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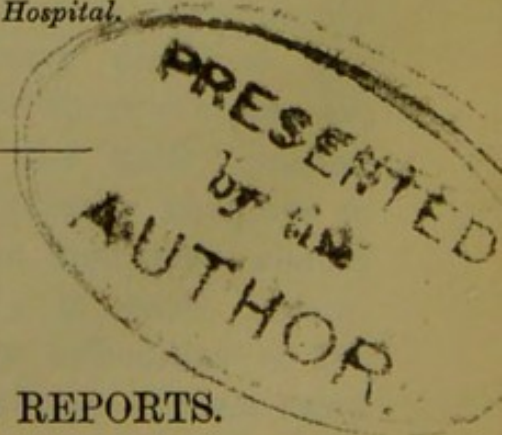


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OPHTHALMOSTASIS;
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AN ACCOUNT
OF
AN IMPROVED METHOD
IN
EXTRACTION OF THE CATARACT.

BY JOHN F. FRANCE, F.R.C.S.,

Ophthalmic Surgeon to Guy's Hospital.



FROM GUY'S HOSPITAL REPORTS.

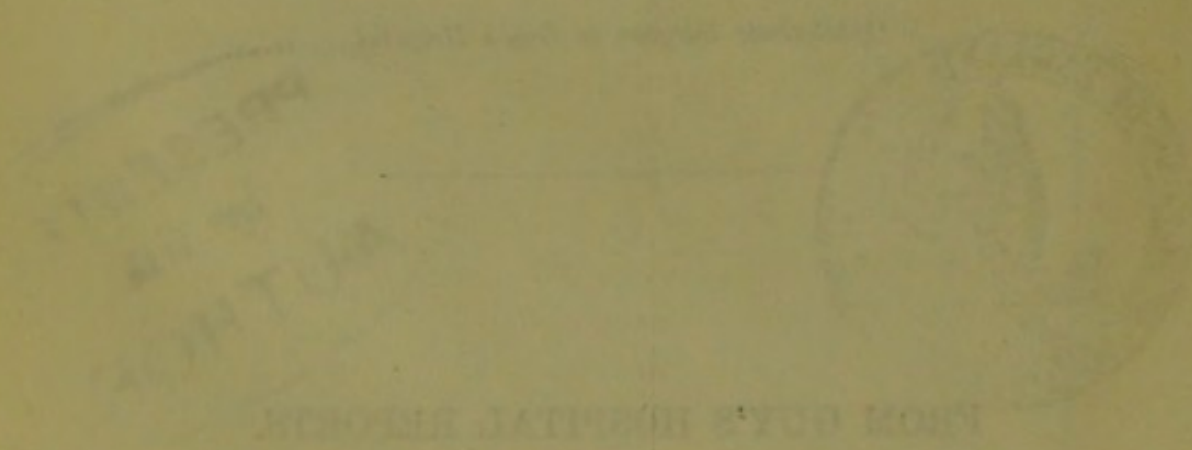
OPHTHALMIA

AN ACCOUNT

AN IMPROVED METHOD

EXTRACTION OF THE CATARACT

BY JOHN H. BARNES, M.D.



ON
OPHTHALMOSTASIS,
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EVER since the practice of extracting the cataract was introduced, the operation has been a favourite with the profession; and surgeons adopting it extensively have but been stimulated by its difficulties to combat and surmount them. Nor are these difficulties constant, supposing the requisite knowledge and skill on the operator's part. With subjects of a calm, tranquil, and confiding temperament, with a favourable relative conformation of the lids, globe, and orbital edges, and an eye generally healthy, the process is one of comparative facility. It is when these conditions are absent, when the patient is nervous and insubordinate, the palpebral apertures narrow, or overhung by a prominent brow, the globe sunk deeply in the orbit, and with involuntary motion wandering apprehensively in every direction and resting in none, or none convenient for the surgeon's purpose, when finally it starts convulsively from the knife, causing the aqueous humour to escape and the anterior chamber to collapse, at the critical moment when the instrument should steadily traverse the anterior chamber; in such circumstances as these it is that the primary difficulties of the operation are extreme. Between the two classes of cases every

gradation of course exists; and we have to encounter them as they present themselves promiscuously; while chloroform lends us no assistance, for we want consciousness preserved, and we tremble at the prospect of struggling or of sickness. The obstacles just enumerated are of course overcome daily by skilled and experienced men; but they do not the less exist, render in a measure precarious the accomplishment of the end immediately in view, and imperil the ultimate result; and could we in any way diminish the difficulties they occasion, and reduce the anxious and troublesome cases more nearly to a level with those on which it is a pleasure to operate, assuredly the gain would be substantial and great. To effect this is a problem which has exercised the ingenuity of departed worthies in the profession, and, ere offering my own solution, I propose to bestow a glance retrospectively at their efforts.

It is well known that Daviel, numerous as were the instruments he used,—a lancet-shaped knife to puncture the cornea at first, a blunt-pointed, double-edged knife to enlarge the wound each way, two pairs of curved scissors to give the section its complete dimensions (which with him were two-thirds of the circumference of the cornea), a small spatula to raise the flap, a needle to open the capsule, a curette and forceps to remove fragments of the lens and shreds of the capsule,—did not employ any artificial means of fixing the globe.¹ Though the corneal section was then, and long afterwards, always made downwards, in a situation the most accessible, yet it was early felt how conducive to success fixity of the globe during the process must be; and hence the very volume in which Daviel's memorable paper was given to the world contains the first suggestion, from another hand, for the attainment of this desideratum. A young surgeon, of the Hotel Dieu, named Poyet, devised, for the incision of the cornea, a long narrow knife, pierced close to its extremity with a little hole to carry a thread. When the point of the knife transfixing the cornea emerged on its nasal side, this thread was to be disengaged and form a sling to hold the eye stationary while the section was completed. As tested on the dead subject the contrivance was approved by a committee of the Royal Academy of Surgery;

¹ See '*Mém. de l'Académie Royale de Chirurgie*,' 1752.

but on the living it proved utterly abortive, and was relinquished as such by its author.

Samuel Sharp, the eminent surgeon of our own hospital, was among the first to hail the new operation, to practise it, and attempt its improvement. His observations and the figure of the knife he recommended (but which is now dis-used) will be found in the *Philosophical Transactions* of 1753. In the latter of his two papers,¹ he says, "It is to be hoped that when extraction shall be more generally practised, ingenious men will render it still more perfect; and I should not be surprised if the use of a speculum oculi should hereafter be deemed an improvement; but then it must be contrived so as that it shall not compress the globe of the eye, or if it does the operator must be careful to remove it in the instant the incision is making."

Twenty years later, Joseph Warner (who for the unexampled period of forty-five years² trod the wards of Guy's, its equally distinguished surgeon), adverting to the same topic as his former colleague, wrote, "The common speculum oculi must not be made use of in this operation, since the compression from that instrument will be found to be so great as to squeeze out a part of the vitreous humour."³ To appreciate the force of this objection it is requisite to ascertain the form of the now obsolete instrument referred to. A kind apparently long in vogue, and figured by Dionis,⁴ is represented of reduced size in fig. F. It consists simply of a metal ring, meant to press on the front of the eye, mounted on a handle. Mr. Sharp himself had delineated a modification of the same instrument prior to the introduction of extraction.⁵ It was capable of adjustment to eyes of differing volume, being so constructed as to provide for the enlargement or contraction of the metal circlet, by means of the division of the latter into two segments springing from a forceps-like handle, the blades of which

¹ November, 1753.

² From 1745 to 1790.

³ 'Description of the Human Eye and its adjacent parts, with their principal Diseases, &c., 1773.

⁴ 'Chirurgical Operations,' translated from the Paris edition. London, 1733.

⁵ 'Treatise on the Operations of Surgery,' 1739.

were maintained at the desired distance by a sliding button and clasp. It is shown in fig. D. These instruments were not intended for application directly upon the globe, but upon the lids; and in order to keep the eye at once exposed and still by the metal ring embracing the cornea (with the intervention of so slippery a medium), very considerable pressure must necessarily have been demanded. No wonder, therefore, that Warner should deprecate their use in extraction.

Benjamin Bell concurred in this judgment of the old specula;¹ but, nevertheless, recommended, in the operation before us, the invention of a fellow-townsmen, Mr. Miller, which I have copied in fig. G. In this appliance a flat, metal ring affixed to a handle was to press directly on the sclerotic around the cornea, and keep the whole globe motionless, while the superior lid was raised and held up on a curved plate, projecting like a cap-shade from the upper part of the ring. Mr. Ware, in his translation of Wenzel² (though coinciding generally in his author's discouragement of specula, who terms "*inutiles les instrumens proposés pour fixer l'œil*"), describes an instrument similar to Bell's and Miller's, only with an oval instead of circular ring, which he attributes to Mr. Else, and recommends, and himself used in particular cases. There is obviously, however, the same objection to this instrument of either variety as to the former, though in a less degree. Their redeeming plea was, that pressure might and ought to be remitted, (though the speculum could not be absolutely removed, the knife traversing in front of it), as soon as counter-punctuation was effected, and ere the section was finished; but that they were cumbrous is apparent, that they failed in the immediate object of fixing the globe, I much suspect, and most practical surgeons since Warner's time have extended his decision respecting earlier specula to this of Miller, and endorsed their condemnation. Their fundamental principle—compression—was, to say the least, pregnant with danger; and their universal abandonment argues that in actual employment they were found mischievous.

Of altogether different form, though involving the same

¹ 'System of Surgery,' Edinburgh, 1785.

² 'Treatise on the Cataract,' London, 1791.

vicious principle, if considered in relation to extraction, are the specula of Pellier, senior, fig. н., and of Sir William Adams, fig. 1. (*a* and *b*), on which a few words in passing may be bestowed. The former, regarded merely in the light of a retractor to separate the lids and expose the globe, in various cases of difficulty from spasm and tumefaction, has deservedly held its ground to the present time; while for its other purpose of fixing the globe by pressure on the sclerotic, in common with Adam's which acted almost exclusively in this way (though not designed by its author for the operation of extraction, which he discouraged), it has equally deservedly fallen into disuse.

According to Sabatier,¹ and Pellier² jun., Beranger of Bordeaux (whose treatise, if separately published, I have not been able to trace), employed a double hook, (figured by the latter, and exactly resembling a two pronged fork with its sharp points curled round, fig. к.), wherewith to hold the conjunctiva, and so control the eye during extraction. He does not seem, however, to have enlisted any imitators.

The same author, Pellier de Quengsy, exhibits a complex kind of forceps, intended, after the completion of the section, to seize the edge of the sclerotic and attached margin of the cornea, and hold them firmly in cases where the movements of the eye impede the escape of the cataract. The proposed application of such an instrument would be peremptorily and deservedly condemned at the present day; besides which, it being designed for a different stage of the operation from that with which I am concerned, it need not on that account further engage our attention.

Le Cat recommended a peculiar kind of forceps known by contemporaries as of the Swiss form, and previously in use for extirpation of the mammary gland. I have not succeeded in discovering a drawing of this instrument, but conceive it to have somewhat resembled the "devil's-claw" forceps, formerly employed for excision of the tonsils or deep-lying tumours. The method of their application would almost seem to have been by claspings the entire globe between their long-toothed branches, a plan of procedure which, if actually

¹ 'Medicine Operatoire,' Paris, edition of 1824, vol. iv, p. 129.

² 'Cours d'Operations,' Paris, 1789.

followed, would well account for and justify their fate, narrated by Demours:¹ "Ces instrumens, qui ne remplissoient qu'imparfaitement les intentions ont été abandonnés à raison de la *compression* qu'ils exerçoient sur le globe de l'œil." In reference to the same implement Aug. Gottlieb Richter, from whom I have drawn the above description of it, had written:² "Le Cat forcipe usum fuisse scimus Cum autem hæc instrumenta tunicæ oculi conjunctivæ infixæ dolores creent, quos culter in cornea vix creat, *oculumque male mulctent, ut inflammatio ingens interdum cum nova et insanabili visus privatione suboriatur* semper quoque metuendum sit, ne illorum usus vel *premendo* vel irritando humores expellat, facile intelligitur, *tam periculoso auxilio* ad motus illos cohibendos opus non esse. Accedit hæc instrumenta cultello sectionem corneæ peragenti, imprimis in oculis profunde in orbita latentibus, impedimento plerumque esse." From these extracts it is apparent that, whatever were its precise construction, Le Cat's instrument was in itself, or in its method of application, a very formidable affair; and something very different from that which I have myself in the sequel to introduce.

Pellier put forward another instrument (fig. 1), quite within the scope of our present inquiry. His "crescent," so called from the shape of its extremity, was intended to be applied on the inner side of the globe, near the margin of the cornea, to maintain the latter by counter-pressure in a favorable position, while the knife was piercing and dividing its texture. To give the crescent a better hold upon the eye, its concavity was furnished with dentated projections; and to promote the convenience of the operator, the shaft was made of varied curve, and the extremity fixed thereon at different angles. The main idea of this appliance, however, was not novel. It was in effect a modification, and in some respects an improvement, of Pamart's lance, an instrument to which I shall refer again presently, but never seems to have gained the acceptance which the latter met with.

It is open to palpable objections on the ground of inadequacy to its purpose on one side, or of involving the ex-

¹ In his Memoir read before the Academy of Paris in 1784, and reprinted by Pellier.

² 'Observ. Chirurg.' fasc. prim., Gottingæ, 1770.

ercise of hazardous pressure on the other ; while by occupying the operator's second hand it deprives him of the advantage of himself commanding the upper lid. Its use is little likely to be revived at the present day.

The latter remark is applicable to several other contrivances, all having the same aim—to facilitate the section of the cornea ; but which have respectively been employed coextensively only with their inventors' spheres of practice ; or, if adopted for a time more widely, have now long fallen into oblivion. Thus, the father of Pellier de Quengsy tried to fix the eye, by providing the back of the knife with which he incised the cornea, with a notch or stop (like a half spear-point) ; but the idea was futile, as the instrument could not at the same time advance forwards to complete the section, and hold the cornea stationary by the backward pressure of the stop. Thus, Brambilla¹ published an engraving of a double speculum to act on both eyes simultaneously. It resembles two of Sharp's specula mounted at right angles on a connecting bar on which they slide. He describes its use as being "*ad aperiendas palpebras, et firmandum si necesse fuerit oculum ;*" but judiciously adds "*usus ejus fere exolevit. Præstat, rem potius digitis operantis et ministri peragi.*" Notwithstanding this remark, however, he gives the drawing of another speculum (fig. M) to aid extraction ; writing, with reference to it, "*hoc instrumento firmatur et reprimitur oculus, dum prædicti scalpelli apex oppositum corneæ latus subit.*" Thus Guerin, of Lyons,² devised the instrument represented in fig. N, intended to fix the eye by the pointed extremity of the forceps being implanted in the cornea on one side, while the knife-armed extremity made the requisite incision from the other. Thus, Pope of Troyes invented a kind of forceps resembling Assalini's, with one nib prolonged, flat, and sharp-pointed, to enter the margin of the cornea, which when pierced, the other nib should close upon, and hold secure, while the section was accomplished with a knife. It is figured by Pellier, but I have not thought it sufficiently plausible to reproduce. So I have shrunk from representing

¹ '*Instrumentarium Chirurg. Austriacum,*' 1782.

² Author of '*Maladies des Yeux,*' Lyons, 1769.

the intricate piece of mechanism known as the ophthalmotome of Guerin, of Bordeaux, who aspired to fix and achieve the section of the cornea by machinery, with what success the oblivion which has overtaken the once jealously guarded invention may show.¹ Contemporaries, however, disputed whether Guerin or Dumont were entitled to the credit of the suggestion, which by Sabatier² and Demours,³ is divided between them. I despair of conveying an idea of Guerin's instrument; but the reader may form some conception of Dumont's, as engraved with modification by Demours (who extended its application to the removal of staphylomata), by imagining an implement resembling a common spectacle case, within which a knife is concealed. Towards its rounded extremity, this case is pierced with a circular aperture to receive (when applied flat to the surface of the eye) the cornea. That structure is then incised in the requisite direction by the knife working within the case and acted upon by a spring. The lids meanwhile are held apart by means of little wing-like appendages, attached to the upper and lower edge of the ophthalmotome, opposite its circular aperture. Perhaps I have already bestowed too many words on so thoroughly exploded a contrivance; but time was, that it was regarded with admiration as a veritable triumph of mechanical skill.

Pamart's lance (fig. A.), already alluded to, is as simple as the last-named instrument was complicated; and appears to have enjoyed considerable popularity on the continent, being still used there at the present day. It consists, as will be seen, of a simple, cylindrical stem, curved or nearly straight, according to the fancy of the surgeon, fixed in a handle, and terminating in a sharp point, with a projecting collar or stop close to it. The point was intended by the inventor to be inserted in the cornea, but the modern adopters of the instrument (as Desmarres, from the third volume of whose work,⁴ fig. B, exhibiting the application of the instrument

¹ Its contriver declined to afford Pellier—when visiting Bordeaux, and anxious to pourtray in his work an engine which at that time excited considerable attention—an opportunity of examining it. Pellier notwithstanding gives detailed, but with difficulty intelligible, engravings of its several parts.

² '*Médecine Opératoire.*'

³ '*Traité des Maladies des Yeux.*'

⁴ '*Traité, Théorique et Pratique, des Maladies des Yeux,*' Paris, 1858.

is copied) very properly substitute as equally advantageous and more safe, the sclerotic as the part to which it should be affixed. I can well believe that thus used it may impart a most desirable degree of steadiness to the eye, affording just sufficient counter-pressure to resist the thrust of the knife, tending to push the cornea towards the inner canthus. But it can hardly be equally efficient in accomplishing that which is at least equally desirable, viz., the control of the muscular movements of the globe. It would for the most part prevent motion in one direction only, and must be liable to be disengaged, so as suddenly to release the globe from control, if perchance the involuntary movement of the eye should take an outward direction. Moreover, the lance is obnoxious to another objection, the gravity of which experienced operators will acknowledge; that, by employing the second hand of the surgeon, it compels him to depend upon the assistant for the command of the upper, as well as the lower lid, and thus deprives him of the all-important power of himself regulating the exact degree and duration of pressure, or of ensuring its absence altogether. While, lastly, in relinquishing to an assistant the management of the upper lid, and still making the upper section, the operator must almost necessarily be in front, instead of at the head of his patient; and, in making the section of the cornea, cut away from instead of towards himself, a mode in which less accuracy is usually attainable. The "*Pique de Pamart*" may once more be employed here and there, as I am informed it has recently been at a London Eye Infirmary; but its utility is, in my opinion, so far outweighed by the inconveniences it involves, that modern British surgeons will never to any noticeable extent recur to it again.

In order to enable the surgeon to retain command of one lid while fixing the globe, and with the view of curtailing the number of fingers the lance involved the use of within a very limited circumference, a surgeon of Dresden designed the whimsical instrument (fig. c), which goes by his name as Rumpelt's thimble. This being worn on the operator's middle or ring finger of the non-operating hand, would, it was supposed, obviate some of the inconveniences of Pamart's pique; but it seems never to have been much

employed, and the practical surgeon will do well to regard only as a subject of history.

Yet Rumpelt's rude thimble probably suggested the idea of one at least of the neater appliances of Demours and Desmarres. The former¹ thus describes his "ophthalmostat"¹ delineated in fig. o, which he had first recommended in a memoir read at Paris in 1784: "Pour faciliter l'incision de la cornée j'ai imaginé un instrument composé de deux tiges de fer aplaties, qui embrassent le doigt, et qui sont terminées par une pointe recourbée." In the original memoir he enters much more into detail; directing the point of the ophthalmostat to be implanted in the cornea, the instrument itself being secured on the finger by the elasticity of its horse-shoe branches clasping the second and third phalanges laterally. In his larger work, published thirty-four years later, and containing a valuable series of plates, though commemorating his invention in the words just quoted, he gives no representation of the instrument in question. Perhaps it is not too much to infer from this omission that the mature and experienced surgeon had seen reason to relinquish the use of his once favorite appliance.

Desmarres' ring (fig. e) is a considerable improvement upon the contrivance last noticed, and (if we except the same author's singular suggestion of a lady's hair-pin²), is the latest attempt to supply by special mechanical means the desideratum which this long series of attempts has endeavoured to meet. It is composed of a circlet (to be worn on the extremity of the middle finger), from which rises a curved branch, terminating at a right angle in one or two fine points. At the part intended to correspond with the back of the finger, the ring, is spread out into two curved plates, which give greater firmness to the instrument; and, being ununited, permit of its adaptation to the exact size of the member. The branch springs from the part corresponding with the palmar aspect of the finger, along which it lies, so as in effect simply to arm the finger's end with the one or two fine points, in which it terminates. The design in short is, to furnish the

¹ Op. cit., vol. i, edit. 1818.

² "Les fortes et longues épingles que les femmes emploient pour fixer leurs chapeaux sur leur tête, ou pour attacher leurs châles, atteignent parfaitement le but."

middle finger, applied in the usual way on the globe at the inner canthus, with these points ; and thus enable it, by their implantation, to command the globe more completely, and with less pressure, than when naked. I believe this contrivance to be the best which has hitherto emanated from the sedulous ingenuity of ophthalmic surgeons. It is simple, probably effectual, and it necessitates not a single change in the mode of procedure generally recognised as the best. Yet I cannot but entertain objections to the puncture of the sclerotic (and perhaps deeper textures) which it inflicts ; and can readily foresee possible risk to the cornea in attempting to affix the points satisfactorily in a restless eye, with other unpleasant contingences in detaching them instantaneously on the completion of the flap. On the whole, admitting the merits of the instrument to be greater, and its drawbacks less, than those of any of its predecessors, I should be loth to use it myself, and should regret its introduction for habitual employment in this country.

The retrospective part of my subject is now finished. In the preceding pages I have reviewed all the principal contributions to the armoury of the profession having the object in view with which we are engaged. Some of less note it is likely may have escaped my research ; but we may fairly argue, if those which in their day achieved celebrity are found so little entitled to our praise now, we have small reason to regret the obscurity from which others, if such there be, have never emerged. In conclusion, there is little difficulty in subscribing to Guthrie's summary declaration—"The specula of Beranger, &c., as well as those of more modern invention, are all abandoned as worse than useless."¹

The defects of particular instruments, and the constant failure of repeated endeavours to produce others less open to animadversion, justify the sweeping condemnation just quoted, endorsed as it is by the nearly unanimous voice of the best British authorities in ophthalmic surgery. But that condemnation has reference to past abortive efforts, and cannot prejudice fresh suggestions. For observe, in spite of this and similar expressions of opinion, the practical fact remains,—that

¹ 'Operative Surgery of the Eye,' 1827, p. 230 *note*

a good position of the cornea, and steady condition of the globe, greatly favour the accomplishment of an adequate section, and the preservation of the iris from injury; that these auspicious preliminary circumstances are in many cases quite unattainable by the unaided fingers of the operator and his assistant; that casualties occurring to competent surgeons at this stage of the proceeding (which influences all the subsequent steps) are mainly attributable to this deficiency of control; and that if such deficiency could be remedied by art, without some countervailing evil attending the means employed, an immense advantage would accrue.

Even Guthrie, whose sentence I have cited and concur in, virtually admits this to the full, by proceeding at once to try his own hand at a device to incise the cornea while protecting the iris, the real aim of all the specula he censures; but he succeeded no better than his predecessors in persuading the profession at large to adopt his views. It remains for me, with humbler pen, to show how the desired advantage may be gained by simpler means.

For many years I have been accustomed to steady the eye during extraction by the contact and pressure of the fingers alone, according to the practice of most modern operators; the forefinger holding the upper lid, and restraining the globe's movement upwards, the middle finger on the caruncle curbing its movement inwards. In many cases this arrangement is sufficient for the purpose, and the section is made not only satisfactorily but with ease. In how great a degree, however, that ease is dependent on the patient's strength of nerve and steadiness of eye; and how limited the surgeon's real command of the globe is apt to prove, when the opposite qualities are manifested (especially if the anatomical conformation of the parts happens at the same time to be unfavorable), every operator of wide experience and equal candour must confess. Can no unobjectionable means then be devised which shall render his command absolute?

In operating for the formation of artificial pupil I first became aware of the practicability of holding the eye perfectly still and motionless, or as nearly so as possible, by the mere application of artery forceps. The idea at length was suggested of extending the use of this instrument to another

operation, in which, as far as I know, it had never been employed, (at least in this country,) before; of availing myself, in short, of the same resource as in cases of artificial pupil (and with a similar object) in cases of extraction.

I have since brought the idea to the test of experience, with the result which it is my present object to make known,—the result, that is, of facilitating in a degree I could not have anticipated, the most critical stage of this operation. The mode in which I proceed is as follows. As soon as the patient is laid on the operating table and all the preparations are complete, standing at his head, I apply the extremity of the forceps with rather firm pressure a little beneath the inferior margin of the cornea, and clasp a somewhat broad portion of conjunctiva and of the submucous fascia securely. Then, taking the instrument between the finger and thumb of the other hand, as near as practicable to its closed points, I deliver it to the assistant; whose hand, supported upon the patient's cheek, receives it, and holds it as he would a pen. It is well that the assistant should be practised in his share of duty on the dead subject. The ordinary artery forceps are, on the whole, preferable to those with a spring catch, commonly known as Liston's; but it is of consequence that the nibs should be broad, and the teeth sufficiently prominent. The lower lid requires no further depression than that necessarily produced by the attachment of the instrument to the ball in this way. I then raise the upper lid with the fore-finger, direct the assistant to draw the cornea into a central position and retain it there with the forceps, place my fore and middle fingers on the globe in the usual way, and thus perfect the command of the organ. On now making the section, the eye is found steady and motionless; the knife can be deliberately entered, deliberately carried across the chamber, and deliberately brought out on the inner side of the cornea; and counter punctuation being fully effected, and the flap on the verge of completion, the object of the forceps is accomplished, and they are at once disengaged. The remainder of the operation is finished in the ordinary manner.

I have had much experience in the operation of extraction, having performed it myself considerably upwards of a hundred times; and of course am familiar with its pleasures (so to

speak), and its difficulties, its contingent casualties, and the sequelæ of embarrassment attending them. After one or two trials, therefore, I was in a position to estimate the amount of advantage gained by the accessory manipulation just described; and this has proved indisputably so great, that I have employed the forceps without exception ever since. It will, perhaps, be the best way to place before the reader the facts which the current season has enabled me to gather, as practical criteria of the soundness of my conclusions.

I have, then, since conceiving the idea that forceps would be beneficially available in this operation, performed extraction in the following cases: the recumbent posture; the superior section; generally the previous application of atropine; Beer's knife; and the use of the right or left hand respectively, as the cataract was to be removed from the right or left eye, being adopted in all; several of the patients had cataract in both eyes, but that operated on alone is indicated.

CASE I.—May 5th. Mary G—, æt. 54; healthy; left eye. Applied forceps at the outset, but they became disengaged, and I then contented myself with commanding the globe in the ordinary way; operation completed without casualty. Good vision restored, to read, &c.

CASE II.—May 5th. Mary W—, æt. 68, very infirm, of Deptford; arcus present; left globe held with forceps, which proved of essential service in keeping quite steady the eye of a nervous woman; section made and cataract extracted satisfactorily; but wrinkled the cornea immediately became sunken, concave, and (though no vitreous humour had escaped), evidently from abnormal thinness and impaired elasticity. On examining the eye again in half an hour, I found the cornea resuming its natural shape. The case progressed without a subsequent bad symptom, and excellent vision was recovered.

CASE III.—May 19th. Ann B—, feeble and half-starved, æt. 54; eyes small; amaurosis of left, with clear pupil; cataract of right; the globe held by forceps; good flap. All proceeded well at the operation, but chronic ophthalmia with much intolerance and neuralgia retarded the cure. On July 16, however, she was presented with the eye free from inflammation and with excellent vision.

CASE IV.—May 19th. Robert J—, æt. 55, a gardener, from Wickham Market, healthy. Right globe held with forceps, which were of much use as the patient lost his self-command ; good flap ; pupil contracted, circular, and central at conclusion of the operation. A prolapse of iris afterwards arose ; but this yielded to puncture, followed by caustic and an opiate collyrium accompanied by nutritious diet. July 26th, the patient was presented, seeing well with the operated eye.

CASE V.—May 19th. Miss Mary K—, æt. 66, of very sallow complexion and impaired constitutional power, residing at Winchelsea. Left globe held with forceps ; flap being somewhat limited on nasal side, I enlarged it with bistoury, and then extracted with ease a firm nuclear cataract invested in an abundance of softer cortex. Some remains of the latter for a week or two lingered in the pupil ; but excellent vision was restored by the 5th of July.

CASE VI.—May 17th. Miss B—, æt. about 65, residing temporarily in Mornington Crescent ; healthy but nervous. Right eye, restless and unsteady from mental agitation, would probably have occasioned much trouble, but for the aid of the forceps. With this assistance a good flap was at once formed. The instrument was affixed where a vein happened to emerge ; and a thrombus beneath the conjunctiva was the immediate result. Everything notwithstanding proceeded well, the thrombus had disappeared when the eye was opened ; and on June 10th the lady returned into the country with excellent vision.

CASE VII.—June 9th. Stephen C—, æt. 56, from Wickham Bishops, Essex, baker. Eyes prominent, and the right previously subjected to keratonyxis, which had left the capsule open. Right globe held steady by forceps in spite of patient's nervousness, which was so great, that after accomplishing counter-punctuation satisfactorily, at the moment of completing the section he suddenly raised his head from the pillow. A gush of vitreous humour, carrying the cataract with it, instantly ensued ; and the globe became comparatively sunken, the cornea concave, and the wound gaping. To flatten down the edge of the flap and close the wound by means of gentle friction through the lid, and then to promote contraction of the pupil by exposure to light, were the measures adopted prior to closing the lids with plaster, and placing the man with his head well elevated in a chair.

He had little pain or uneasiness; six hours after the operation, the globe had resumed its bulk, the cornea its form, and the flap (as far as could be ascertained) its normal position. Considerable inflammation arose in the course of the next ten days; but this gradually subsided; and the man recovered a sound eye and good vision, notwithstanding the enlargement and partial displacement of pupil, which always result when a portion of the vitreous has been lost.

CASE VIII.—June 9th. John B—, æt. 74, of Greenwich, formerly a pilot, apparently a hale man, but with indications of serious heart-disease. On the table he became nervous and fidgety; but forceps contributed materially to steady the right eye, and an adequate section was effected satisfactorily. A portion of cortex remaining in the anterior chamber after the extraction of the main body of the cataract was removed by fresh gentle pressure. He progressed favorably for the first nine days, when projection of the flap, swelling of the lids, and pain in the eye, supervened. From this time considerable inflammation with photophobia set in, maintained by a prolapse of the iris. The latter was punctured, and nitrate of silver applied with benefit, but his convalescence was tedious and not complete at the time of writing, Aug 24th.

CASE IX.—June 3d. Mr. B—, of Wandsworth Road, æt. 69, anæmiated and much out of health, on which account I had deferred operation from October, 1857. Right eye amblyopic; both pupils indolent; and general appearance unpromising. Left globe was well fixed by forceps, the section accomplished satisfactorily; and after removal of the cataract, though the cornea became concave, the pupil looked clear, central, and moderately contracted. No bad symptom followed; and the eye recovered with a clear, bright pupil, and fair vision, but not sufficient to read,—a better result than I had ventured to reckon upon.

CASE X.—June 23d. Susan A—, æt. 71, tall, thin, and weakly in the extreme, knuckles deformed by attacks of rheumatic gout; arcus. Right eye held by forceps, ample section made, and capsule opened freely; but cataract slow in emerging, owing to its enormous size and density. A little vitreous followed its passage; but the pupil appeared central, and the flap in good position before plaster was applied. No bad

symptoms arose, and, on July 21, she was presented, with excellent vision.

CASE XI.—June 23d. John M—, æt. 65, from the hospital estate at Long Sutton, Lincolnshire, a healthy man, from whom I had extracted the right cataract last year. The difficulties of the operation were then great, from the unsteadiness of the eye, which necessitated the completion of the section by the bistoury. He, however, recovered good sight, which is still preserved. Left eye held by forceps, which proved most valuable in fixing the globe, and so preventing a recurrence of the difficulties of last year. Section made at once, and cataract extracted satisfactorily. July 21st. Convalescent, good vision restored, though a little film of capsule lingers behind the lower part of the pupil.

CASE XII.—June 23d. Elizabeth F—, æt. 62, of Oxford, also had the right cataract extracted by me last year; and retains excellent sight—to read and to work, &c. Left eye now held steady by forceps; section, opening of capsule, and removal of cataract accomplished without casualty. For the first four days she did well; then atonic inflammation set in, with serous chemosis, extensive infiltration of cornea, hypopyon, and subsequently reopening of the wound. Under active measures of stimulus and support, the threatened suppuration was averted, the cornea cleared up, and the flap reunited. But an artificial pupil must be formed before useful vision can be regained.

CASE XIII.—July 21st.—Margaret G—, æt. 54, healthy. Left iris adherent extensively to capsule, right free: right eye held by forceps, flap ample, no injury to iris or vitreous escape; arthritic inflammation and prolapse of iris, however, supervened, but were subdued, and the patient convalesced with useful vision.

CASE XIV.—July 21st. Sarah G—, æt. 63, of Camberwell. Left eye held by forceps, flap being insufficient required to be extended with bistoury. The usual difficulty was encountered in doing this, and the edge of the pupil was caught on the blunt extremity of the bistoury in withdrawing that instrument, but no perceptible wound was inflicted. Recovery was rather slow; but good vision was re-established by August 28.

CASE XV.—July 21st. Robert M—, æt. 80, shoemaker, formerly a soldier, and present with Nelson at Copenhagen and

the battle of the Nile. Left eye held by forceps, good flap, large and dense cataract extracted satisfactorily. No unfavourable symptom arose locally; but he was attacked with acute bronchitis from previous exposure under a tent; and died on the 24th, rather suddenly. The heart was found excessively fatty; an arcus had been noticed during life as only "slight."

CASE XVI.—July 21st. John C—, æt. 65, a man of weak intellect, had the right cataract extracted by me in 1856. The difficulty of the operation was extreme, from his inability to keep the eye still; but he obtained, and still enjoys, good sight with that eye. Left eye held by forceps, which entirely obviated the inconveniences experienced on the former occasion; good flap; cataract emerged on the instant of its completion accompanied with a little vitreous, but not enough to affect the volume of the globe. He did well; and recovered a clear pupil and excellent vision.

CASE XVII.—August 4th. James P—, æt. 55, had undergone keratonyxis twice, and so obtained absorption of the fluid portion of a left cataract, which was still bulky enough to occupy the whole pupil. Last year he was twice put on the table for the purpose of extraction; but the spasms of the orbicularis, and incessant movement of the eye, combined with natural prominence of brow, made the performance of the operation so extremely hazardous that I abandoned the attempt. In short, though an old sailor, he utterly lost his self-command. This day he was again placed on the table, when the contractions of the orbicularis and recti set in as before; but the forceps enabled me to overcome the difficulty, and keep the eye sufficiently steady, and in fair position. An adequate section was made; and, as anticipated (the capsule being already open), the cataract passed forth at once. August 28. Convalescent, with a clear, black pupil; but vision imperfect from amblyopia.

CASE XVIII.—August 4th. Thomas S—, æt. 56, a farrier, from Hampstead. Right eye held by forceps in good position; much spasm of orbicularis; on completing section, the capsule yielded spontaneously, and the cataract, accompanied by some vitreous, was immediately expelled; pupil left clear, and flap and iris *in situ* before applying plaster. August 28. Convalescent, with good vision.

CASE XIX.—August 11. Mrs. K—, æt 53, for whom I had extracted the left cataract in private four years ago. The right eye was held quite steady, and the cornea central, with forceps. The section required enlargement with the bistoury, which was effected without injuring the iris, after which the cataract emerged satisfactorily. August 28. Considerable conjunctivitis remaining; but flap healed; pupil clear, and good vision regained.

CASE XX.—August 9. Mrs. W—, æt. 54, residing in Hampshire, but staying for the operation with her daughter in Walworth; a stout hale person, with an enormous bronchocele. The left globe was kept quite still with the forceps; and the operation, otherwise conducted in the usual way, was completed exactly as desired. She progressed without an unfavorable symptom, and was convalescent on August 28, with every promise of excellent vision, the pupil being central and circular, though temporarily clouded with a portion of soft cortex.

The above examples comprise all the cases of extraction I have operated on during the present season, since adopting the use of the forceps; and the effect of the instrument has unquestionably been in an eminent degree advantageous. It has facilitated the operation in difficult cases, in exact proportion to their previous difficulty and risk. This was strikingly evinced in Cases 11 and 16; both of which patients had, at a former period, occasioned the utmost anxiety, from the impediments their restless eyes presented to the satisfactory performance of the operation. They, indeed, recovered their sight well, but it was in spite of dangerous obstacles. This year they each recovered the sight of the second eye, under circumstances strongly contrasted; that which was so embarrassing before was now effectually surmounted at the very outset, by the simple means we are considering. Still more remarkable in some respects is Case 17, that of the sailor; who on two previous occasions had proved so utterly uncontrollable, that I was compelled to desist from the attempt to operate. On the present occasion, with the aid of forceps, after a little preliminary trouble, the globe was brought into and held in a sufficiently favorable position for a good section

to be made. Could more convincing evidence be afforded of the value of this appliance?

The assistance rendered by the forceps is further illustrated by the fact, that in not a single case did premature escape of the aqueous humour (with its attendant inconvenience of the iris folding over the knife, and forbidding the immediate completion of the section on pain of wounding that membrane) occur. In three cases only did the first incision prove from any cause inadequate, and resort to the bistoury become expedient; and it was in one of these alone (in manipulating the bistoury after the forceps were detached) that the iris was sensibly touched.

I am well convinced that the advantages of the mode of operating now recommended will be fully appreciated upon trial: it may, therefore, be better for me to bestow a word or two in anticipation of any objection which might perhaps deter some one from the experiment. Really, the single objection which occurs to me as sufficiently plausible to merit notice (if the directions above given be followed, and especially that of disengaging the forceps as soon as counter-puncturation is complete, and before cutting out), is, that the conjunctiva might possibly suffer injury from the forceps sufficient to awaken troublesome inflammation, and compromise the result. A conclusive answer is afforded by experience: no mischief has, in any case, under my observation, ensued; and this fact is substantiated, not by the foregoing cases alone, but also by numberless cases of artificial pupil, in which forceps are now habitually used, as well as by many others of soft cataract (to which I have latterly extended their use), and which are all equally available for the determination of this point.

It is right that I should acknowledge myself indebted to the work of Desmarres, already referred to, for the *idea* of adapting artery forceps as an "ophthalmostat" in extraction, but not for their *advocacy*. He, in fact, discountenances their use, giving a preference it is needless here to impugn, to Pamart's lance, and his own peculiar thimble. He appears to have employed the forceps (if at all, which is doubtful) with his own hand, instead of confiding them, as I have done, to

another; and thus to have encumbered their application with a serious drawback. For he must, of necessity, in consequence, have committed charge of both lids to the assistant;¹ and so relinquished the twofold advantage of commanding the upper lid himself, and of aiding, with his fingers in the usual position at the lid and canthus, the influence of the forceps and the guidance of the knife.

His observations, however, upon the general question of fixing the globe by some artificial means, are so much to the purpose, that I cannot forbear transcribing them in this place, as an able vindication of the practice, and an appropriate conclusion to the present paper. He writes:² "Tout chirurgien véritablement prudent n'exécutera pas l'opération de la cataracte par extraction, sans préalable-ment avoir fixé l'œil Ainsi, tel malade parfaitement résigné quelques moments avant de se livrer au chirurgien, perd tout à coup contenance; ses yeux, excités par le contact du couteau et du doigt, s'agitent violemment, tournent dans l'orbite; l'orbiculaire se contracte en même temps, et une pression considérable, augmentée encore de celle nécessitée par l'écartement des paupières, pèse sur la cornée qui, tout à l'heure, sera ouverte. Chez tel autre patient l'œil fuit dans le grand angle, poussé par le kératotome, et c'est au hasard qu'il faut faire la contre-ponction de la cornée dont le bord interne, malgré la pression du doigt médius de l'opérateur, va se cacher derrière la membrane semi-lunaire et la caroncule lacrymale. J'admets, qu'avec de l'habitude on puisse dix-neuf fois sur vingt, peut-être, opérer avec succès sans fixer l'œil; mais on m'accordera que si, une fois sur vingt, on laisse volontairement au hasard quelque éventualité malheureuse, on regrettera amèrement un accident qu'on aurait pu éviter. L'œil doit donc, dans l'extraction, être absolument fixé, parce qu'en chirurgie on ne doit jamais rien abandonner volontairement au hasard."

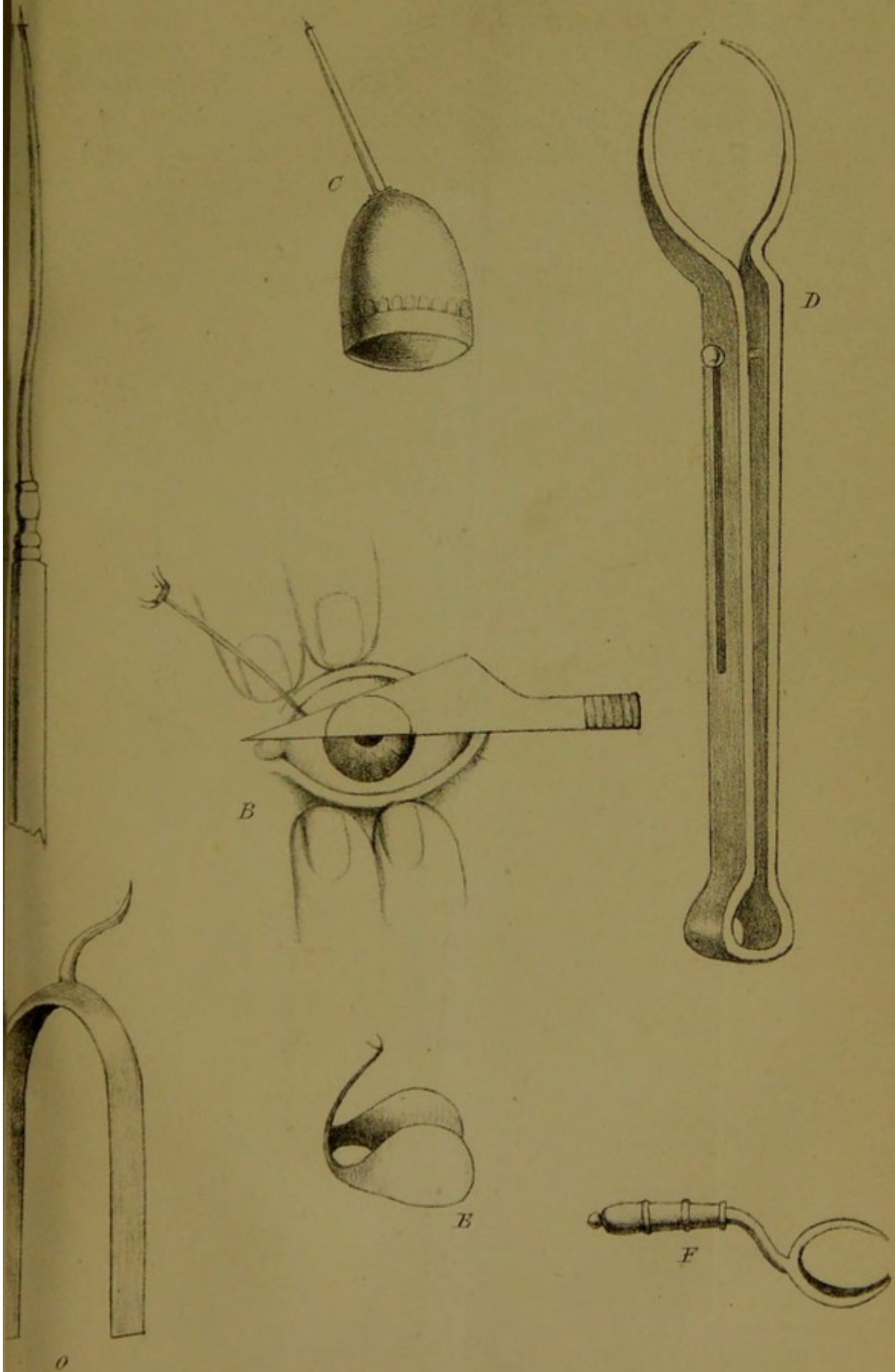
¹ This is evident from the words, "La pique de Pamard, a comme d'autres instruments nécessaires à la fixation de l'œil, le désavantage d'obliger l'aide à écarter les deux paupières" (vol. iii, p. 184); and is further demonstrated by the figure at page 200.

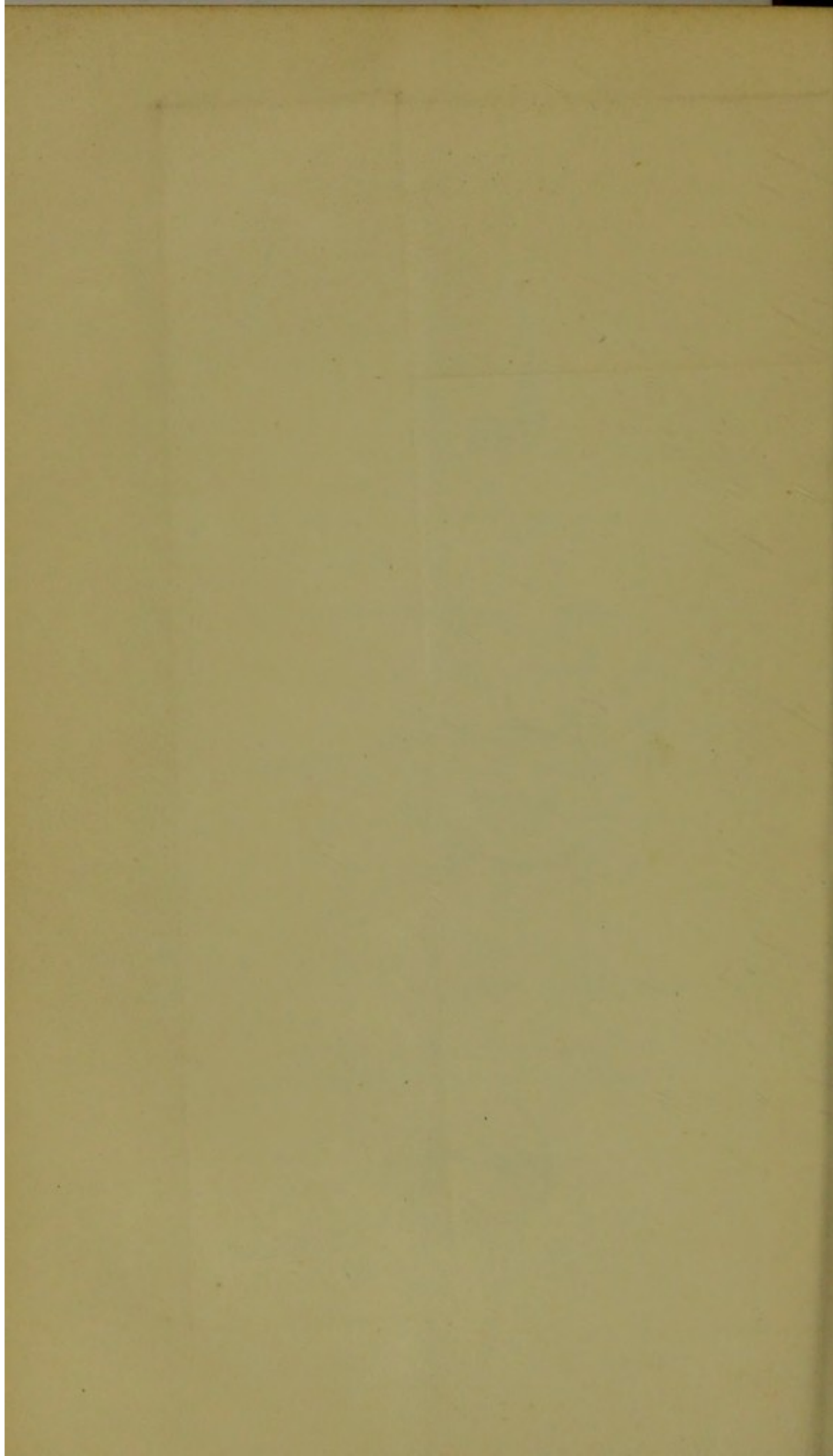
² Vol. iii, p. 183.

PLATE I AND II,

Showing the instruments referred to in Mr. France's paper
on Extraction of Cataract.

- A. Pamart's lance.
- B. Mode of using Pamart's lance, as modified by Desmarres;
all the fingers are those of assistant, the operator's
hands being occupied by the two instruments.
- C. Rumpelt's thimble.
- D. Sharp's speculum.
- E. Desmarres' ring-thimble, worn on operator's middle
finger.
- F. Ancient common speculum oculi, of reduced size, after
Dionis.
- G. Miller's or Else's speculum, the flat ring to be pressed on
the sclerotic, the projecting curved plate to receive and
support the lid.
- H. Pellier, sen.'s, speculum.
- I. (A and B.) Adams's speculum, in two views.
- K. Beranger's double hook.
- L. Pellier, junr's., crescent.
- M. Single branch speculum, after Brambilla.
- N. Compound instrument for fixing and incising cornea, of
Guérin, of Lyons.
- O. Desmours' yoke-thimble, the branches to clasp the finger's
end, the point to be implanted in the cornea.





I^b

I^a

H

G

L

K

M

