

DR. KELLY, closing the discussion—In anastomosing the ureter in the bladder I follow one of two plans. I either bring the ureter in opposition with the vesical opening by using one of my guides, or I draw the ureter well into the bladder by means of a pair of alligator forceps suggested by Snger for this purpose. The forceps are inserted through the urethra, and then through the bladder wall, and so used to pull the ureter into the bladder, when it is held and sutured there. I have a guide on the end of the forceps, in the form of a long tongue, which projects into the ureteral lumen, thus preventing any contraction of the ureter. The statistics are so meager that it is desirable to have all cases recorded, and I am sure there are many.

## LESSONS FROM A FIRST SERIES OF ONE HUNDRED CATARACT OPERATIONS.\*

F. T. ROGERS, M.D.

PROVIDENCE, R.I.

The man who fails to study his case records, and thus gain confidence by reason of his successes and profit by his failures, does not take advantage of the best way of perfecting his medical education, begun in college; he is at his graduation but ready to learn. The successful physician is one who appreciates this fact and finds in each case fresh instruction, in each success added confidence, in each failure a warning of incomplete preparation.

It is neither because I can add to the sum of human knowledge by a recital of personal experiences, and instruct this Section concerning the technique of cataract extraction, nor gain personal glory or added notoriety that I report these cases, but because during six years of attendance at these meetings I have not heard adequately discussed the results of cataract extraction from a beginner's standpoint.

Masters of operative skill have reported their cases by hundreds. We are wont to listen with admiration to their recital of good results, but aside from the incentive to renewed exertion we gain little practical good. I am speaking to-day to the younger element, the tyros of operative skill, in the hope that profit may result to them from the discussion of evident mistakes and the bad results obtained just as I have personally gained by a study of these records.

I am at the start impressed by one fact, that a certain proportion of the bad results I have obtained has been due to the poor selection of cases. The young man beginning operative work is apt to allow his judgment to be warped by his desire for another operative case. The eagerness to operate overcomes the possibility that a successful result will not be obtained, and when but moderate vision is secured it may be due to the fact that the vision was not there as well as to some fault of the operator.

I am convinced that not enough attention was paid to the general condition of the patient, and that the ideas advanced before this Section three years ago by Dr. Knapp in regard to the effect of any systemic disturbance on the ultimate result were not sufficiently impressed on me at the time. The existence of bronchitis, nephritis and rheumatism in patients undoubtedly influenced the healing process, although prior to the operation this did not seem important.

If, however, we operate upon patients to benefit them and not to gain a record for perfect vision, even partial success is to be desired if it ameliorates the condition

and improves in any degree the vision of the patient. The operator who can change total blindness to even ability to get about, is deserving of some credit. As an evidence of this I cite one case:

CASE 52.—Mrs. M. W., 64 years of age, suffered, in 1896, from acute glaucoma of the right eye, for which an iridectomy was done five days after the onset of the disease, when the patient was first seen; but the resulting vision was nil. L. V. was at that time 0.5 with +1.50. Two years later glaucoma of the left eye occurred, for which an iridectomy was done within twenty-four hours with relief of pain and slight improvement of vision; but within a month the lens became opaque and the patient totally blind. There was good perception of light but poor projection and I decided to operate for possible relief after a frank statement to the patient of the possibilities of failure.

An easy extraction with dense capsule and a secondary dissection gave her an ultimate vision of 18/200 with +13, and her later years have been rendered happier, at any rate. Although by current rating this operation can not be classed a success, to my mind it is one.

The series includes operations upon the following:

Senile cataracts of varying degrees of maturity	92
Traumatic cataracts	2
Congenital cataracts	5
Soft cataract	1

The preparation of the patient has included the careful cleansing of the lids, lashes and brows with soap and water and a solution of bichlorid 1 to 5000, and in hospital cases the application of a bichlorid poultice for twelve hours before operation. When any secretion was noted on its removal the operation was delayed until the existing trouble had been treated. Cocain was used in all cases except four congenital cataracts, and just before operating the eye was flushed thoroughly with a warm solution of boric acid. The instruments were sterilized either by steam or formaldehyde and placed in absolute alcohol, and all dressings were rendered sterile by steam. I have no knowledge that any eye was lost by reason of carelessness in the preparation of either patient or instruments.

The after-treatment was in the ordinary room or ward and with a subdued light, but without darkening it; with few exceptions all dressings during the first week were done by myself. The results in acuity of vision were as follows:

Vision of 1.0, 6 cases; vision of 0.9, 7 cases; vision of 0.8, 14 cases; vision of 0.7, 12 cases; vision of 0.6, 7 cases; vision of 0.5, 14 cases; vision of 0.4, 9 cases; vision of 0.3, 7 cases; vision of 0.2, 3 cases; vision of 0.1, 8 cases; count fingers, 3 cases; light perception, 4 cases; nil, 5 cases. Total, 100 cases.

This shows an average vision of 0.502 and, if 0.1 be assumed as useful vision, 88 per cent. of successes, 3 per cent. of partial success and 9 per cent. of failures.

The operative procedure was: Simple extraction, 18 cases; extraction with iridectomy, 66; extraction following preliminary iridectomy, 8; needling, 7; suction, 1; total, 100.

Concerning the method of operating, I am convinced that difficulty in making a clean corneal section has been increased and the success of the operation endangered by insufficient illumination. Once, I have been obliged to withdraw the knife and postpone the operation on account of inability to see the blade distinctly when introduced into the anterior chamber. I believe that a routine practice of illuminating the field of operation by a condensing light, electricity in the hospital

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and an acetylene light in private houses, is a decided help to success. Outside of special hospitals it is difficult to gain skilled assistance and the surgeon is compelled to rely on himself. It has happened in my earlier cases that, while the fixation forceps were held by an assistant, interest in the operation frequently distracted his attention from his own duties so that undue pressure was made with the forceps; hence for several years I have not used an assistant but, holding the fixation forceps myself, I am able to make counter-pressure against the knife and thus aid its introduction and exit.

A conjunctival flap was made in twelve cases, but there was so frequently a hemorrhage which obscured the field of operation that I have not lately used it save when accidentally made. In a large majority of cases the knife has, just before the completion of the section, been turned outward and the exit made in clear cornea about one millimeter from the sclerocorneal margin. Although such a section, it is stated, is more likely to entangle the iris and more liable to primary or secondary infection, it has not proved so in my experience. I have found the flap to close accurately, prolapse of the iris has been less frequent and I have seen no reason to discard the practice save that it is not advised in the books.

After the corneal section I remove the speculum, and make the cystotomy while holding the upper lid by pressure over the orbital arch. My losses of vitreous—seven cases—all occurred with the speculum in place. The accident has not occurred when the lid has been held.

Cystotomy has been made by the semicircular and crucial incision, and I am unable to detect any difference in the ease of extraction or the resulting condition of the iris and capsule. Simple extraction was done in but eighteen cases, the combined operation in sixty-six cases, and I am led to prefer the method with iridectomy for the following reasons:

1. In one sense it simplifies the operation, rendering it easier to expel the lens and soft cortical matter through the large coloboma, and lessens the frequency of secondary cataracts.

2. There is less danger of prolapse of the iris.

3. The clean excision of the iris is no more likely to cause inflammatory action than the traumatism to which it is subjected by the expulsion of the lens in simple extraction.

4. It requires less skill and delicacy of touch, and thus lessens the danger of complications.

5. With care in replacing the angle of the excised iris and any bits of capsule, there is no greater danger of incarceration in the lips of the wound.

6. It does not materially affect the mobility of pupil.

7. While the cosmetic effect is not so perfect as in the simple extraction, the upper lid so completely hides the coloboma that, even if the cosmetic effect was the desideratum instead of acuity of vision, there would be little in favor of the simple method.

8. Visual acuity is nearly the same; according to Gayet it is the same. In my cases the average vision in the cases of simple extraction is 0.48 and in the combined operation is 0.47. The proportion of complications in the two methods was as follows:

	Uncompli- cated.	Prolapse of Iris.	Iritis.	Visual Acuity.
Simple operation; 18 cases	10 cases. 55 per cent.	5 cases. 27 per cent.	5 cases. 27 per cent.	.48
Combined operation; 66 cases	37 cases. 57 per cent.	1 case. 1.5 per cent.	14 cases. 21 per cent.	.47

The combined operation has its drawbacks: It is prolonged, more painful and possibly increases the danger of infection, although with the means at our command this is reduced to a minimum, but to the average man it is safer and gives as good or better results.

The ideal operation is the one with the preliminary iridectomy, and in eight cases where this was done there was uncomplicated healing in seven. Personally I am of the opinion expressed by many authorities that had I a cataract requiring operation I would have a preliminary iridectomy; one can hardly give better advice to a patient than that which he takes himself.

Artificial ripening of the lens was done in five cases, and was in every case entirely satisfactory. Preliminary iridectomy with gentle massage of the cornea sufficed to render the lens mature in from three to six weeks, and the extraction was invariably easy and satisfactory. The resulting vision was 0.3, 0.5, 0.9, 0.5, 0.7.

The suction operation was done once, with resulting perfect vision. The needle operation was done seven times with resulting vision of 0.3, 1.0, 0.9, 0.5, 0.6, 1.0.

Secondary discission was done in twenty-seven cases with a maximum increase of vision of 0.8, a minimum of 0.1 and an average of 0.4. Following the secondary operation there developed in four cases a mild iridocyclitis, in three a severe attack, but in all there was in time a complete subsidence of all inflammatory action.

Failure to obtain useful vision occurred in twelve cases. Of these, three are able to get about with difficulty, four have bare perception of light, and in five the eye was lost. This unfortunate termination occurred as follows:

CASE 6.—A female patient, 65 years of age, was operated on at St. Joseph's Hospital. The modified Graefe operation was made without difficulty, and until the sixth day recovery was uneventful. She was treated in the open ward and on the evening of the sixth day a new patient was admitted and placed in the next bed. During the night a large psoas abscess was evacuated and the bed and bedding were well soaked with pus. Forty-eight hours later there was swelling of the lids, chemosis of the conjunctiva, and, in spite of treatment, panophthalmitis developed and phthisis bulbi resulted.

CASE 38.—Simple extraction in a woman of 60 years. On removing the dressings on the second day there was found beginning panophthalmitis, and the eye was lost. I have no knowledge of the source of infection, save possibly this, that the operation was done in the presence of a number of physicians who were visiting the hospital and one had come directly from a case of puerperal septicemia.

CASE 66.—Modified Graefe operation was made on a man of 75 years and in poor health. The operation was smooth, and aside from slight iritis there was an uninterrupted recovery but no vision. Examination showed almost complete detachment of the retina; it probably did not occur after the operation and it was an error of judgment to operate the case, although it may have occurred at the time of the extraction of the lens.

CASE 89.—Female, aged 71 years, underwent a smooth operation and perfect convalescence until the eleventh day, when there was noted a slight puffiness of the lids with beginning chemosis of the conjunctiva. The dressings, solution of atropin and droppers were taken immediately to the state laboratory and were pronounced sterile, but the eye was lost in forty-eight hours. Examination of the purulent discharge showed a small rod-like bacillus of great activity which rapidly affected the

culture-medium, but gave no intimation of the source of infection.

CASE 94.—Male, aged 84 years, had the wound infected on the second day, and ten days later enucleation was done. This case was undoubtedly infected by the unclean fingers of the patient, as he tore the bandages from the eyes and rubbed them violently the first night and was so unruly that no covering could be kept on the eye.

Of the four cases resulting in perception of light two may be designated as accidents pure and simple.

CASE 9, was a simple extraction of soft cataract. The operation was done in a boarding-house and the patient was on the third floor. During the night while the attendant was asleep he arose from the bed and went down the three flights of stairs to an out-house in the yard. Returning in apparent safety he miscounted the stairs and turned into the room on the second floor just under his own, and groping his way he deliberately crawled into bed with a man and his wife. Aroused from sound sleep by this unwelcome intruder the occupant of the room seized the patient by the collar, marched him to the door and calmly kicked him downstairs. The next morning I found the wound open and a large hernia of the vitreous. Recovery was slow but without useful vision.

CASE 26.—On the seventh day while making an uneventful recovery, a fly crawled into the nose of the patient and caused a violent attack of sneezing. The wound was opened with loss of vitreous and a resulting iridocyclitis, which resulted in a blocked pupil and although two attempts were made to improve the vision by discission and an iridotomy the result was not favorable.

In Cases 20 and 60, iritis of a severe type on the fifth and sixth day produced a tedious convalescence and blocked pupil.

CASE 91.—Male, 69 years of age, was referred to me by another oculist with a request that I operate on him in the hospital. The patient was not seen until on the table, when I found a large fleshy pterygium on the cataractous eye. Although my judgment was against operating, I finally did so, making the corneal section somewhat obliquely so as to avoid the pterygium. A severe keratoiritis developed and the ultimate vision was for large objects.

CASE 88, was a hospital patient of exceedingly filthy habits, and there was an infected wound. Hot fomentations and the persistent use of pyoktanin checked the destructive process so that the eye was saved, but without useful vision.

Similar infection of the wound occurred in two other cases, one in private and one in hospital practice: The first was infected by the finger of the patient on the tenth day and, although the wound was infiltrated and the cornea like ground-glass, faithful and persistent use of hot fomentations and pyoktanin finally controlled the process and gave an ultimate vision of 0.8. The second case was infected on the fifth day and the vision for a week reduced to bare perception of light. Under the same treatment the vision finally gained was 0.6. Various minor accidents occurred which were annoying to both patient and operator, but did not materially affect the ultimate vision.

From a careful study of these cases and from experience gained in my first hundred operations on the lens, while perhaps not befitting me to give advice to others, I am able to draw the following conclusions which will at any rate guide me in future operative work:

1. More attention should be paid to the general condition of the patient, and the presence of any systemic disturbance should influence the prognosis.

2. All operative procedures on the crystalline body should be done under the best possible illumination.

3. Providing that it is large enough, the exact site of the corneal section does not materially influence the result.

4. The combined operation is the safest and the easiest for the operator of limited experience.

5. The most frequent complications, iritis and iridocyclitis, should be combated by the early instillation of atropin, and their existence does not necessarily prevent an ultimate good result.

6. Discission of the capsule can be done with comparative safety and materially increases the acuity of vision.

7. Infection of the wound does not in all cases destroy the sight, and careful and assiduous treatment may save an apparently doomed eye.

8. The experience gained in the first series of operations has, besides improving the technique of operation, impressed me profoundly with the possible dangers which may arise and will prevent me from advising operative procedures so freely as I have done in the past without a frank statement to the patient of the possible outcome.

9. For some reason, which I hope will be brought out in the discussion, I have had more iritis in these cases than I should, but whether due to defective skill in operating or insufficient care in the after-treatment I am unable to decide.

#### DISCUSSION.

DR. E. E. HOLT, Portland—I have been very much interested in this paper and I think we should all welcome reports of cases carefully taken down and the deductions made from them. When I began practice 25 years ago I found no satisfactory book for making records of eye cases and I devised one so that I could have a record of all cases, but I have made but few compilations therefrom, which is contrary to the resolve I made early in my practice. When I mention, however, that I have founded an eye and ear institution and begged and handled several hundred thousand dollars to build it and carry it on I think you will excuse me. I find, however, that in the records of the Maine Eye and Ear Infirmary I have operated some 500 times for cataract and in my private practice I think I have done as many more, so my experience is based on about a thousand operations for cataract.

In opening the discussion on this paper I am reminded that in the American Ophthalmological Society, when we have listened to a paper on cataract, it is passed by without discussion because members say there is so much to be said and no one is willing to undertake to start it. I shall confine my remarks to my personal experience.

In the preparation of a case for cataract operation I like to get acquainted with the patient and have him under observation at least a week before I operate, see that the bowels are all right and have him take certain baths and remedies that may be indicated. I have the face washed and all parts adjoining the face cleansed in bichlorid, and the conjunctival cul-de-sac washed out with a 1 to 5000 solution of bichlorid for a week or more before operation. I also look after the lachrymal sac, syringe it out with antiseptic solutions if need be, and examine the nasal cavity and mouth to remove all possible foci of infection. I like to use some weak mydriatic in order to examine the lens, to estimate its size and determine as well as I can how large a corneal section I shall make. I admit this is very difficult to determine in some cases, as we find some larger lenses than we anticipate. In my early career I operated with ether and did the modified Graefe operation with an iridectomy. For the last ten years or more, however, I have done the simple operation without iridectomy as a rule.

making the puncture and counter-puncture just at the corneal margin, and I like to make a small conjunctival flap, for I think I am less likely to get prolapse of the iris. In changing over from operating with iridectomy to operating without it I found that I had to learn a new technique, and one of the most essential points to observe is, after making the cystotomy, to make pressure on the lower border of the lens to tip the upper part forward and prevent its sliding up under the iris. In my early career I always practiced on the mask with pig's eyes before attempting an operation, and I think that it is very important for the young operator. I am sure I performed more than a thousand operations on pigs' eyes before I did many cataract operations on the human eye. The young man has plenty of time to do it and it gives him confidence in his hand and forearm, and when he has to operate he will do the operation very much better. I was very much pleased some time ago when I saw a book written on that subject, though I can not recall at this moment the name of the writer.

I used to wash the anterior chamber out when there was any amount of cortex left. I should not hesitate to do that now, although I think there is apt to be some irritation from it, but I do not find the occasion for it as I used to. I think the normal-salt solution sterilized is better than the pure water for this purpose. In dressing the eye I have for a long time been putting cotton over the eye and using isinglass plaster to hold it in place. Fifteen years or so ago I used a shield made of wire and also of pasteboard, but I abandoned them, for in my practice I thought I got more prolapses of the iris when I used them than when I did not. They are apt to become irritating to the patients and they make efforts to move about, causing spasms of the muscles, and, by the way, I think prolapse of the iris is more frequently caused by muscular contractions and spasms than by external violence.

When Dr. Ring brought out his eye shields I tried them, but I again abandoned them for the same reason I had before.

DR. R. L. RANDOLPH, Baltimore—I hope this paper will elicit some discussion as to the technique to be pursued in these cases. I have long maintained that the eye is endowed with natural powers that make it unnecessary to use bichlorid douches before the operation. While I am not prepared to say that its use in Dr. Rogers' case had anything to do with the iritis, I do not think he would have had any more iritis if he had abandoned the use of the bichlorid. I think the eye, more than any other part of the body, is endowed with antibacterial properties, and I make it a rule to use no bichlorid solution whatever. In the first 100 cases I reported I did use it; in the second 100 cases reported a few years ago, I used nothing, but simply sterilized my instruments and used sterile cocain. I would like to ask Dr. Rogers if he sterilized his cocain in these cases.

I am surprised to note the number of cases where he was successful in maturing the cataract. I have tried in ten cases, but succeeded only in one. Lately, I have abandoned cocain also in these cases and never use anything but holocain.

DR. W. B. MARPLE, New York—I should think it would be interesting in connection with Dr. Randolph's remarks to know from the different gentlemen here whether or not they irrigate the eye before operation. Since Dr. Randolph's paper of a few years ago, I have used nothing but the sterile salt solution, and I would like to know if there are many who use no irrigation at all. Irrigation with some sterile non-irritating solution seems to me to be in many respects of decided advantage.

DR. ALBERT E. BULSON, JR., Fort Wayne—Aside from the general interest which a paper on cataract operations excites, this paper becomes of interest because the essayist recounts his failures and successes, with reasons therefor.

The point which I wish to make in discussing the paper is that, with the average operator, a preliminary iridectomy is usually unwarranted. It has always appeared to me to be an unnecessary risk to open the eye twice for the purpose of removing an opaque lens. The average ophthalmologist does not exceed fifteen or twenty cataract operations a year, and as every one of these cases must of necessity carry its weight of praise and blame, and as it is practical results which all patients desire, it behooves the operator to secure the best possi-

ble results as a minimum risk. In spite of the most exacting efforts to have an aseptic operation, occasions will arise in which infection alters what otherwise might prove to be an ideal result, and opening the anterior chamber twice paves the way for such a complication. I have never felt that the results with preliminary iridectomy averaged any better than the results with iridectomy at the time of extraction, and the patient certainly objects to two operations when one may be fairly stated to do as well.

I believe the combined operation for the average ophthalmologist to be, not only the easiest, but the best for securing practical results. It is usually attended with fewer complications, and but few patients will complain of the cosmetic effect, the main desire being to get vision, and it is this which brings out their praise.

DR. J. L. THOMPSON, Indianapolis—These reports appeal to most of us because there are very few of us now that see as many cases as Knapp, or the Baltimore physicians, and very, very few of us get more than twenty-five cataract operations a year. I feel that one of my failures used to be due to the manner in which I used the speculum. That seems to bother a good many of the beginners. I used to open it very widely, but now I open it just as little as possible, to give enough room to work on the eye. Of course, I began when there were no antiseptics in use. In regard to cleaning the wound, I notice, if you go to Knapp's clinic, for instance, the great pains he takes to clean the wound and to put the iris back just as carefully as possible, but the beginner feels that he had better leave well enough alone, and he does not want to work over the eye too much.

I do not recall one case I ever lost where I made a preliminary iridectomy. We have so many cases where just a plain extraction of the cataract is out of the question on account of the small cornea; the deeply sunken eye, the shallow anterior chamber, etc. I would like to advise the beginner to learn to use both hands and to do an iridectomy.

DR. LUCIEN HOWE, Buffalo—I want to call attention to one point in regard to the difficulties with an assistant, and the necessity of having some one who rotates the eye or fixes it without pressing on it. Some years ago I presented a small pair of autofixation forceps, and I want again to call your attention to the advantage of not having another brain to depend on, but in having one's own fingers only involved in the operation. The little forceps on the speculum fixes the eye perfectly, and acts as our third hand.

## YELLOW FEVER; ITS NATURE AND CAUSE.\*

EUGENE WASDIN, M.D.

Surgeon U. S. Marine-Hospital Service.  
WASHINGTON, D.C.

From the earliest history of yellow fever in our country there have been evidences of its having been imported from some foreign place, usually the countries to the southward within the tropics. This importation has usually taken place during the prevalence of warm weather in the spring, summer or fall months, and could be traced to one of the intertropic endemic centers. During cold weather, the disease would disappear either entirely or to a great extent.

Its continued presence, however, from year to year in some of our southern cities, and its recrudescence with the advent of the warm weather of the spring, following its epidemic presence during the summer, induced numbers of prominent observers to believe that this disease was indigenous to our southern latitudes, and, like malarial infections, depended on unsanitary conditions.

The cessation of the fever following the institution of an adequate system of maritime quarantine protection for our southern seacoast cities, against such importa-

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