

THE
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Analytical and Critical Reviews.

I.—Operative Surgery of the Eye.¹

THE invention of the ophthalmoscope by Helmholtz in 1851 has been of greater importance than was expected at the time. Not only did its introduction give an enormous stimulus to the study of ophthalmic medicine, but its use has since furnished many surprising revelations, and its powers have proved susceptible of immense development. By it a disease of the retina can be diagnosed with the same certainty as one of the cornea, the effects of intra-cranial as well as of intra-ocular pressure can be directly observed, and the refractive condition of the eye can be determined with accuracy, more in many cases than by the use of glasses.

The history of ophthalmic medicine naturally divides at the period of this invention. Progress and change had been comparatively slight since the time of Beer, except in so far as the views current in general pathology had been modified, and such modification had produced some alteration in treatment. The second period was inaugurated by the rise of the Berlin school, of which von Graefe was the head, and to whom it owes almost the whole of its fame. The first number of the 'Archiv für Ophthalmologie' appeared in 1854, and commenced with a paper by him, unsurpassed in ophthalmic literature. This was followed for the next sixteen years by a series of his communications

¹ 1. *Traité des Opérations qui se pratiquent sur l'œil.* Par ÉDOUARD MEYER et A. DE MONTMÉJA. Paris, 1871.

2. *Handbuch der gesammten Augenheilkunde.* B. iii ('Operationslehre,' von Prof. ARLT). Leipzig, 1874.

3. *Ophthalmic Surgery* (extracted from 'Erichsen's Surgery,' 6th ed., 1872). By J. F. STREATFIELD.

4. *A Practical Treatise on the Diseases of the Eye.* By HAYNES WALTON. 3rd edition. London, 1875.

which, for originality and importance, will not be again approached. About the same time the anatomy of the eye was diligently studied, and chiefly by Bowman, and physiological optics were systematised by Helmholtz, and applied to practical purposes, especially by Donders. The contributions of minor importance, published in various countries, have become almost uncountable; there were, in the single year 1870, more than 600 original works, large or small, published on ophthalmic matters, the anatomy and physiology of the eye being included. The result of all this zealous study is that this department has advanced more rapidly than any other in medicine, and that it is now pre-eminent for fulness and accuracy of knowledge, and consequently for certain and successful treatment.

For some years the statements of von Graefe were widely received with distrust, too often in a hostile spirit. Nowhere was this more the case than in England, where the opposition culminated in an active controversy on iridectomy in glaucoma, and revealed a surprising amount of ignorance, rashness, and critical incapacity, which might be admired in a conservative politician, but was deplorable in surgeons supposed to be "of mark."

"When the novelty was fresh, our statistical notions of ophthalmic diseases were a little perturbed at hearing of the number of cases of glaucoma which were operated on. We thought the disease a rare one, in any of its forms, but especially in the chronic. On looking over the patients in general or special hospitals, in passing through work-houses, and inquiring into the pathology of inmates of blind asylums, or examining into the published tables from ophthalmic hospitals, we find the disease to be a rare one. Well, as we looked more narrowly into the records of the new cases, we found they were not cases of glaucoma at all—certainly not according to the standard laid down by the best authors, and accepted by the most practical teachers. The young gentlemen who were twaddling (if we may use the expression, and they will agree with us in its applicability ten years hence) on this subject were evidently but indifferently educated, we mean as oculists, and were writing about what they did not understand, employing a jargon of which they scarcely knew the meaning, and doing but indifferent justice to themselves, the subject, or the operators they were reporting."¹

¹ "Medical Epidemics: Glaucoma and Iridectomy," a Review. From the 'Dublin Quarterly Journal of Medical Science,' August, 1860, p. 77. The feeling on the Continent was very different. See Testelin's letter ('Ophth. Review,' i, 168), written in March, 1864:—"La cause de l'iridectomie (appliquée à la cure du glaucome) ne compte pas d'adversaire sur le continent. Il est encore plus difficile de supposer que la discussion passionnée et malveillante de ses antagonistes, que l'ignorance absolue (feinte ou réelle) qu'ils déploient, au sujet des découvertes de l'oculistique moderne, ne contribuent pas à jeter sur la cause qu'ils défendent le plus profond discrédit."

It is astonishing what may be written by even able men. The review in ques-

More than ten years have passed since the publication of the passage just quoted, and a large amount of evidence has accumulated during the interval, yet no general work has appeared in which any attempt has been made to collect it together. It would be profitable to examine not only how iridectomy in glaucoma, but also how the many other operations introduced or re-introduced during the last twenty years, have stood the test of experience,—to ask what operations should now be admitted as established, and what rejected or left for future decision. A full, still more an exhaustive examination of these questions would be a long and difficult task. Space and time would preclude any but a hasty and superficial survey in this place of the whole of operative ophthalmic surgery, and such an outline would necessarily exclude any exposition of the reasons and experience by which recent innovations are supported. Hence we prefer to restrict ourselves to one portion of this subject, to the indications and results of the operations performed on the cornea and iris, or for diseases of these parts. Even then we shall be able to adduce but a little of the interesting and valuable matter at hand.

tion contains many curiously erroneous statements, of which we may notice a few. Such are that Reichenbach first recommended iridectomy in 1767, and that modern iridectomists make “an aperture either in the cornea in front, or in the sclerotic behind the ciliary attachment of the iris.” Reichenbach’s essay has been twice reprinted (the reviewer characteristically gives no reference); the reader will find it in the ‘*Thesaurus Dissert.*’ . . . ed. E. Sandifort, iii, 437; ‘*Lugd. Bat.*,’ 1778; or in the ‘*Dissertationes Med. sel. Tubingenses*’ . . . ed. C. F. Reuss, iii, 278. Tubing., 1785. The object of the dissertation is to show that in cases of cataract with closed or contracted pupil, the opaque lens can be extracted, the pupil enlarging under its pressure, or being opened out by the needle. “*Si igitur cohesio pupillæ minus arcta mansit, tunc demum consilii est acu, quali ad depressionem utuntur, et qua ego ad apertionem capsulæ crystallinæ uti soleo, in extractione cataractæ, portam hanc aperire, et linea recta, seu potius oblique sursum vulnus in centro infligere, et ita portam hanc arte et marte aperire.*” The rest of the essay is correctly epitomised by Reuss, as “*Extractio cataractæ hic occurrit; lens crystallina adhærens forcipe separata. Exemplum profert autor, in quo visus non redit, aliud extracti corpusculi per vascula adhærentis; rectum scalpellum præfert.*” Reichenbach thinks, indeed, that “*si vero quis acum scindentem reformidet, non inepta inventio foret, instrumenti cilindracei subtilis extremitate excavati et in peripheria scindentis (quale lorarii seu frenarii ad foramina rotunda a loris excindenda, seu quali chirurgi Galli ad cauteria infligenda utuntur, quo uvea pertundi, et formari possit, cujus experimentum facere data occasione forsân licebit.*” Such an operation would still be a novelty. The reviewer probably depended for his statement on Jüngken’s reference, in his *Operative Surgery of the Eye*, to the last-quoted paragraph.

Again, we read in this essay:—“What benefit arose from all this? A very manifest one; the New Sydenham Society, in its last volume, published von Graefe’s ‘*Three Memoirs on Iridectomy*,’ which form the subject of the present review. Was not that a benefit to the members of a society who, for neither love nor money, could procure a copy of that fine old work, John Woolhouse’s *Treatises on the Eye*, or Bannister’s book, and other essays on the diseases of the organ of sight which we might refer to!” John Woolhouse and Bannister!! What a selection!

A few words on the books quoted at the commencement of this article are necessary before we pass to our proper subject. The first on the list, by Messrs. Meyer and Montméja, is a handsome quarto volume, illustrated by numerous woodcuts, and twenty-two large photographs. The former are good; the latter are indifferent, and must add much to the cost. Each operation is carefully described; its indications and contra-indications are pointed out in the manner usual to systematic writers, but in a more than usually clear style. We find almost nothing to object to, and at the same time scarcely anything that can be fresh to those acquainted with recent ophthalmic literature. Take it all in all, we can recommend this work to any one in want of a perspicuous and reliable guide.

The second treatise is one of a series, principally by German writers, intended to ultimately form a complete system of ophthalmology. It is by Professor Arlt, one of the most learned and experienced ophthalmic surgeons in the world. It is particularly remarkable for the careful and minute description of each operation; every detail, every modification, is usually explained. We wish it had been still longer; a bibliography and index would have increased its value. As might be expected, it is wonderfully full of information; it will for years to come be indispensable for study and reference.

Mr. Streatfeild writes in a sketchy manner, is rather one-sided, and makes some statements which we think incorrect. His little pamphlet contains, however, many just and interesting remarks.

The first edition of Mr. Walton's book appeared in 1853, under the title of 'A Treatise on Operative Ophthalmic Surgery,' and was most favorably noticed by the late Mr. Mackenzie in this Review.¹ A large amount of valuable matter is to be found in its 1200 pages, whilst at the same time we think it deficient in some important particulars. Numerous excellent cases are related, and Mr. Walton constantly gives his own experience. Books of this class are never very abundant, and we are thankful to the author for this one. The practitioner will often have recourse to it with advantage. We must not forget to mention that the woodcuts are usually very good, and that the coloured drawings of diseases of the fundus, as seen in the inverted image, are some of the best yet published.²

¹ 'British and For. Med.-Chir. Rev.,' xi, 433. London, 1853. See also the review of the 2nd ed. in vol. xxix, 319, 1862.

² The second figure on the second plate must be wrongly named, and the third figure on the same plate does not represent a typical case of retinitis pigmentosa. The first figure on the next plate represents retinitis albuminurica most successfully.

The *progress of operative ophthalmic surgery* has been much promoted by the use of anæsthetics, and by fixation of the eye and eyelids. Pain and pressure on the eye are objections to fixation, but the former can be annihilated by an anæsthetic, and the latter to a dangerous extent is usually the fault of the operator or his assistant. Many minor operations, such as paracentesis, the needle operation for cataract, and removal of foreign bodies from the cornea, can be and are continually performed without these auxiliaries, yet in unsteady or very young patients the necessary manipulations are much facilitated and rendered more exact by their use.

Peritomy (excision of the conjunctiva around the cornea). Obstinate pannus was often treated in antiquity and in the middle ages by destruction of the conjunctival vessels. Attention was called again to this treatment in 1862 by Furnari,¹ who advised the excision of the conjunctiva and of the subconjunctival tissues all round the cornea, so as to completely denude the sclera, and the free application of the nitrate of silver to the exposed portion. The cauterization has been generally abandoned owing to the risk. Hirschberg (Prof. A. v. Graefe's 'klin. Vorträge' . . . herausg. v. J. Hirschberg, i, 232, Berl., 1871) says that, as performed by Furnari, the operation has destroyed no few eyes. Restricted to the removal of a small strip, without cauterization, it has been found useful by many operators. A. von Graefe recommended it in (1) trachomatous pannus after disappearance of the granulations, (2) in certain cases of the diffuse keratitis of scrofulous children, and (3) in the corneal infiltrations tending to sclerosis which accompany scleritis and sclerotico-choroiditis. "Peridectomy is an excellent means in these, and, indeed, in all sclerosing inflammations of the cornea."² Meyer has had very satisfactory results in cases of diffuse keratitis in adults, where all other means, employed for months, had failed.³ Wells says⁴ that in some cases of the very dangerous crescentic ulcer of the cornea "great advantage has been derived from syndectomy, either partial, if the ulcer was but of slight extent, or complete, if a considerable portion of the cornea had become involved." Horner has succeeded in arresting diffuse interstitial keratitis in some recent cases by its use.⁵

¹ He had previously recommended, after the example of Scarpa, the removal of a strip of conjunctiva, a line broad, from the circumference of the cornea. (S. Furnari, 'Traité pratique des Maladies des Yeux,' p. 325. Paris, 1841.)

² See Brecht's papers on Corneal Peridectomy in the 'Deutsche Klinik,' 1871, p. 189, and the 'Archiv für Ophthalm.,' xx, 1, p. 113.

³ l. c., p. 200.

⁴ J. S. Wells, 'Treatise on Diseases of the Eye,' 3rd ed., p. 116. Lond., 1873.

⁵ P. Jackowlewa, "Ueber keratitis interstitialis diffusa," Diss. Zürich, 1873, quoted by Prof. Saemisch in 'Handb. d. ges. Augenheilk.,' iv, 269. Leipz., 1875.

Median incision of the cornea was introduced in 1869 by Saemisch¹ as a means of treating certain spreading ulcers of the cornea, often with pus in the anterior chamber, to which he gave the name of *ulcus corneæ serpens*. The incision passes vertically through the whole thickness of the cornea, and should extend beyond the ulcer into sound tissue. The incision is reopened daily, so long as appears necessary. He states in his pamphlet that he had so treated thirty-five cases with only one failure. Nieden² reports eighty cases treated by division; of these fifty were accurately noted. The treatment failed in only two cases of extensive ulceration (4%). In forty-two cases, or 84 per cent., the progress of the ulceration was arrested by the first slitting, the same result being obtained in six cases or 12 per cent., by the second slitting; the ciliary neuralgia, which was more or less severe, ceased at the same time in all these cases.

“The ultimate result was in thirty-five cases (70 per cent.) opacities of the cornea, in eleven (22 per cent.), opacity with adhesion of the iris, and in two (4 per cent.) the patient did not return.”

Other operators have employed a free incision in spreading suppuration and infiltration of the cornea. Mr. T. P. Teale has published a series of very interesting cases³ to show “that suppurative affections of the cornea and iris, which do not rapidly yield to atropine and opiates, ought to be dealt with by direct incision through the median part of the cornea into the anterior chamber, just as much, as a matter of course, as one would incise a whitlow or a thecal abscess.”

He noticed—

“That on incising in its early stage a circumscribed abscess in the layers of the cornea, a small white body sometimes escapes from the opaque spot, which, when placed under the microscope, proves to be broken-down corneal fibre, infiltrated with pus;”

in fact, a corneal slough, like the core out of a boil. He asks—

“May we not hope that the same treatment may prove to be of equal value in threatened sloughing of the cornea from purulent ophthalmia, in the exceptional cases of glaucoma which iridectomy fails to relieve, and in most acute affections of the eye which threaten the vitality of the cornea?”

Some forms of suppurative keratitis are probably due to infection. It has long been known that chronic inflammations of the lachrymal sac considerably diminish the prospect of success in extraction of cataract. Saemisch's remark that this

¹ T. Saemisch, ‘Das Ulcus Corneæ Serpens.’ Bonn, 1870.

² Nieden, “On the Treatment of Ulcus Corneæ Serpens,” in the ‘Archives of Ophthalmology and Otology,’ iii, 1, p. 238. New York, 1873.

³ ‘Ophth. Hosp. Reports,’ viii, 61. Lond., 1874.

relatively common disease renders even very slight injuries, which would otherwise have produced scarcely the least effect on the eye, most dangerous,¹ is worth remembrance in regard to the treatment of obstinate cases of lachrymal disease. Hirschberg,² in 80 per cent. of the cases of what he calls torpid infiltration of the cornea, found blennorrhœa of the lachrymal sac of old date, and remarks that "special stress is to be put on the epithet old; by no means rarely the patients in question are exceptionally stinking, with inveterate ozæna, Rhinitis ulcerosa." Saemisch found the same state of the lachrymal sac in 32 per cent. of his cases of *ulcus corneæ serpens* at Bonn. Recent experiments of Eberth, Leber, and Stromeyer have rendered it probable that the blennorrhœa is even more closely connected with the keratitis than had been supposed, and that possibly the process is due to infection with septic substances contained in the discharge from the sac. Partly as a consequence, further trials have been recently made with disinfectants directly applied to the eye (see the remarks by Horner, Schiess, and v. Welz, 'Klin. Monatsbl. für Augenh.,' xii, 432. Stuttg., 1874).

Staphyloma corneæ.—The old operation of excision is liable to be followed by considerable loss of vitreous, intra-ocular hæmorrhage, and suppuration; the result being a small and inefficient stump. For these reasons the wound has been sutured by Mr. Wilde, Mr. Critchett, and others, the threads being passed through the sclera, or through the conjunctiva and episcleral tissue (Knapp), or simply through the conjunctiva (Wecker). It has been objected to sutures passed through the sclera, that they "sometimes give much pain and keep up inflammatory symptoms during the protracted healing" (Streatfeild, l. c., p. 51). Even sympathetic disease of the other eye is said to have been excited by them (Knapp in 'Arch. für Ophth.,' xiv, 1, 273). v. Oettingen records a case in which the sutures caused an extremely painful panophthalmitis ('Jahresber. üb. d. Leist. u. Fortschr. im Gebiete d. Ophth.,' 1871, p. 231, from the 'Dorpater Med. Zeitschr.,' Bd. ii). According to Anagnostakis, excision of the projection with subsequent suture of the wound is mentioned by Celsus, Galen, Paulus Ægineta, and Aetius. Two needles were passed cross-wise through the base of the staphyloma, which was then excised; the wound was closed by tightening the threads ('Annal. d'Ocul.' vol. lxxviii, 1872). Abscission of nearly the anterior half of the eye has been preferred by some surgeons to excision of the staphyloma alone.

¹ l. c., p. 9.

² 'Klin. Vortr.,' p. 210.

“The object of the operation is to remove a useless and painful or unsightly feature, and to gain, instead of it, a low stump as a good foundation for an artificial eye. If we are careful to remove the lens, which is liable to chalky and other degenerations, and the ciliary body, which is full of muscular tissue, nerves, and blood-vessels, together with the offending parts, we get rid of future sources of offence, and very much lessen the chances of irritation and inflammation in it, and of sympathetic irritation and inflammation in the other.” (Streatfeild, l. c., p. 50.)

A greater improvement has been, however, the substitution of enucleation in certain cases. Arlt remarks that total, even partial, excision is dangerous, when the eye is amaurotic from increased intra-ocular pressure. Beer long ago opposed the operation in cases where there are symptoms of what he considered cirsophthalmia, which we now call secondary glaucoma. During, or at all events after, the operation, the veins at the outer side of the choroid give way; retina and choroid are forced forwards through the wound, with excruciating pain; excision of the parts prolapsed is usually required to stop the bleeding and relieve the suffering. Then comes panophthalmitis. In such cases it is not good practice to excise the staphyloma; the eye should be enucleated (l. c., p. 377).

Küchler preferred (‘*Neue operat. Heilmethode,*’ Braunschw., 1853, quoted by Arlt, p. 379) as a certain cure at any stage of total staphyloma, division of the projection, evacuation of the lens, and a frequent reopening of the wound. His directions have been strictly observed by Arlt, who has, however, abandoned this treatment, owing to the occurrence of panophthalmitis. For the same reason the latter surgeon does not approve of the passage of a thread through the base of the staphyloma.

“If the thread is removed too early, there is no shrinking; if it remains till there is greater reaction, especially till there is œdematous swelling of the conjunctiva bulbi and eyelids, the occurrence of panophthalmitis cannot always be prevented” (l. c., p. 379).

Passing over opacities of the cornea with the remark that Wecker has introduced a mode of colouring them with indian ink, and has found that both appearance and sight are greatly improved by the tattooing, we come to *Conical cornea*. Many attempts have been made to improve vision in this affection. Arlt says in respect to iridectomy which was recommended by von Graefe (‘*Arch. für Ophth.,*’ iv, 2, 271), that it can be of use only when the projection is slight and does not extend far towards the periphery of the cornea, or when the object is to use a latent portion for the attainment of tolerably good vision. He thinks it probable, from four cases operated on during the

first year of existence of this disease, that its progress may be arrested by early iridectomy (from the pupillary to the ciliary edge). A year later the disease was stationary in two eyes, and in the other two there was an improvement in comparison with the state before the operation (l. c., p. 344). Other methods, such as iridesis (Critchett, Bowman), production of a contracting cicatrix (v. Graefe), excision of a small portion of the apex (Bader, Galezowski, Bowman, Wecker), have also been tried. It must, however, be admitted that all these proceedings are yet upon their trial.

Corelysis.—Mr. Streatfeild, who introduced this operation, says:

“If iris adhesions be few in number, three or four perhaps, and these be not wide, if the iritis have occurred but once, at least two or three months previously, and the iris seem otherwise healthy, able and ready to dilate, as much as could be expected, considering the adhesions, under the influence of atropine, and the latter remedy have been fairly tried (a drop of a strong solution placed in the eye three or four times a day for a week) and have failed, I have been in the habit of detaching them with a spatula-hook passed between the iris and the lens. There is no fear of wounding the lens. But, now, unless circumstances be altogether favorable, according to the above data, I am afraid of lighting up a fresh iritis, and of getting readhesions after the detachment has been done.”¹

The propriety of any operative proceeding is questionable in such cases, and the surgeon's decision will evidently be largely influenced by the greater or less importance attributed by him to a few narrow adhesions. von Graefe's views have been much exaggerated by some surgeons; what he asserted about numerous broad synechiæ has been extended to all cases. He considers the recurrence of iritis to be chiefly due to the former; yet the emphatic manner in which he speaks of the kind of adhesion seems to have been often overlooked.

“The existence of posterior synechia is in most cases the true cause of the tendency to recurrence. Iritis cured without posterior synechia seldom evinces any tendency to recur. Iritis with slight and extensible adhesions sometimes recurs, but in comparatively few cases. Iritis with many broad adhesions, resisting all artificial mydriasis, will very generally recur, and there is scarcely any exception to this rule when synechia posterior totalis—a perfect exclusion of the pupil by exudation—has occurred.”²

On the other hand, excellent surgeons, as Arlt and Schweigger,

¹ Loc. cit., p. 29.

² “Three Memoirs on Iridectomy,” p. 252, New Syd. Soc., 1859. It deserves mention that v. Gräfe afterwards adopted the more correct appellation of annular synechia for these cases: see the ‘Ophthalmic Review,’ i, 23—25.

attribute scarcely any influence in this respect to adhesions that are insufficient to cause exclusion of the pupil. Arlt says (l. c., p. 346):

“It cannot be unconditionally admitted that the existence of posterior synechiæ is the chief cause of iritic recurrences. The synechiæ can be counted only among the causes of recurrence. Posterior synechiæ, even though broad and inextensible, cannot in and by themselves indicate iridectomy or any other operation; the inflammation must have already recurred, or at all events threatened (persistent or frequently recurring sensibility to light and exertion, pain or tension in the eye or its proximity, slight redness induced by occupation, change of temperature, or mental excitement): we should, besides, investigate the state of the other eye and general condition, and whether any consequent indication should be attended to previously or at the same time. *Iridectomy can remove only what may be termed a mechanically acting cause.* It will very often disappoint both us and the patient if we ask more.

“When, for example, a patient with chronic iritis and synechiæ is syphilitic, we should certainly not be content to perform iridectomy alone. Many sufferers from chronic, frequently recurring iritis show indisputable signs of scrophulosis; in other cases of the kind we have to do with people whose nutrition has been impaired by privation or weakening influences. (For example, irido-cyclitis after famine-typhus). Both eyes are attacked in such cases, one after the other, generally in striking symmetry, yet we are not usually justified in considering the affection of the second eye to be due to sympathy. I have been able to watch for years many patients on whom the operation has been performed for this reason. There has mostly been no subsequent attack. In many, however, there has been a recurrence once or more at some later period, notwithstanding a perfect operation and healing of the wound. The recurrent inflammation has been attended by pericorneal injection, discoloration of the iris, dotted opacities on the membrane of Descemet, and more or less haziness of the vitreous, whilst the coloboma, large and reaching to the periphery, has not changed. On the other hand, I have seen many patients for years (one from his 34th to his 55th year), whom I had treated for bilateral iritis, and in whom both eyes, not only the one iridectomised, but also the one with numerous synechiæ, have continued free from inflammation.

“Idiopathic iritis is closely related to another form of disease, the only difference during the attack and throughout their course being the frequent recurrence. Such patients are for an uncertain period liable to recurrences of iritis, the duration of the intervals and the severity of the inflammation being uncertain. We cannot then be surprised that as the rule they present a number of iritic adhesions. Yet this fact alone supports the assertion which is pretty generally admitted, that the synechiæ are the cause of recurrence.” “The possibility of such a causal relation cannot of course be denied, yet the individuals with extensive posterior synechia who do not suffer

from recurrent iritis are too numerous for the mechanical influence of the adhesions to be blamed without more ado as the cause of recurrence, and on the other hand recurrence takes place quite independently of synechiæ. I have met with cases treated adequately by atropine from the very commencement, where no adhesions were left, and yet in which there were frequent recurrences without any assignable cause such as syphilis.¹ I have repeatedly seen the very same."

Arlt is, consequently, not favorable to corelysis.

"I have hitherto preferred iridectomy when any operation was required. Even the excision of a small piece of the sphincter relaxes the parts fixed by synechiæ. Iridectomy, as we shall see in respect to glaucoma (§ 101), modifies at the same time the circulation of the uveal tract, and this, not to speak of medical and dietetic treatment, is certainly of more importance when 'there is a tendency to recurrence,' than the removal of any dragging, which may be imagined, but is, at all events, not directly proved" (l. c., p. 348).

Two slightly different methods of separating the adhesions, one by a very small incision, the synechiæ being torn by a hook (spatula-hook, Streatfeild), the other by a larger incision for the introduction of forceps (Passavant), have been employed. In addition to the older observations of Streatfeild, Weber, and Hasner, we may notice that Passavant operated more than fifty times according to the second method without any accident; he separated a single adhesion at a time ('Arch. für Ophth.,' xv, 1, p. 259, Berl., 1869). He has been followed by Mauthner ('Wiener Med. Presse,' quoted in 'Jahresbericht über d. Leist. und Fortschr. im Gebiete d. Ophthalm.,' 1er Jahrg., 1870, p. 303), who has operated many times and always with good results; and by A. Reuss (ibid., p. 304), who thus treated a case, in which there was a dense pupillary membrane, with the effect of improving the vision; a part of the edge of the pupil remained free and the membrane shrank considerably. Wecker, on the other hand, rejects the operation because he finds that it usually results in adhesion of the iris to the cornea ('Wiener Med. Wochenschr.,' quoted in the 'Jahresbericht üb. d. Leist., u. s. w.,' 2er Jahrg., 1871). To this Passavant replies that if his operation is performed exactly according to his directions, it has no bad effect.² Finally, we have two short but interesting communications to the American Ophthalmological Society ('Trans.,' 7th annual meeting, p. 67, New York, 1871; and 8th annual meeting, p. 130, New York,

¹ Schweigger, 'Handbuch,' 1871, p. 321.

² Prof. Nagel (ibid., p. 304) has operated repeatedly with a good result. Twice the posterior was replaced by an anterior adhesion; in one case the latter was again easily separated. The iris sometimes readhered to the capsule.

1871). From these we learn that the operation was performed on nine eyes in eight patients; that there were twenty-four operations, and that more than one adhesion was separated on some occasions: that the adhesions numbered from one to at least five (in one case perhaps annular, and "pupil covered with a film of deposit"); they are thrice noted as broad or strong. The result was a free, movable pupil in six eyes, and in one it was circular; in respect to two the result is not stated. The only accident was the escape of some blood into the anterior chamber in one case.¹

Iridodesis.—Adams (1812) and Himly (1816) recommended displacement of the pupil by means of a small prolapse left in the corneal wound (Iridenkleisis.) van Onsenoort (1822) punctured the sclera for this purpose.² It was recommended and often used by Tyrrell (see the chapter "of changing the natural position of the pupil," in his book, ii, 499, Lond. 1840) in conical cornea and central leucoma. Mr. Critchett revived the operation and rendered its immediate result certain by ligaturing the prolapsed iris. Thus modified, it became known as iridesis, iridosis or iridodesis. It was employed in leucoma of the cornea, stationary partial cataracts, lateral displacement of the lens, and conical cornea. The operation in itself proved all that could be desired: thus, for example, the pupil was displaced from behind an opacity to opposite a clear portion of the cornea, and in many cases this was in each respect a decided gain. Unfortunately it has been found that serious diseases may arise from the synechia, even long after the operation. Such cases have been recorded by A. Graefe ('Arch. f. Ophth.,' ix, 3, p. 199), Steffan (Ibid., x, i, p. 122), M. Gruber (a case under A. Rothmund in³ 'Deutsche Klinik,' 1866, p. 149, and 'Ophth. Review,' iii, 284), &c.⁴

¹ There are some inaccurate statements in these papers. In the first Dr. Jeffries speaks of 13, and in the second of seven operations, whilst according to the details given there were 12 in each.

² He perforated the sclera with a needle, one line from the edge of the cornea, passed the hook along the *posterior* part of the iris till its point was seen through the pupil, and withdrew the pupillary edge of the iris, strangulating it in the wound. He says that he has repeatedly performed this operation with the best result; he has thus operated even on the two eyes of a patient. A. G. van Onsenoort, 'Genees-en heelk Handboek over de Oogziekten,' 2e deel., p. 454, Amsterd., 1840. Coloured plate of his first case in the 'Annales de la Médecine Physiologique,' t. ii, p. 97. Paris, 1822.

³ Compare the account of the same case in Worlitschek's 'Mittheilungen,' 1866.

⁴ Höring, "Three cases of Irido-Cyclitis after Iridodesis," in one case both eyes were lost, 'Klin. Monatsbl. für Augenh.,' 1865, p. 42, and 'Ophth. Review,' ii, 208. Rydel, "Purulent Iridocyclitis fifteen months after the operation," Tetzler, Rydel, and Becker, 'Bericht über die Augenklinik der Wiener Universität,' 1863-65, p. 80. Wien, 1867.

Arlt says (l. c., p. 345) that not only may purulent iridocyclitis spring from the cicatrix months, even years after the operation, but what is still worse, sympathetic irido-cyclitis of the other eye may be excited. Streatfeild remarks :

“But by this method of proceeding the *ultimate* results are often very unsatisfactory : the *iris is confined*, and a low chronic recurrent iritis, &c., may be set up, which leads to far worse results than the state of things which the operation was intended to remedy. These artificial anterior synechiæ seem to be as pernicious as are the common iritic posterior synechiæ. We have recently seen many instances illustrative of this disagreeable truth. An excision of iris is a far safer though less attractive operation ” (l. c., p. 24).

The consequence has been that many surgeons have entirely abandoned its use, and treat conical cornea, in which it sometimes gave very good results, by other means (see ante), and replace it in other cases by iridectomy or iridotomy.

Iridectomy.—The incredulity with which many surgeons received the announcement that this operation would arrest such diseases as irido-choroiditis and glaucoma seems to have almost disappeared. An examination of the principal treatises published and of the statistical tables of operations performed by various surgeons during the last ten years shows that the indications given are, with some slight modifications and limitations, generally followed.

What are these indications? What were the changes introduced by Von Graefe? “One of the first changes in the second period was the employment of the operation in the very large class of cases in which the patient can see perfectly with one eye, the other being more or less diseased. So long as the ultimate results of the operation remained very uncertain, no one would, of course, recommend its adoption, provided the patient’s other eye was sound. When, however, better methods of operating had become more generally known, and success could reasonably be expected, many surgeons began to operate, also, in cases where the vision was perfect on the other side. Thus, Prof. A. von Graefe, who had adopted iridectomy in all cases as the only means of making artificial pupils with certainty, utterly rejecting division of the iris, or separation of it from its ciliary attachments, had, before 1856, performed it in more than 300 cases of blindness limited to one eye, the other being sound. The question may be considered as settled since the time when he published his paper (‘Archiv Ophth.,’ ii, Abth. 2, p. 193; and ‘Med. Times and Gaz.’ 1857, ii, 267), in which he showed, by an analysis of these cases, that in some persons there resulted binocular vision with its many important

advantages, such as the accurate estimation of distance; that in the less successful cases, the appearance of the patient was improved, and the field of vision enlarged; that even if squint or double vision occurred, they were quite amenable to treatment; in short, that it was always advisable to operate on the blind eye, the other being healthy, provided the artificial pupil could be made in a tolerably central position.

“In the very next paper in the same journal we meet with the celebrated article in which von Greefe recommended iridectomy in a great number of diseases, with an entirely different object from the one of allowing light to pass to the retina; and this essay was soon followed by two others, published in 1857 and 1858 respectively, in which he still further extended its applications. As translations of these papers have been published by the New Syd. Soc., it would be quite superfluous for me to do more than rapidly to enumerate the cases for which Graefe recommended this operation. Instead of taking them in the order in which they are mentioned in these papers, it will be better, I think, to classify them under four heads. 1. As a prophylactic, to prevent future attacks of iritis, or the extension of iritic disease to the choroid; to avoid the evil effects of the pressure of a swollen lens, either after cataract operations or in accidents; in certain cases, to prevent sympathetic disease of the other eye. 2. To relieve inflammation, or even only violent pain, as in some cases of choroidal inflammation, in iritis resisting other treatment, in corneitis where there is extensive ulceration, in sympathetic disease of a previously sound eye. 3. To diminish in some cases the intraocular pressure, as in glaucoma, staphyloma, &c. 4. As the best means of removing small foreign bodies impacted in the iris.”

The assertion that these indications are generally followed may be proved by a reference to almost any recent treatise, and scarcely calls for further remark. A short account of some statistics more particularly full and reliable, may illustrate the present practice. (See also Cohn, ‘*Vorarbeiten für eine Geographie der Augenkrankheiten.*’ Jena, 1874.)

Dr. A. Rothmund, junior, performed iridectomy 89 times out of a total of 420 operations in 1864: he distinguishes the results as good, moderate, or none.

		Good.	Moderate.	None.
For restoring vision	49 . .	28 . .	15 . .	6
As an antiphlogistic	30 . .	16 . .	10 . .	4
Preparatory to cataract-extraction	10 . .	10 . .	— . .	—
	—	—	—	—
	89	54	25	10

¹ T. Windsor, “The Operation for Artificial Pupil: its history and present state,” ‘*Brit. Med. Journal,*’ 1862, ii, 464.

It was performed as an antiphlogistic 7 times in inflammation of the iris and choroid, thrice for continually increasing posterior synechiæ, once in ulcer of the cornea, and 19 times in glaucoma (3 acute, 6 subacute, and 10 chronic). The result was always very good in acute glaucoma. In the other cases the vision was decidedly improved only 9 times. In one case of subacute glaucoma intra-ocular hæmorrhage took place during the night after the operation and ended in atrophy of the eye.¹

Dr. A. Mooren performed 240 iridectomies in the year, 1865-66, out of a total of 665 greater operations, of which he gives the following table; the figures I, II, show that the operation was performed on one or both eyes:

	I.	II.
Leucoma cornæ centrale vel cicatrix adhærens	46	8
Præcipitata plumbea	1	—
Pterygium	1	—
Symblepharon	2	—
Ulcus rodens cornæ	1	—
Abscessus vel ulcus cornæ cum hyopio	13	—
Vulnus cornæ	2	—
Cicatrix cornæ ectatica	4	—
Perforatio cornæ cum prolapsu iridis	6	—
Corpus alienum in iride	1	—
Kerato-iritis	6	—
Iritis parenchymatosa	13	1
Irido-cyclitis	3	—
Irido-choroiditis	23	1
Irido-choroiditis sympathica	2	—
Choroiditis	3	—
Glaucoma	15	4
Cataracta accreta	6	—
„ traumatica	18	—
Iridectomia cum extractione cataractæ	2	—
„ cum extr. lineari per corneam	11	1
„ præparatoria pro extr. catar.	9	6
„ cum extract. catar. secundariæ	6	2
Total	194	23

The 240 iridectomies were performed on 213 eyes; in 9 cases the operation was repeated twice, in 3 thrice. In the first four diseases it was indicated for simply optical purposes.¹

De Wecker in Paris had, in the second half of 1871, 61 iridectomies—28 optical, 33 antiphlogistic—out of a total of 248 operations:

¹ K. Worlitschek, 'Mittheilungen aus der Heilanstalt für Augenkranke des Prof. Dr. A. Rothmund, junr zu München,' 1860.

² A. Mooren, 'Ophthalmiatische Beobachtungen,' p. 179-181. Berlin, 1867.

		Results.	
		Good.	None.
OPTICAL—			
for opacity of the cornea with or without adhesion			
of the iris	23	19	5
„ simple closed pupil	4		
„ congenital cataract	1		
ANTIPHLOGISTIC—			
for partial staphyloma of the cornea	4	4	—
„ recurrent iritis	4	—	—
„ irido-choroiditis	15	—	—
„ acute glaucoma	1	—	—
„ simple chronic glaucoma	9	—	—

In 3 of the cases of choroiditis, patients who could hardly see to walk before the operation, could after it count fingers at twenty feet.¹

The same surgeon had, in 1872, 157 iridectomies in a total of 630 more important operations.

OPTICAL—			
Opacity of the cornea			31
Leucoma adhærens			11
Simple closed pupil			10
Congenital cataract			2
Post. polar cataract			2
			—
			56
ANTIPHLOGISTIC—			
Corneal abscess			1
Partial staphyloma corneæ			9
Recurrent iritis			8
Irido-choroiditis			30
Acute glaucoma			3
Glaucomatous keratitis			1
Chronic glaucoma			36
Wound of the cornea with adh. iris			10
Displacement of the lens			3
			—
			101

Dr. J. Hirschberg, in Berlin ('Berl. kl. Wochenschr.,' 1870), performed 29 iridectomies in 25 patients; 4 times for glaucoma, thrice for abscess of the cornea, once for progressive sclerosis corneæ, 7 times for iritis, and the rest for leucoma corneæ and closed pupil. The same surgeon reports from, September, 1870 to September, 1872, 117 iridectomies; 72 antiphlogistic, 44 optical, and 1 for removal of foreign body from the iris. ('Klin. Beobacht. aus der Augenheilanstalt,' von Dr. J. Hirschberg, p. 110. Wien., 1874.)

¹ "Relevé Statistique," par G. Martin, in the 'Annales d'Oculistique,' vol. 67, p. 157. Brux., 1872.

² "Clinique Ophthalmologique, du Dr. de Wecker, à Paris. Relevé Statistique," par le Dr. Georges Martin. Paris, 1873.

As to the performance of this operation in glaucoma we find that in the St. Petersburg Eye Hospital during the four years 1860-63 there were 95 cases of glaucoma with 158 affected eyes (39 men and 56 women) out of 1943 in-patients.

"The cases were generally treated by iridectomy—an operation which, indeed, was performed 101 times; once the eyeball was enucleated, and once paracentesis of the anterior chamber was employed. In respect to the curative action of iridectomy on the glaucomatous process, the results were perfectly satisfactory . . . The operation was performed fourteen times in glaucoma consummatum, when there was total blindness, simply for the purpose of relieving severe ciliary pains; 87 operations therefore remain, from which some action on vision could be expected. The results may be arranged in the following manner: Vision was improved 54 times; it remained just as before the operation 26 times; and 7 times it deteriorated after the operation, thrice from accidental cataract, the lens being wounded during the operation, and four times from advancing atrophy of the optic nerve."

The cases were thus distributed: Incipient glaucoma (premonitory stage) 10, acute glaucoma 12, chronic inflammatory glaucoma 57, glaucoma simplex 11, secondary or complicated 5, and eyes lost from glaucoma 63.¹

Dr. L. Rydel has given a full account of the cases observed at the Ophth. Clinic of the Vienna University ('Bericht üb. die Augenklinik der Wiener Universität,' 1863-65, p. 132. Wien, 1867). There were in the three years 79 cases (46 men and 33 women); in 15 one eye was affected, in 64 both were diseased (or in all 143 eyes); of these 42 were totally lost. Iridectomy was performed in 79 cases, in 53 on one eye, in 22 on both eyes (or in all 97 times); 90 times with the view of preserving or improving vision, 7 times on account of violent pain, &c. The results were as satisfactory as could be expected with one exception. Many of the more interesting cases are related by Dr. Rydel at length.²

The use of iridectomy in partial staphyloma, glaucoma simplex, and exclusion of the pupil deserves some further notice.

Partial staphyloma of the cornea and projecting corneal cicatrices.—Beer observed so long ago as 1806 that the prominence sometimes receded after this operation. The same effect was noticed after him by Rosas, Heiberg, and Flarer. Chelius, jun. ('Staphyl. der Hornhaut,' p. 48, Heid., 1847) says positively that, if possible, an artificial pupil should be made in every

¹ See Dr. Magawly, "Contribution to the Clinical History of Glaucoma," 'Ophth. Review,' i, 233, from the 'St. Petersburg. Med. Zeitschrift,' vi, 193, 1864.

² A series of cases of iritis, irido-choroiditis and glaucoma will be found in the appendix to Donders' 2nd report. Utrecht, 1861, pp. 277-420.

partial staphyloma. "By this means the partial staphyloma is changed into a simple synechia and any further increase prevented." Arlt says (l. c., p. 365) that a conical projection is more liable to be followed by secondary glaucoma than a spherical one, whether partial or total. Perception of light may continue for years in the latter; it is lost in a few weeks or months in the former. Von Graefe makes some important remarks in his last paper on glaucoma ('Arch. für Ophth.,' xv, 3, p. 108, and 'Ophth. Hosp. Reports,' vii, p. 92. Lond., 1871). He has seen by no means unfrequently cicatrices after central ulcers from blennorrhoeic, diphtheritic, or pustular ophthalmia, where there had been no perforation, followed by expansion of the anterior chamber and ultimately by glaucomatous tension.

"Inclusion of the iris much intensifies the danger. For this reason it is of great importance to prevent synechia anterior in perforating ulcers and wounds, just as it is to avoid synechia posterior in iritis. As to both forms glaucomatous tension follows in only the minority, fortunately for the patients, yet both are attended by permanent risk in every case. We have noticed not unfrequently, that eyes affected with synechia anterior or leucoma adhærens, after being good for many, many years, are ultimately attacked by glaucoma on the approach of old age." "The greatest attention must be paid to all the objective symptoms, for these processes usually occur during childhood, when no great reliance can be placed on functional examination, and the effect of the treatment depends on the stage of the disease. It is indeed mournful how many eyes, after escaping entire destruction from ulceration, as in ophthalmia neonatorum, are afterwards rendered blind by secondary glaucoma, for which active treatment has not been used in time . . . No doubt it seems desirable for many reasons to postpone iridectomy in a child. Yet there is one urgent indication, never to be overlooked, owing to which the operation must be performed at any age; that is, an increase of the intra-ocular tension. Its first symptom in children with leucoma is usually an expansion of the anterior chamber. . . . To delay in leucoma adhærens after ophthalmia neonatorum till the increased tension can be estimated by the touch, would usually be to wait till too late."

Iridectomy in Glaucoma Simplex.

"Whilst the operation has a perfectly uniform effect in simple inflammatory glaucoma, whilst in secondary glaucoma its various results may be naturally deduced from the nature of the primary cause, we are obliged to admit that cases of glaucoma simplex vary extremely in their ultimate course, even when the pre-existing conditions appear to be exactly similar. The result is often very satisfactory in a relative sense, when the operation is performed at a late period; I mean that after six or seven years the patients continue to see decidedly better than at the time of the operation; in some, operated on at an early period, the vision remains for many years in the same state then gradually

deteriorates; in some, again, the disease is not rendered perfectly stationary; and finally, some, fortunately very rare, patients become rapidly blind after the operation. When we accurately determine and record the tension, we find that these differences more immediately depend upon its variations. Thus iridectomy reduces the tension directly and permanently to its normal amount in most cases of simple glaucoma. It reduces it considerably, but does not render it quite normal in others; the vision usually continues in the same state, the eye acquiring, as it were, a sort of adaptation to a moderate increase of tension; yet not unfrequently the sight becomes again worse after a time, or the pressure again increases slightly and gradually, until in either event by a second operation, which I shall afterwards describe, it is rendered permanently normal and the vision secured. In a third series, the tension is normal or but little increased soon after the operation, whilst at a later period there are from time to time considerable increases, which do not always permanently yield to a second operation. Lastly, iridectomy is sometimes followed by greater instead of less tension, the result being that vision is lost by progressive impairment or by a sudden attack resembling acute glaucoma.

“Hence it would almost seem as if iridectomy had such an uncertain effect in simple glaucoma as to render its indication doubtful. This conclusion is found to be quite erroneous when we consider the numerical distribution of the varieties described. It has been already mentioned that in more than half the cases, a single operation renders the pressure permanently normal, and not only preserves, but even gradually improves, the vision for a long period. The second category includes fully one fourth of the cases, and though our object cannot be said to be fully attained, yet the result is generally satisfactory; it may be necessary to repeat the operation in some few cases in order to secure permanent success. A second operation sometimes stops the progress of the blindness in the third category where the disease recurs; it at all events renders the deterioration slower in comparison with the spontaneous course. The last variety alone is thoroughly unfavorable, blindness being hastened by the operation. Yet this ‘malignant’ course is extremely rare; I have seen it fully developed only five times in some hundred cases of simple glaucoma on which I have performed iridectomy. Judging not only by my own practice but also by that of others, it does not form two per cent. of the cases of glaucoma simplex submitted to operation. Now an operation that gives permanent protection from blindness in more than 90 per cent., renders the course slower in the majority of the remainder, and does harm in less than two per cent., is indisputably indicated, though exceptional bad results, such as never occur in an analogous manner in inflammatory glaucoma, may necessitate prudence in the prognosis” (l. c., p. 99).

Arlt states that his experience is essentially the same (l. c., p. 358).

The iridectomy should be repeated when errors in the operation or after-treatment appear to cause the continuance or

recurrence of the glaucomatous pressure. The formation of a second and large coloboma at the diametrically opposite side is also advisable when the tension remains great or again increases after the first operation.

“Many comparative trials in the years 1865–67 proved that excision of the opposite piece of iris had a far more decided effect on the tension than that of the adjacent (even extremely large) portion of iris. These trials were made a few times when both eyes were in almost exactly the same state; the result was decisive, for excision of the adjacent piece had afterwards to be supplemented by that of the opposite portion of iris. I must indeed confess that I have become dubious whether excision of the adjacent piece has any influence over the tension; it is, at all events, very slight, and will generally not suffice in cases where the first iridectomy has had no sufficient or permanent effect. On the contrary, I could adduce at least a dozen cases where excision of the opposite piece has had a permanent effect after failure of the first iridectomy.” (von Graefe, l. c., p. 106.)

“A man, æt. 53; left eye atrophied from glaucoma; right eye with good central vision, but great contraction of the field; in the spring of 1858 a violent inflammatory attack before the operation, which had been already arranged, was performed. The amount excised was insufficient, owing to the patient, who was not thoroughly under chloroform, moving when the iris was seized. The symptoms continued, though to a less degree. Operation repeated on the tenth day; patient more completely chloroformed. Coloboma enlarged downwards and inwards. Rapid diminution of the symptoms of pressure and inflammation, but very slow improvement in vision, which had sunk to mere perception of light. Even in the sixth week the patient did not dare to walk out alone. From the eighth week decided improvement, so that in the autumn Jäger No. 3 could be read with convex 10. From that time till now (autumn, 1873) no change whatever.” (Arlt, l. c., p. 360.)

Posterior synechia.—Though the influence of isolated adhesions in respect to recurrences of iritis is not estimated so highly by many surgeons as it was by von Graefe, there is no doubt of the correctness of his assertion that—

“exclusion of the pupil is the point from which the further complications proceed, especially chronic choroiditis (with progressive amblyopia, and in the end atrophía bulbi). By exclusion of the pupil I understand simply the total adhesion of the pupillary margin with the capsule.”¹

Iridectomy is indicated in exclusion, *i.e.* posterior annular synechia, even though the centre of the pupil is clear, and the vision relatively good. It may also be employed, it may be indispensable, in blind eyes to arrest chronic inflammation of the iris and ciliary body, and to prevent further changes, even

¹ ‘New Syd. Soc. Monographs,’ p. 257. Lond., 1859.

sympathetic disease of the other eye. The prognosis is at first good; it becomes worse when (1) glaucomatous tension and excavation of the disc occur owing to serous exudation into the posterior chamber and vitreous body; or (2) when, on the contrary, the vitreous body shrinks from the very beginning or after some temporary increase of tension, and the retina separates from the choroid (contracting exudations on the inner side of the ciliary body and in the vitreous); or finally (3), when a layer of exudation between the capsule and iris unites them and the ciliary processes firmly together (total posterior synechia). In the latter the posterior chamber is entirely or almost entirely absent; it may be abnormally large in annular synechia. Occasionally the operation has to be repeated three, four, or five times before the disease is arrested, and a sufficiently large pupil persists.¹

In respect to the complication first mentioned, Von Graefe says ('Ophth. Hosp. Rep.,' vii, 77):—

"Posterior synechiæ, the effects of iritis, are very often the cause of secondary glaucoma. As a general rule, we may say that the danger of ultimate increase of tension is proportionate to the extent and number of the adhesions, though occasionally glaucoma is excited by perfectly circumscribed, pointed synechiæ. The degree of danger is also influenced by various conditions, such as the age, with which it increases. On the other hand, the tension may remain normal throughout life; this is, indeed, numerically speaking, the rule even when the adhesions are numerous and extensive. As soon, however, as they *completely encircle* the pupil, causing exclusion, the tension seems to me to increase almost invariably. There must, of course, be no mistake; the most careful examination will sometimes fail to show minute apertures, through which fluid will pass. In my opinion, *projection of the iris by retro-iritic fluid is the only sign of complete exclusion*. When this state is clearly shown by the well-known prominences of the iris, glaucoma is sure to ultimately occur, and the patient is fortunate if it is not already present."

The use of iridectomy has, as we have seen, been somewhat restricted by the introduction of other operations, such as median incision of the cornea. It seems probable that it will be replaced in some cases by iridotomy. Wecker, who divides the iris with forceps-scissors, has frequently performed the operation and speaks strongly in its favour. The results of seventeen cases operated on by Prof. Rothmund have been recorded by Dr. Garvens ('Annales d. Ocul.,' vol. lxx, p. 123, 1873; vol. lxxi, p. 115, 1874; and vol. lxxiii, p. 118, 1875. E. H. Garvens,

¹ Arlt, l. c., p. 348. The case at p. 350, quoted evidently from memory, is somewhat incorrectly reported, if, as there seems no reason to doubt, it is the same as Case 17, in 'Bericht ü. d. 'Augenklinik der Wiener Univ.,' p. 72. Wien, 1867.

‘Über die Iridotomie.’ München, 1874; many historical details will be found in this pamphlet). Many operators avoid it also in the acuter stages of iritis and irido-choroiditis. Arlt expressly remarks, to prevent misunderstanding, that it should not be performed in iritis or irido-cyclitis whilst the inflammation is florid, but at least during a distinct remission. The only exception is when increase of tension forbids longer delay.

Its failure is well-nigh constant in sympathetic irido-cyclitis. Mr. Critchett¹ was the first to urge that enucleation is of little or no value when sympathetic ophthalmia has once commenced, that iridectomy does not arrest the disease, and consequently that operative treatment should be delayed till the inflammation has entirely ceased. Mooren, Stellwag and Schweigger are strongly opposed to any operation before the end of the inflammation. Mooren thinks that iridectomy in the progressive stage hastens the destruction of the eye.²

It would almost seem as if iridectomy was considered by some surgeons to be free from all danger, yet the fact is that, however well performed, it may be followed by destruction of the eye. Not to speak of such accidents as traumatic cataract, loss of vitreous, cystoid cicatrization, which may be due to defects in the operation or after-treatment, we find it followed by purulent infiltration of the cornea (case of leucoma adhærens, ‘St. Petersb. Med. Zeitschr.’ viii, p. 50, 1865; preliminary to extraction of cataract, Mooren, ‘Ophth. Beobacht.’ p. 181, 1867; v. Graefe, ‘Arch. für Ophth.’ xii, i, p. 214) and by panophthalmitis (arising from a cystoid cicatrix, von Graefe, ‘Ophth. Hosp. Rep.’ vii, p. 92; in leucoma adh., Wecker, ‘Clin. Ophth.’ p. 6. Paris, 1873). Sympathetic disease has also occurred (Arlt, von Graefe). Mooren counts on an average $\frac{3}{4}$ to 1 per cent. of such unfortunate results (l. c., p. 181). Desmarres out of 161 ordinary cases of artificial pupil lost two eyes from chronic irido-choroiditis ending in atrophy, and had one case of phlegmon of the eye, whilst at the same time he had out of twenty-eight cases two of phlegmon from iridectomy in blind eyes (‘Ann. d. Ocul.’ vol. xlvii, p. 221, 1862).

How can the effect of iridectomy be explained? Arlt thinks

¹ ‘Ophth. Review,’ i, 178, Lond., 1865, from the ‘Klin. Monatsbl. f. Augenh.’ i, 440.

² ‘Sympathische Gesichtsstörungen.’ See, on the opposite side, H. Müller in his thesis ‘Zur Casuistik der Cyklitis,’ p. 47-49, Greifsw., 1873. Over-estimation of iridectomy sometimes led to neglect of other treatment. E. D. Denis (‘Étude sur la Nature et le Traitement de certaines formes d’irido-choroïdite,’ Paris, 1873) gives examples of the good effect of general treatment after the failure of iridectomy. He advises that, when due to a dyscrasia, it should be treated by appropriate means, any operation being of secondary importance.

scarcely otherwise than by its influence over the circulation in the iris and choroid. We have to account for two, apparently opposite, effects; in the one class of cases it causes a diminution in the intra-ocular pressure, whilst in the other, where the eye is abnormally soft, it is followed by greater, even normal, tension. He quotes some recent researches by Dr. Exner, Prof. Brücke's assistant ('Sitzungsber. d. k. Akad. d. Wiss.,' B. lxx, 1872, and 'Wiener Med. Jahrb.,' 1873). *Direct anastomoses between the arteries and veins* were found in the iris peripheral to the portion which had been excised two to four weeks previously (dog, rabbit). If, as in man, the iris is cut off on the pupillary side of the circulus art. irid. maj., the proximal portion of the larger vessels remains, whilst the greater part of their branches and capillaries is removed. The blood cannot circulate as before; large anastomoses are formed, probably by dilatation of previously existing minute vessels, so that the arterial blood passes at once into the veins, without the intervention of any proper capillary system. Should these researches be confirmed, the explanation would be easy of many practical points; thus a broad coloboma would increase the number of anastomoses, whilst total removal of the iris from its ciliary attachment would rather increase than diminish the intra-ocular tension.

THOMAS WINDSOR.

II.—On Inherited Syphilis.¹

It may, we suppose, be stated as a general rule that our interest in a disease is, or ought to be, in proportion to the frequency of its occurrence; for the more common a disease, the greater is the amount of suffering it produces, the more often shall we have to attack it, and the more important therefore is it that we should understand its nature and its treatment. Inherited syphilis certainly has this claim upon our attention; but it has also another, quite as important, namely, its amen-

¹ 1. *Rare Cases of Congenital Syphilis.* By L. D. BULKLEY, M.D., A.M. New York. 1874.

2. *Cases of Disease of the Nervous System in Patients the Subjects of Inherited Syphilis.* By J. HUGHLINGS JACKSON, M.D. London. 1868.

3. *On Dactylitis Syphilitica, with Observations on Syphilitic Lesions of the Joints.* By R. W. TAYLOR, M.D. New York, 1871.

4. *On Pseudo-paralysis due to a Lesion of the Bones in Infants, the Subjects of Inherited Syphilis.* PARROT, in 'Archives de Physiologie,' 1872.

5. *London Medical Record*, vol. i, p. 10. *Summary of Contributions to the Knowledge of the Pseudo-paralysis of Inherited Syphilis.* By S. GEE, M.D.