to give a very short range of vision, and if there is any latitude at all I conclude that cycloplegia is not sufficient. I think where we wait for a year or more and then retest our cases an increase in the strength of the glasses may be indicated from the fact that the patient has worn glasses for that long, and that there has been a small amount of hypermetropia concealed by ciliary muscle tone or action that could not be overcome by the cycloplegic. I fully agree with what Dr. Risley has said with regard to the use of mydriatics in these cases of deep irritation. I said in the paper that one of the uses of these drugs is to procure rest, and mydriatics are as much indicated in certain cases of eye-strain as in iritis, and can not be replaced by any other substance.

SOME FACTS ABOUT APPENDICITIS, MEDICAL AND SURGICAL.*

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Experienced surgeons make the statement that if they should have 100 consecutive cases of appendicitis and should operate on all of them as soon as the diagnosis was made, they could show a better list of perfect recoveries and a smaller death-rate than if 100 similar cases were treated on the expectant plan and those only operated on which were finally selected by conservative practitioners. I agree with the above statement, but not with the assertion of the ultra-conservative members of the profession when they say that the radical surgeons insist that every patient should be operated on immediately. I never heard a surgeon say so. Surgeons say that it would be better if every case could be operated on, but every careful surgeon selects the time and method of operation in each case. And each case varies. Even if we say that every case ought to be operated on, that does not mean that we recklessly rush in and operate without due consideration of the condition of the patient, the environment and the necessary treatment. We are called to consult in a case in which the patient has been ill for several days, and on our arrival at the house we find a decided change for the better has taken place. We see that the turning-point has been reached and that the patient is going to recover. Does any one operate under such circumstances? I know of none. We say that when the acute symptoms subside, and if the patient has had similar attacks before, we can operate in a few weeks. If, however, we see the patient during a first mild attack, then we suggest that the patient wait, since we know that about 15 per cent. never have a recurrence. But should there be another attack, we advise an operation. Many advocate waiting until firm adhesions have taken place. This has never seemed right to me. It can be justified only when one expects to get one of those very large, appendicular abscesses containing a pint or more of pus, with the sloughed-off appendix floating in it. Such cases simply require an opening of the abscess and drainage; but before one case reaches that stage fifty cases, at least, would end in death.

Furthermore, if the adhesions are firm—which is very good in “let-alone” cases, but a very troublesome condition when you have to break up the adhesions and remove the appendix—you are liable to strip up the peritoneal covering of the intestines.

Another idea which seems to me very objectionable, is that waiting in such cases is a good thing. “Wait until the power of resistance of the individual has been developed.” When has it reached its acme? There

is a limit to nature's power of resistance and I think this power as a rule is greatest in every case, when the disease has existed the shortest length of time. This brings us to a consideration of phagocytosis and leucocytosis—the power of resisting and eliminating microbe infection. As the infection becomes greater, nature offers more barriers to the onslaught, but a limit is reached in these cases also, and nobody can make me believe that a person who has been subject to a septic condition for five days is a better case for operation than one who has been subject to septic infection for two days, neither can any one make me believe that ten, fifteen or twenty days after the microbic infection, when all the reserve powers of the system have been exhausted, is a better time to operate on the patient than in the first twenty-four or forty-eight hours. It is so unreasonable, so opposed to all ordinary laws of health and to common sense that I have always rejected the idea.

There is a class of cases in which the surroundings are not conducive to aseptic surgery. We sometimes hear in medical societies, or even read in medical journals, of wonderful operations, performed in the little hovel or flat, where whole families were cooking, sleeping, eating and living in one room. We hear of these most wonderful recoveries under the most adverse circumstances, but we never hear of the thousands of deaths following operations under similar conditions. In those cases in which the environment and the after-care are bad, it seems to me that the surgeon ought to trust more to nature than to surgical skill, which will be nullified by the ignorance of the nurses in whose charge he leaves the patient.

Accurate statistics, furnished by surgeons, show one side of the question, but it is very difficult to get statistics of cases—recoveries and results—from general practitioners. It is almost impossible for the general practitioner to keep statistics if he wants to. When he attempts to write out his records, he is disturbed and must rush away, and so it goes on every day. He is tired out at night and can not sit down and write for an hour or two. But occasionally, a person can take pains in one particular branch. I would like to see a hundred general practitioners keep accurate records of appendicitis, say for a year or two, and then report them. They ought to have the age of the patient, the number of attacks, the line of treatment pursued, and the final results. Then we might come to some conclusion on the medical side of the question.

The kind of microbes, it seems to me, has little to do with the severity. We know in all cases the bacillus coli communis is found, which gives us cases with low temperature, and very deceiving cases on that account, as they are jogged along by the general practitioner for a week or ten days when suddenly leakage takes place into the peritoneal cavity and when the surgeon arrives the patient is beyond help. Cases with mixed infection of bacillus coli communis and staphylococcus pyogenes aureus have a very high temperature and rapid pulse. These are cases that frighten the general practitioner and induce him to call in a surgeon in time. I have also found cases where the appendix had not ruptured and the peritoneal fluid contained staphylococcus albus only, but with the most severe symptoms. How they get there I do not know. We also find bacillus or diplococcus fetidus and many other kinds, so that all around it seems to me that the variety of bacteria or germs has little to do with the severity of the case or the danger to the patient.

* Read before the Allen County Medical Society, Fort Wayne, March 20, 1899.

Sometimes an appendix is removed, especially during the interval, which does not seem to be diseased macroscopically; the patient, nevertheless, gives a clear account of having had repeated attacks. If, however, a microscopic examination be made, you will find that the appendix is ulcerated, strictured, etc., and what is better proof, the patient becomes well afterward. Repeated attacks in the same individual vary very much. The first attack may be very light or severe, the second or third may be light or severe, or either of them severe. We can never tell. Many patients are what I call chronic invalids, simply from repeated attacks of appendicitis and the resulting sequelæ.

I think there is no medical treatment that is specific. I think ice or hot applications, or painting with iodine or anything else, are of little value. I do not believe in opium, and still, if the patient is in pain an occasional dose is indicated. Starving the patient, as has been suggested by Ochsner, is certainly efficacious, but does not cure the case; they will have recurrences and require operations.

The diagnosis is generally easy, if the physicians will only look for appendicitis, although the first day the symptoms may point to the stomach on account of the vomiting, or to the bowels on account of the constipation or diarrhea, but after that the well-marked pain in the region of the appendix and the rigidity of the muscles over that part is so clear that a mistake is seldom made. I have operated on cases where I found a malignant growth or a perforation of the bowels, but the mistake was not serious, as this kind of cases equally requires surgical intervention. Morris and Richardson have recorded a large number of cases that show a mistake is made in 3 or 4 per cent. I am perfectly satisfied that I do not make a mistake any oftener and I think every general practitioner in the course of his practice is a splendid diagnostician if he does not make more than this.

The tumor develops as the result of plastic exudate, which walls in the appendix. The appendix becomes attached to the side or the back of the pelvis and finally ruptures, still being well walled in. It sometimes ulcerates through the peritoneum at the side or the back, and the pus works its way upward toward the crest of the ilium, or behind it below the kidney, where it breaks or is opened. These are exceptional cases, patients with the peculiar power of the peritoneum to throw out fibrous exudate, layer over layer, and prevent the rupture into the peritoneal cavity. In fact, the whole question of medical treatment, it seems to me, depends on the health of the individual, especially on his power to throw out the plastic exudate of the peritoneum, and I think that our surgical success depends on the same power. If we operate carefully, restrict contamination of intestines and peritoneum to a minimum, remove the pus, and put in a drain, in a few hours the cavity or the opening we have made is surrounded by plastic lymph and well walled in, and our patient recovers. If, however, the patient's peritoneal secretion is thin and does not coagulate, the bacterial infection is spread all over the peritoneum and we have general septic peritonitis.

I looked over the death record of the city of Detroit for 1899 and I found that 37 cases are put down as having died from appendicitis. There are 54 put down as dying from peritonitis, and though some of the latter cases may be due to pelvic diseases, I am sure that more than half are due to appendicitis, treated with poultices and opium, and finally disposed of with a pious exclamation, "The Lord's will be done."

The death records of these 37 patients were signed by 19 different physicians, and I thought by inquiring from them I might be able to arrive at some kind of conclusion. I received answers from 12, who reported on 25 deaths. Fourteen of these cases had been subjected to operation and eleven others died without any operative interference. As the members of the medical profession who had signed these certificates had been able to properly diagnose the cases, and were first-class men in good standing, I thought I might also get further information from them and asked them to give me the number of cases they had had during the year, and how many died with or without an operation. I received reports of 213 cases of appendicitis. Of these, 160 were operated on during the acute attack or during the interval, in fact, at any time when the surgeon thought it was proper. Of these 160 cases, 14 died. This list of surgical cases includes naturally the reports of the principal surgeons and gives a death-rate of about 8 per cent., counting everything—easy interval cases, severe cases, purulent peritonitis, and those actually moribund. The number of cases not operated on, that is, medically treated, were 57, with 11 deaths, giving a mortality of over 20 per cent. From the reports of the physicians in nearly every case, the operation had been urged, but refused by the parents of the patient, or by the patient himself.

I do not want to place these figures forward as positive proof of the result of one line of treatment over the other, because the number is limited. Still, taking them up at random from men who know how to diagnose appendicitis, they certainly must be very near the truth. We certainly can not accept the figures of those who do not know what appendicitis is, never diagnose it, and never have a death from it. We must take our statistics from men who are able and progressive and who keep a record of the number of cases; so many were operated on; so many were not operated on; so many died following an operation; so many died without an operation." These statistics from such men must certainly be very near the truth. I would like to have a larger list, but as stated above, one can not expect general practitioners to keep the statistics of all kinds of diseases.

This proves that cases of appendicitis die under medical treatment. This is often denied. I have here the proofs. If I should hunt up all the cases which were put down as peritonitis in the death record, and get the report of them, I feel quite sure that I would increase the above-given record of death of medically treated cases of appendicitis 50 per cent., if not 100 per cent. The general average given by nearly all surgeons is that at least 15 per cent. of appendicitis cases die; 15 per cent. never have a recurrence after the first attack, and about 60 per cent. have recurrences and die off, one by one, at the rate of 15 per cent., unless relieved of their appendices. In conclusion I desire to make the following points:

1. It ought to be a general rule that every case of appendicitis should be operated on as soon as the diagnosis is made, but when it is the first attack and very mild, or no proper facilities are at hand either to perform the operation or to take care of the patient afterward, it is often good policy to wait and watch the case.

2. In cases of second or subsequent attacks, however, the patient should be sent to a hospital, even though it is at quite a distance—unless good facilities can be had at home—and an operation promptly performed.

3. Statistics of cases operated on as they come along.

good, bad and indifferent, by experienced surgeons, give a mortality of only 8 per cent.

4. Statistics collected by general practitioners who are able and up to date, and who advocate surgical interference, show that medically treated cases have a death-rate of at least 15 to 20 per cent.; that at least 60 per cent have recurrences; while the cases operated on are absolutely cured.

IMPROVED LANTERN FOR TESTING COLOR PERCEPTION.*

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This lantern is an improved form of the one I showed at the meeting of this Section last year. It puts in more practical form the principle which has for many years been carried out on the railroads of Holland, where a color-test both by worsted and a lantern, of more complicated construction, is required. The lamp is arranged with two burners, and in the front of the lantern are two openings so that two colors can be shown at one time, as red and green, two reds, or two greens of different shades, a red and white, etc. In this way a comparison of signal colors can be had, as is often the case in service; or, by moving a diaphragm one light can be cut off, and only one color at a time is then seen. There are thirteen colored glasses, and variations of intensity of color are arranged by a difference in the shades of the colored glasses and by combining them with smoked glasses placed in another disk. Also, the size of the colored area can be varied by a diaphragm moving between the disks.

The lantern is square in shape, about a foot high and six inches on each face. On its front are two revolving disks. The lower carries thirteen glasses, five reds and five greens of different shades, including a red glass that with the spectroscope is seen to transmit a certain amount of green light in addition to the red, and a green glass that transmits a certain amount of red in addition to the green, although not enough in either case to interfere with the general color of the red or green glass when seen by a normal eye. Such glass is often found in signal lanterns, and if a person is defective in his color perception for red and green there is more chance of his mistaking the color of such signals than when the glass transmits light of a purer shade. In addition to reds and greens, this disk carries one yellow, one blue and one colorless glass. The upper disk has several empty spaces and three different shades of smoked glass, and any of these can be combined with any of the glasses of the lower disk to give a variation in the intensity of color. Between the disks is a movable diaphragm arranged so that colored areas of three different sizes can be shown, or so that one light can be completely cut off.

Inside the lantern are two movable pieces of ground glass, which can be put in the path of the light or withdrawn, and the combination of these ground glasses gives very much the same effect as is produced by fog and smoke on the appearance of the colored signal lights. The darker smoked glass should not be used with the smallest opening of the diaphragm, for it will reduce the light too much, but with the larger openings any of the glasses may be used. With each colored glass is an illuminated number, and with each smoked glass a letter, illuminated by the lamp of the lantern, so that

the examiner can see it, but screened from the person being examined. In this way it is easy to keep a record of the color shown in every case, together with the name given to it by the person tested. This lantern test is easy to make either by day or night, a darkened room

being used by day. These colors do not fade. They resemble very closely the colors and appearance of signals in actual use; and will detect small defects of color perception in the central portion of the retina that may be entirely overlooked by the worsted test.

During the past year I have had four cases who passed the Holmgren test without difficulty but who made so many mistakes with the reds and greens of the lantern as to show that they were unable to distinguish correctly the true colors of signal lights seen at the usual distances. One of these cases who had been twice exam-

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