OPERATIVE JUDGMENT AS A FACTOR IN SURGICAL MORTALITY AND MORBIDITY.

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At the present time, it seems as though the anxiety to be known as a research worker or the desire to exhibit a remarkable degree of manual dexterity for the benefit of the bystanders were in danger of subordinating that most important factor in lowering surgical morbidity and mortality in the case of the individual patient, viz., surgical judgment.

The writer would be among the last to belittle research and laboratory work, and he envies the chosen few that dexterity which is not the heritage of the majority, but he desires to enter a plea for the benefit of the individual patient who falls into the hands of the surgeon.

Time was, and not beyond the memory of some of us, when surgery was a matter of manual craftmanship. But a limited number of operations were performed and the factors involved were simple, so that the vital question was one of speed, dexterity, ability to do a finished job in the shortest possible time, and in the middle decades of the preceding century that man who could perform an amputation or do a lithotomy the most rapidly was the man who deservedly won surgical success. Surgery then was purely an art and as a science could scarcely be said to exist.

Then appeared the era of science as applied to human physiology and those departures from the normal which we know as disease processes, and the revelations of bacteriology, chemistry, and physics made it appear that medicine and surgery were, at last, to be upon the secure footing of one of the exact sciences. Perhaps the time is coming when this will be true, when with instruments of precision all the functions of the body will be measurable, when every deviation from the normal will be capable of recognition, and when this millenium of diagnosis shall have arrived the means for correc-

tion of every error will be at hand. To-day the ultrascientific laboratory worker who is not a clinician would persuade us that this surgical millenium is almost here, and some few surgeons are willing to accept the diagnoses of clinically untrained internes and assistants, whose conclusions are purely academic in their origin and whose knowledge of the efficacy of treatment is based entirely upon the results observed while patients remain in the hospital. The research laboratories have placed at our command a great mass of data, but out of this mass there are as yet so few facts whose interrelations are thoroughly understood, that the placing of diagnoses in the hands of those without clinical training is pure folly, and acceptance of their dicta as to the course of treatment to be pursued is worse.

It is to be feared that the immature judgment of such untrained men is further warped by their desire to keep up the clinic of their chief, and certain it is that the reputed results of certain methods of treatment are exaggerated in order to show that his methods of treatment, operative or otherwise, are superior to any other.

As opposed to this is the group study of instances of obscure disease in which the clinical and *x*-ray laboratory men collaborate with the trained internist so far as possible in establishing a diagnosis, while the experienced clinical surgeon uses all the data they have collected, makes his own independent examination, and either operates or stays his hand with but one object in view, viz., the good of the individual patient, and his final decision after all is governed by one predominant factor, and that is his surgical judgment.

If he operates, the particular operation he performs, whether it is done under local, nitrous oxide, or ether anesthesia or a combination of all of them, whether he does a rapid, simple, almost crude operation, or a slow, painstaking, academic dissection, whether he drains or closes up, will depend again upon factors other than theoretical considerations, and that factor which is most important is his surgical judgment.

In the matter of the particular operation which he performs, allow me to cite two or three widely separated types of cases as examples.

Exophthalmic Goiter.—There may be an honest difference of opinion as to whether Basedow's disease is a medical or surgical condition, but there can be no honest difference of opinion as to the outcome of properly applied surgical treatment. Even this rarely gives a complete cure in the sense that all the symptoms are relieved permanently and at once, but it does convert the patient from an invalid or semiinvalid to one whose condition is such that self-support

is possible and the health nearly as good as the average, but this result cannot be obtained by slavishly following out one method of procedure, whether that be pole ligation, tying of one or more vessels, or partial thyroidectomy. The last has a prohibitive mortality if used in each and every case, the first two are not efficient in the chronic slow going type of cases, especially in women, while they not only have a very low mortality but a high permanent recovery rate in acute cases in the male, in whom the pelvic functions do not constantly disturb the patient's nervous equilibrium. By a proper selection of cases for the various procedures, by a judicious selection of the anesthetic for the individual case, and above all by speed in operating, absolute prevention of postoperative bleeding, gentle manipulation of the gland, and sealing of the relatively large raw area by painting the wound surface with tannic acid solution combined with drainage, practically every case can be saved. I was tempted to say every case, until I recalled that even the best surgical results do not prevent an occasional internist from frittering away valuable time with medical treatment until the patient is already moribund from myocardial degeneration.

I should like at this time to interject a word relative to preventing absorption from the wound and stimulating drainage by the use of tannic acid solution. All of us who use catgut hardened by means of tannic acid must have observed the nuisance of profuse serum accumulation in the wound, and this annoying feature led me to try painting of the entire tumor bed with 1 per cent. tannic acid solution before closing. Unquestionably there is a great increase in the drainage, and apparently a diminution in postoperative hyperthyroidism. Whether the latter observation is correct or not could only be proven by a larger number of cases than I have at my command, but its apparent correctness has encouraged me to continue its use.

Another set of cases in which surgical judgment is demanded is acute intestinal obstruction of the internal type, that is, such as is not due to hernia through the abdominal wall. Preëminently is this true of postoperative obstruction. I know of nothing so trying to the surgical honesty of the operator as the supervention of obstructive symptoms within a day or two after the successful completion of a difficult abdominal operation. Primarily the diagnosis is obscure, a conclusion as to the gravity of the situation hard to determine, and the nature of the operation necessary for its relief can be decided upon only after the abdomen is opened and the operator has made a survey of the field which must be accomplished both

rapidly and accurately. The diagnosis as between paralytic ileus, postoperative peritonitis, and true obstruction can be established nowhere but at the bedside, and this diagnosis is most difficult in those cases in which the primary obstruction is neither complete nor interfering in a serious manner with the integrity of the gut wall. Only too frequently the pain in such cases is considered as merely "gas pain," the occasional vomiting is thought to be neurotic or due to the modern surgical bugaboo, acidosis, and insufficient bowel motions as the result of intestinal paresis, the observer not awakening to the true gravity of the situation until collapse, extreme pain, persistent vomiting, absolute obstipation and tympany, certify that the favorable moment for interference has passed. How can the diagnosis be made before such a catastrophe has occurred? I know of but one method, and that is through the careful, systematic, unremitting observation of the trained surgical clinician, who is willing to waive all theoretical considerations and balance with accuracy the evidence which his own eyes, ears, and fingers place before him, giving every bit of evidence the weight which his surgical judgment dictates. Only this, and that intuition which is the result of past thought and experience, can guide to a correct diagnosis in time to forestall disaster.

Acute obstruction other than postoperative is less difficult of diagnosis because the patient has suffered no interference which in itself might be responsible for the symptoms presented, but again the laboratory findings are of no assistance save in a negative sense, the absence of marked leucocytosis indicating the *probable* absence of an inflammatory or gangrenous focus in the abdominal cavity. But let me repeat that the trained surgeon with an abundance of clinical experience behind him is the man who must make the diagnosis, because he should be able to make it more quickly than any one else and institute treatment sufficiently early to be of some avail.

In the treatment of intestinal obstruction the slavish obedience to some precept learned while a student or swallowed in its entirety because propounded by the master of a surgical clinic is likely to result in as serious a disaster as delayed diagnosis. To eventrate every patient through a huge incision means that the operator has utterly overlooked the possibility of death from shock due to exposure of the peritoneum and much handling of the gut; to attempt operation through a wholly inadequate incision means that an enterostomy only will be done. Reopening the primary incision in postoperative obstruction is all that is needed ordinarily since the obstruction will be found in or about the operative site, and under

any circumstances an incision large enough to admit the hand for exploration should be sufficient unless the obstruction is at a point far remote from the exploratory opening.

What should be done with obstruction when discovered is, of course, a sufficiently large subject for a monograph, but leaving out the rarer forms, the determination of our course of action is not extraordinarily difficult if preconceived notions or limited experience are not hampering the judgment. I wish to utter an earnest protest against the very common practice of making an enterostomy the end of every operation for acute obstruction. There is a place for enterostomy, but it is *not* the aim of every operation for obstruction, postoperative or otherwise. Enterostomy saves an occasional patient in whom the point of obstruction cannot be located and in whom overcoming of the distention allows a twist in the gut to unfold itself. It saves an occasional desperate case in which no effort to find the point of obstruction is justifiable, but even in this instance a secondary operation of a serious character is always demanded. My plea here is for the use of good far reaching surgical judgment, which takes into consideration not only the present but the future condition of the patient, which does not unnecessarily hazard life at the present moment, but which does not overlook the fact that a secondary operation may be of so serious a nature that an opportunity to cure now and at once should not be passed without mature consideration. It has seemed to me that many of the patients reported as saved by an enterostomy would have done equally well without, if any attempt at overcoming the obstruction had been made, and that the idea of intestinal drainage has been worked far beyond the limits of good sense and good judgment.

So, too, with the drainage of the gut at the time of operation followed by immediate closure, on the theoretical basis that absorption of the contents of the distended bowel so soon as they reach the injured intestine is likely to prove fatal. Granted that a greatly overdistended paretic intestine is better emptied than left, how many times do we actually see the gut in such condition that if that were the only indication we would proceed to empty it? This really practical reason for emptying is only too frequently bolstered up by the theoretical consideration of possible poisonous contents above the point of constriction which poison will be absorbed by the uninjured mucosa lower down. Relatively so little of the gut is emptied by puncture, and the risk of soiling the peritoneum and wound edges is so great, that if this theory of poison were universally true it would almost invariably end in

death anyway either from this source or from infection of the peritoneum and wound.

In this connection I wish to report 33 cases of acute obstruction of all types excepting intussusception, in 20 of which adhesions were released and the point of constriction oversewn if necessary but the bowel was at no time opened and all recovered; 5 in which the intestine was evacuated and then closed, with 2 deaths; 6 in which an enterostomy was made with 4 deaths; 1 resection with immediate closure recovered, and 1 enteroanastomosis recovered.

On the surface this shows a much better result for no opening of the intestine than really is true, because my own practice is to open the intestine only if it seems absolutely demanded, and it is obvious that the most seriously ill patients were treated in this manner. On the other hand, the fact that in 20 of 33 the intestine was not opened either temporarily or permanently, and that no deaths occurred, is fair proof that some enterostomies, at least, are unnecessary.

Did time permit, I should be glad to go into two other phases of abdominal surgery in which theoretical considerations or experimental work have led us from the path of safe procedure. One of these is drainage, the other the use of cathartics, more particularly postoperative cathartics, in abdominal surgery. Perhaps, I still have time merely to touch upon them.

It is not so long since drainage was practised after every abdominal operation, and with the unclean methods of operating in vogue a few years ago it would be hazardous to say that such drainage was not a very essential factor in the recovery of many patients. Then came the swing of the pendulum with the dictum that practically every patient would recover if the abdomen were closed, or as one German surgeon declared, the abdomen should always be closed and with this closure the fate of the patient is sealed since nothing more can be done, or as one American authority wrote, the abdomen should be closed after every pelvic operation, as any abscess which might form could be opened later through the cul-de-sac of Douglas. The fear we had of pus in the tubes was lessened by the laboratory demonstration that living microörganisms were absent in the great majority of instances (one place in which research was of practical clinical value) and our fear of peritonitis from soiling the pelvic cavity with the contents of chronic pus tubes disappeared when this demonstration was verified by clinical experience. It was characteristic of the profession that it joyfully and promptly concluded

that pelvic drainage was always unnecessary. What are the facts? They are that virulent peritoneal infection introduced by means of the hands or instruments to-day is almost unknown in the practice of the modern surgeon, that leaks at the suture line in surgery of the large intestine are fairly common, no matter how careful the technic, that extensive raw areas in the pelvis may not of themselves be especially dangerous, but that they often cover badly damaged, even perforated gut, and that the combination of large oozing surfaces and damaged intestine gives an excellent culture medium plus the probability that the microörganisms will migrate through the intestinal wall, and last that pelvic pus of other than gonorrheal origin is not necessarily sterile, no matter how long it may have been walled in. It follows logically that prophylactic and protective drainage (cofferdam drains) still have a very prominent place in the practice of some of us who are doing abdominal and pelvic surgery, and it is to my own partiality for drainage, when in doubt, that I attribute the recovery of every case but one in the last 217 cases of salpingitis upon which I have operated, and the patient who died would have recovered if drainage had been practised since sepsis was secondary to slow bleeding from a vessel tied in the midst of edematous inflammatory tissue.

It is our belief that it is good surgical judgment to use a rubber dam prophylactic drain to the vicinity of sutured large intestine, especially if there has been injury during the enucleation of inflamed structures and the gut wall is infiltrated. That a cofferdam led through the vagina is all important if such enucleation leaves behind a large oozing area, and that an occasional instance of salpingo-oophorectomy even for presumptive chronic disease is saved by such drainage when raw areas are left after the removal of adherent pelvic organs whose primary infection was not due to gonorrheal salpingitis.

In a syndicated health article in one of the daily papers, I notice that a distinguished internist and ex-health officer gives advice something like the following to an inquirer who asks what to do for a beginning attack of appendicitis. Put an ice bag on the abdomen, go to bed, and take a cathartic. The article is not before me at this writing so that the quotation is not exact. It probably is well that the layman with appendicitis has too much pain to depend upon newspaper advice, but it likely would be better if the entire medical profession did not seem obsessed with the idea that calomel and salts or castor oil were sovereign remedies for every sort of abdominal trouble having pain as one of the cardinal symptoms. It would be

interesting to know how many patients with appendicitis have been sent to the Great Beyond by calomel and salts.

It would be more interesting to know how many had been tormented by unnecessary distention, gas pain, and loss of sleep because of professional belief in the postoperative cathartic fetich. Aside from this morbidity, it is our positive conviction that there is a distinct mortality from the same source due to the forcing of gas and liquid feces into the temporarily paralyzed gut and consequent torsion of that portion about adherent areas. Where this idea of the value of early postoperative catharsis originated is questionable, but it was probably from the teachings of Lawson Tait, and the notion that intraabdominal drainage could be established in this manner, plus the nervous anxiety of the surgeon who knows that paresis, obstruction, and peritonitis do not exist if the bowels move, but whose judgment ought to teach him that their absence is not due to the fact that the bowels are moving. Let me repeat in concluding this imperfect and admittedly dogmatic article that it is no screed against research, but the number of research workers is so small in proportion to our needs, the published results of researches are so frequently premature and unconvincing, that unless they are absolutely substantiated by thorough going clinical observation they are not to be accepted in lieu of the great laboratory which should exist at the receiving center for the five senses of the clinical surgeon.

DISCUSSION ON THE PAPERS OF DRS. YATES, SKEEL AND CARSTENS.

Dr. Gordon K. Dickinson, Jersey City, New Jersey.—The first aphoristic statement we have heard for a long time is "postoperative cathartic feeding." That will ring in my ears for some days to come. If my friend from Detroit would try Kemp's tube I think he would find it of some advantage. He says he has not used it, yet he speaks of postoperative cathartic feeding. He feeds his patients medicine and drugs and tries to push into the lame gut, that needs to be rested, something from above. This adds to the nausea for which he gives bread crumbs. Why doesn't he wash the stomach out and let the poor thing rest? There is nothing like rest in the belly. It cannot act well without it.

Some one has said that this is an age of observation. We have research laboratories; we make observations, but nobody is doing the correlating because we have five senses and but one brain. Our five senses are working overtime and our brain is lazy. The moving picture show is all the rage. When we go to a moving picture show it does not work our brain a bit. We see with our eyes, we hear nothing, and do not understand what the lips are saying. We

should observe our patients carefully. We should not put them into a hospital for the purpose of operating, but for the purpose of observation. Do not let Dr. Jones send in a case for Dr. Smith to operate upon to-morrow. Keep the patient under observation; study the case carefully; get the atmosphere for the patient and make her understand where she is. Do not give her opiates to put her to sleep, but put her to sleep with jollying and joking. Let humor prevail. Do not let her feel that "there is nothing to be done." You may cut down the bill if you do not find as much pathology as you expected because the patient will say, "You charged me so much when you said the operation was nothing." Nevertheless, you may have saved that patient's life. Above all things, study your case. Let your intern study it and you study it with him. Use your brains. Do not go to your laboratories until you have written your diagnosis in ink, and when you have written it, stand by it.

Dr. W. A. B. Sellman, Baltimore, Maryland.—This is a most interesting subject, and we all have the same feeling in regard to it. I must differ with the doctor who read the paper in regard to bringing patients into the hospital days or weeks before operating on them. One can easily see the evil of this. When a woman is brought to the hospital days before operation she becomes frightened. She is in a condition of shock before operation actually takes place. I believe in preoperative treatment in the patient's home where none of these disturbing influences are present.

I do not think we should operate on a case without knowing what the diagnosis is. We must make our diagnosis and then certain preparations are necessary. In some cases it is necessary to give an eliminant, that is, cathartics by the mouth to act on the intestines. In other cases one could give urotropin or formin because it is more easily secured, and is cheaper for the patient. But I think formin as given before operation is a most valuable drug, and by allowing the patient to be in a hospital only a short time before operation she does not develop fright and dread. If the patient to be operated on occupies a room adjoining a patient that is brought from the operating room, she is likely to develop fright; she is in more or less shock, and is therefore in a bad condition to be placed under an anesthetic and be subjected to a major operation.

In regard to the use of H. M. C. tablet, I have abandoned it entirely, and if the patient is restless, I give a hypodermic of morphine and atropin, namely, $\frac{1}{4}$ of a grain of morphine with $\frac{1}{150}$ of atropin an hour before operation or before the anesthetic is administered.

I have been fortunate in having a most excellent anesthetist in whom I have every confidence and I never take the anesthetic into consideration during my operation. My anesthetist is not diverted by watching the operation. I think the anesthetist should be a graduate physician, a man who has had years of experience, and one who has been trained in a large hospital. My anesthetist is a graduate of the Johns Hopkins, where he has had an opportunity of seeing a large amount of major surgical work done; he is a laboratory man, understanding the functions of every organ in the body,

and a very careful man, and he insists upon commencing the anesthetic with the essence of orange. He uses a bitter orange, claiming that sweet orange has no efficacy at all. He uses 25 per cent. of oil of bitter orange with seventy-five parts of alcohol. The result is we do not have our patient crying or struggling on the table; they do not dread anesthesia which I think is an important thing.

Many patients do not die from the shock of the operation, but death is due to shock which takes place before. The patients are in a bad condition, and if they go into a hospital a day or two before operation the shock is much less than if they are brought there and remain a week or two before operation. I think having them in the hospital several days before they are operated on has a bad effect on them. One patient will tell what she went through and how she felt after operation, and naturally the woman to be operated on will dread it and is in no condition for operation. She is not rested. Both her mind and body are active.

After an operation, if I find there is a great deal of pain, I give another hypodermic of morphine and atropin.

There is one point I would like to mention, and that is the use of drainage tubes. I do not use rubber drainage tubes any more; I use a cigarette drain of gauze wrapped with rubber tissue properly prepared. These drains are less disturbing and much more effective than a rubber tube which becomes clogged. This gauze is like a Turkish towel, it empties the pus basin, and you get the material out of the patient's body.

Dr. Albert Goldspohn, Chicago, Illinois.—In regard to the class of cases Dr. Carstens referred to concerning which there is some uncertainty as to the diagnosis, the women attending to their business and complaining all the time with a rather negative objective condition in the pelvis, he is inclined to ascribe this trouble to adhesions, and certainly adhesions do make such trouble. But every now and then we open the abdomen and pelvis and find adhesions that have not caused any trouble; and I am satisfied that adhesions are like paper, that will allow anything be printed on it. They cannot talk back. In a number of such cases I have ascertained the mode of life of such patients, the details of their domestic life, their individual habits, things they would not confess to their own mother frequently, and have found that some of these persistent complainers who have no clear objective pathology that one could find by the closest bimanual examination, have indulged in coitus interruptus, or were given to masturbation; and you will have to use all the skill and ingenuity that you are master of, to get them to confess. But it will often succeed. This abnormal habitual excitation of the sexual orgasm that is not gratified naturally is followed by a pernicious effect upon the pelvic circulation, in that it results in an excessive hyperemia. We see a varicose condition of the broad ligaments often enough; and I am satisfied that we do have varicosity of veins in the pelvis as well as we have it in the legs. In this condition the patient will have discomfort or pain. We cannot treat it in the same way that we do a varicose condition of

the legs; but we can usually offset it by an overcorrection in the sense of a suspension of the uterus up against the abdominal wall. And that can be done innocently if you know how to handle the round ligaments correctly.

In regard to the rest of patients in the hospital before operation: This is frequently needed in order to get their excretory organs in proper condition before assuming a surgical risk. Again, it is often needed to make acute inflammatory conditions in the pelvis subside properly, when they are not from the appendix, before operating. Occasionally I get a patient who has been the rounds of a number of celebrated surgeons, and has had proposed to her a gastroenterostomy or cholecystostomy, or some operation in the epigastrium, because when the woman came to the doctor she first complained of epigastric symptoms and her pelvic organs have been left quite out of consideration. I contend we cannot make up our minds finally as to what we will do for *a woman* until we have examined her from her head to her pelvis, beginning at the head and finishing with the pelvis. I believe we should go over the trunk as carefully as any specialist would and thoroughly convince the patient that we know her case before we pronounce a dictum with regard to her condition. What your dictum then is, she will have confidence in. There are cases where I cannot decide with certainty that the epigastric symptoms are due to pelvic lesions. In some of them I know that they are, when they come to me. In other instances, I cannot decide positively. I will put such a woman at rest in a hospital where she is under intelligent care and have her eat about the same things that she was accustomed to eat at home, properly prepared. But she must rest, and with bed pan service. She is not to get up to defecate or urinate. Constant complete recumbency soothes or stops both the local and referred symptoms of gynecological disorders. Accordingly, when the epigastric symptoms are of a referred nature, they will stop or greatly improve upon such preliminary rest treatment, and show that epigastric surgery is not needed, if the clearly pathological conditions in the pelvis are effectively cured.

Dr. William H. Humiston, Cleveland, Ohio.—All of the papers in this group just read are full of interest, but it is impossible in the time limit to discuss all of them.

With reference to the paper of Doctor Carstens, will state that it is possible to have a pelvic peritonitis in a patient who does not give up and go to bed—walking cases—but upon making a bimanual examination you will find tenderness and impaired mobility of the uterus. This impairment of mobility may be of any degree from slight, to a fixed condition. In cases that give evidence of having had a pelvic inflammation, do not curet the uterus, unless you immediately open the abdomen and correct fully the pathologic condition existing. The trauma of cureting the uterus and withholding complete surgical work is quite liable to be followed by a sharp reaction. The patient suffering with cirrhotic ovaries is a chronic neurotic. The constant pain wears them out together with the reflex disturbances of the circulatory system and digestive tract.

Are usually emaciated and the ovary can be palpated though smaller than normal. It is found firm and very sensitive. The tunica is thickened, and ovulation does not occur. While suffering all the time, the symptoms are all increased during the scanty menstrual period. Removal of this type of diseased ovary is essential to recovery. With but an occasional exception, I use the drop method of ether as the best and safest anesthetic. This requires a competent well trained anesthetizer to attain the ideal, and the postoperative vomiting is almost nil.

It is difficult to obtain a complete relaxation of the abdominal muscles from gas-oxygen. Besides we do have a goodly number of fatalities where it is administered by one of limited experience. I believe in lower abdominal surgery it is unnecessary to have shock. The two principal causes that produce it are hemorrhage and careless and prolonged manipulation of the abdominal viscera, both preventable in competent hands.

In that type of case that has suffered for weeks from tuboovarian suppuration, rapid pulse, some fever, loss of weight and strength, and free perspiration, who must have relief through thorough operative measures, I carry them safely over the operation without shock by a steady administration of sterile saline solution submammary during the half hour required to complete the operation. I have noted in many of these extreme cases a better pulse after completing the operation than it was for days prior thereto.

Dr. Charles L. Bonifield, Cincinnati, Ohio.—I have certainly enjoyed the paper of my friend Dr. Yates, as well as the very epigrammatic paper of Dr. Skeel. I have expressed myself on former occasions on the two subjects they have mentioned, so that I would not take the trouble to express my opinion again if it were not for the fact that they and you might think I did not still have the courage of my conviction, and that I was not still doing my own thinking in religion, politics and medicine.

Dr. Yates insists on giving these patients large doses of opium to benumb them, to stop elimination. If there is anything on earth we have learned in modern surgery, it is that we can assist nature by elimination. You can control pain; you may control vomiting often by putting the patient profoundly asleep. But you are simply shutting up the fire in the hold of the ship; you are not destroying it. On the other hand, if by stimulating these secretions of the kidneys, the skin, and the activity of the bowels, you hasten elimination, you are driving the thief out of the door. This treatment by opium was tried by the profession and weighed in the balance and found wanting before I began to practice medicine. Certain members of the profession are trying to bring it back. It had an element of truth or it would not have survived as long as it has, but its value after abdominal operation has been disproved time and again.

The other thing I want to talk about is purgation. Doctor Skeel seems to think that the bowels, after the abdomen has been opened, are so damaged or injured or insulted that to rid them of their

normal contents is to invite disease, and he wants to know where we got the idea that purgation does good. I will ask him if purgation does not do good in other conditions. All the nose and throat men purge their patients the first thing in pharyngitis or tonsillitis. If you have an acute inflammation of the eye and call in an ophthalmologist, he is very likely to give you a free purge. Lawson Tait instituted this treatment of purgation, and I got the idea of purgation by watching the immediate effects when that treatment was put into operation by my teacher Dr. Reamy, and his mortality was instantly reduced. From that time to this, I have always watched my own cases closely, and while I do not purge every case by any manner or means, yet at the hospital where I do much surgical work the Bonifield routine is well known, and when I get away from it my interns and my assistants tell me to go back to it.

A year or two ago I tried to use pituitrin, a dose every three or four hours instead of a purge, and all the boys working with me said, "Let us go back to the old routine." I admit that my patients are more uncomfortable than the average man's patients the day after operation, but I contend that the day following that, and the day following that, they are further advanced than the patient who is loaded with feces. I have learned this by bedside experience; I did not read it in any books. When I began to take care of laparotomy cases for my predecessor the work was done largely at houses in the days when we had few trained nurses, and I nursed these cases myself, I watched the effect of this treatment hour by hour, and it was from bedside experience that I came to these conclusions.

Dr. William Seaman Bainbridge, New York City.—The subject of Dr. Yates' paper is so important that it is to be regretted that only twenty minutes can be allotted to the essayist and only five minutes to each one who discusses it.

In the preparation of the patient for the strain of a major operation as great care in every minute detail should be exercised as is given to an athlete about to engage in any important physical contest. In emergency cases, of course, this cannot always be done, but even in these cases the preoperative care should be as complete as possible. It is my practice, where circumstances permit, to begin the preoperative preparation of the patient with the mouth and to go right through to the anus. Particular attention should be given to putting the teeth in a reasonably clean condition before operation, and the rest of the mouth, the nose and the throat, especially the posterior pharynx, should be put in as good condition as possible. As to the remainder of the alimentary canal, all are agreed that it should be thoroughly cleared out, whether by enemata or by cathartics. I do not advocate the use of large doses of castor oil the night before the operation, thus rendering the patient wakeful and restless when quiet is so important. The gastrointestinal tract should be cleared out three or four days before operation, and a suitable diet of easily digested articles ordered, thus forestalling acidosis of the starvation type. It is better to remove gas before the patient is in a depleted condition than to remove it after opera-

tion. It is better to fortify the patient before operation. It is, therefore, my routine practice to hydrate with an alkaline solution or dextrose water for two or three days before the surgical intervention. More attention should be paid to the condition of the urine. If the urine is of high specific gravity, as Dr. Humiston has said, one should not proceed until this is corrected.

Urine markedly acid from the by-products of the intestinal canal or other toxins should be rendered mildly acid or neutral before proceeding. This may necessitate the use of colonic irrigation, which I have found of great value. I sometimes order 6, 8, or even 12 gallons of alkaline water during the day, using the Kemp tube, or the two rubber tubes employed by Dickinson for postoperative irrigation, inserting one 8 inches and the other 2 inches, and using a teaspoonful of bicarbonate of soda to the pint of water. With the requisite care on the part of the nurse, this plan will soon bring the urine to the neutral point without discomfort. In many cases I employ hypodermoclysis. I have found this advantageous in severe abdominal operations, such as colectomy, or the removal of other abdominal organs. After the anesthesia is complete the hypodermoclysis needles are inserted under the breasts, and from 2 to 3 quarts of saline or tap water introduced, the administration continuing throughout the operation. After the operation, if necessary, soda solution, 1 dram to the pint of water, is given by the Murphy drip, 40 drops to the minute. Experience has shown, in my hands and those of many others, that the use of 1 to 3 quarts of normal saline solution, introduced under the breasts or into the rectum, is distinctly advantageous, and is taken up by the patient without necessarily throwing too much weight on the heart or overloading the kidneys, as some have suggested, although such possibilities are to be borne in mind. After operation I never employ saline solution, preferring bicarbonate of soda or tap water. To continue the saline would certainly entail the danger of overloading the kidneys.

Referring to the matter of rubber drainage, I have followed the practice of Sir Berkeley Moynihan of having a spiral slit in the tube for all drainage other than that of a hollow viscus. The use of gauze drainage is most questionable.

Dr. James E. Davis, Detroit, Michigan.—Referring to Dr. Carstens' paper, I want to make a plea for a closer study of gross pathology. It does not seem that anywhere in this country is there an adequate assembling of material for a careful study in gross pathology. Some of the laboratories are beginning to do this work, and already there is a good beginning, but physicians could be made better diagnosticians if we had the opportunity of studying on an extensive scale gross pathological material.

Just one example of how valuable the observation of gross pathology is in the study of gynecological disease, let us take, for instance, the examination of Skene's ducts, the uterine cervix, and the orifice of the Bartholinian duct in revealing when we have gonorrheal infection. A careful study of these parts will help us materially in

making a diagnosis of gonorrheal conditions, which we all admit are etiological for a great deal of the pathology found in the pelvis.

Dr Yates has spoken of demonstrable pathology. That is largely a personal equation. One man will notice what another man may not notice, so here one must be specially trained for advantageous observation in gross pathology.

I think Dr. Skeel has rather minimized the work of research workers. I think this lesson should be taken by clinicians. If we would use somewhat the same methods that the research workers use, we would be able to advance our clinical methods very much more rapidly than we do.

Dr. Yates spoke of the use of small quantities of water following operations. I believe that small quantities of water are not of any particular advantage. It has been shown by Hertz that if you give a smaller quantity than 4 ounces of water on an empty stomach, it will remain there for a long time until the quantity accumulates to over 4 ounces. If we give 8 ounces or more the stomach will contract and empty that amount of water easily in thirty minutes, or if the patient wishes to vomit he can do so more easily rather than strain with a spoonful, or 1 or 2 ounces.

In regard to the use of formin, it does not seem to me that it is a wise procedure, when we find that the centrifuged urines under the microscope will very frequently show numerous red blood cells after you have given a number of doses of formin. This cannot be a safe procedure to follow, during a number of days preceding operative measures.

In regard to catharsis, Novy, and DeCrief have shown in an unpublished work that sensitization can be secured by injury to the epithelium of the gastrointestinal tract. If we frequently examine the epithelial surface of the alimentary canal, we will be surprised to notice the number of erosions that take place following vigorous catharsis, and if we allow proteins following this there is often a very marked sensitization produced which is most deleterious for patients about to be operated upon. Many of us have recollections of the vigorous catharsis after seeing these patients the next day. It is much better to give cathartics long enough before an operation, so that the patient can recover from any sensitization that may result.

In regard to the submammary use of salines, Novy and DeCrief have also shown in the use of salines we can have marked sensitization in many patients. Just two weeks ago I saw an example of very marked sensitization, from the use of salines given under the breast.

Dr. O. H. Elbrecht, St. Louis, Mo.—The subject of normal saline solution given under the breasts or by proctoclysis has received too little attention in this discussion. Dr. Bainbridge spoke in rather large figures as to the amount of saline he gives under the breast, he said 2 or 3 quarts. I think we all have given too much at some time or rather for there is no question but every now and then we meet with cases that we are overloading and notwith-

standing all the nice surgical work done on the operating table, we are likely to kill such patients by overloading the heart too suddenly, and this applies whether the saline is given under the breast, intravenously, or otherwise. I feel certain that I have made this mistake like many others in my earlier work.

DR. HUMISTON.—How do you give it?

DR. ELBRECHT.—By all three methods.

DR. HUMISTON.—The absorption is slight.

DR. ELBRECHT.—You should figure on how much fluid you are throwing in at one time. If you use several quarts and patients are weak from shock they cannot handle it. It is better to give say 750 to 1000 c.c. and repeat it if necessary. The same thing is true of ordinary saline given by proctoclysis, where overabsorption sometimes takes place, for these patients become edematous and no doubt many of you have seen this phenomena. The point I wish to make is that saline intravenously can be overdone, and saline given under the breast can be overdone. If you would save your patient with saline-solution you can do so just as well with a pint and a half or a quart and repeating the dose on indication rather than by giving too much at one time. If this rule is not regarded it is just the same as putting too big a load on a tired horse going up hill, because of the of the load being too heavy he will have to stop and just so with a weak heart that is overloaded.

DR. CARSTENS (closing on his part).—I have nothing to say in closing the discussion on my own paper; I would like to say a word or two about the other papers.

On general principles, I agree with most that has been said by Dr. Yates. You must get the patient in good general condition, having no material in the intestines that will create irritation. I try to do that. Before I send the patient to the hospital, if I possibly can I treat her for a while, when I do not know whether I shall operate or not. I try to put her in as good general condition as possible, and let her take, if necessary, cathartics a day or two before she is sent to the hospital, and when I decide she needs operation, I operate the next day. There are, however, cases in which I cannot make that necessary diagnosis at the patient's home. I have got to have them in the hospital where I can have a blood examination made and a Wassermann test, and the urine collected for twenty-four hours. That cannot be done in the office, hence the importance of sending them to the hospital for three or four days before operating, and if they do not require operation I send them home. This habit of having patients in a hospital several days before undergoing an operation is dangerous. Such a patient, if she hears another patient scream, is put in an unhappy frame of mind, and she thinks that the Society for the Prevention of Cruelty to Animals should come in and get busy. (Laughter.) Only last week I heard a patient scream to such an extent that she could be heard on three different floors of the hospital. I asked what was the matter with the patient, and was told that she had a severe pain, that her doctor did not believe in giving morphin. Like my friend

Bonifield from Cincinnati, I suppose this practitioner believed in giving cathartics. I would like to ask, what in the name of common sense are morphin and opium made for anyway except to relieve pain? If a doctor cannot relieve pain, of what use is he anyway? I believe we should give morphin or opium or any drug to relieve the pains of these patients. If a patient has had for several days food that is free from purin matter, and the stomach and bowels are in good condition, a couple of doses of morphin will relieve that patient and give him or her a good sleep for twenty-four or seventy-two hours. It will not hurt the patient because he or she does not need elimination. There is nothing to eliminate.

When it comes to giving a patient with an injured intestine which you have been cutting or slicing up, and sewing it end to end, or making a hole in the stomach and joining it to the opening in the intestine, and so forth, I think it is the most absurd thing that I can think of, and I regard it as mighty poor practice. What do you do with a patient who has a fracture? You do not give that patient any cathartics, do you? No, you put the leg in a splint to keep it quiet, so that circulation can be reëstablished and the lymphatics can be at work to absorb the dead blood, and that patient in a week will feel good. The same thing applies to an injury of the intestine. An injured intestine is like a sore leg, if you give it a little rest and do not move the patient's bowels for four or five days, thus giving the poor, sore bowel rest, the patient will get along very much better. In some cases you do not give enemas, In other cases you need to wash out the stomach, but to say we should never give any morphin or cathartics is very absurd. A good dose of opium will keep many of these patients quiet. We must treat each individual case by itself, and therefore I would heartily endorse what Dr. Yates has said. When I was engaged in general practice I had hundreds of cases, and I could not attend to all of them as I would like to have done and do my obstetrical work as well. When I developed into an abdominal surgeon I found out I could not do abdominal surgery successfully and attend to obstetrics as well, then I had to give up obstetrics and devote myself exclusively to abdominal surgery, so that I could devote my individual attention to these patients and not depend upon my house physician and the nurse and others.

Dr. Yates (closing the discussion on his part).—Dr. Carstens in his remarks has brought out practically all that I was going to say, particularly with reference to the comparison he made of the broken arm and injured intestine.

Dr. Dickinson's manner of putting patients to sleep by hypnotism is splendid, and I presume down in New Jersey they sleep that way. Many of my patients are frightened when they come to the hospital, and if they are not frightened, they are nervous so that they are mentally unrested, and I give them a suitable remedy to make them sleep. It may be opium, trional, or something else. If I put the patient at rest by giving such a drug she is ready for operation the next day. I do not know that we all believe in what Dr. Crile does,

namely, anoci-association. I do not suppose we will believe in that, but Crile's microphotographs and pictures show the condition of the brain cells before and after excitement, before and after injury in all these cases which make up the symptom-complex of shock. We cannot get away from that point, and if we give a patient enough opium or anything else, paying attention to the elimination, that patient is going to rest, and when he or she comes to the operating table the next day, she will be in a better condition for defense. She needs all the defense she can get from the most of us.

Dr. Dickinson said that so far as he was concerned, he believed that we should make our diagnosis and stand by it, and that was all there was to it, but that we should go and have our laboratory findings, etc. I am glad Dr. Dickinson has that erudition. Personally, I have to use a stethoscope to listen to the heart; I have to use an instrument for observing blood pressure; I have to use the urinometer; I have to use the blood counting apparatus; I have to use the Wassermann test; I have to find out if my patient has a leukocytosis or if he has not, and all of these things are simply methods of precision, the same as our palpatory or auscultatory methods are means of precision; they are the means of helping us to make a diagnosis, and unless the surgeon of the present day uses these means he will not make a proper or accurate diagnosis.

I do not know exactly what Dr. Bonifield's position is with reference to purgation. I do not know what he means and when he begins it; but in the preparation of this paper I have endeavored to show that we should attend to the elimination of these patients and have their bowels free one or two days before operation is performed, and that we should have the patient's bowels at rest and, if necessary, give a dose of opium. After a patient is convalescing for a couple of days, it is the common knowledge of all of us that we feel better if we can get a little elimination, and if we can do it by some natural means, we find the patient feels better. We feel better if the patient has free elimination. It helps the passage of gas and all that sort of thing, but if we have a patient who has pelvic peritonitis or any other kind of peritonitis, which is more or less diffused, with a soiled peritoneum, it is the type of case that should have opium. The intestines should be kept quiet and thus keep the infection from being disseminated by the movements of the bowels.

Personally, I have never had bad results from using salt solution intravenously. There is a trend against it. I do not know how much truth there is to it. Novy has said some very interesting things on the subject and he seems to show that normal salt solution intravenously may produce anaphylactic shock. He also says that transfusion of blood and the infusion of salt water in the veins, or any other thing used in the veins, is more or less toxic, and it depends largely on how much we use as to when and how much toxicity we get.

I do not have very much fear about using all the water we can use;

I do not think it overloads the heart; it does not hurt the heart. If there is anything that adds to it, it is the bicarbonate of soda.

DR. ELBRECHT.— said that water is all right.

DR. YATES.—I beg your pardon.

DR. SKEEL (closing the discussion).—I have not very much to say in conclusion. There has been a fine flow of oratory but after all not much has been said. (Laughter.)

So far as salt solution is concerned, there is no question but that Dr. Elbrecht is right. I had unfavorable results from using it and discontinued it two or three years ago.

Dr. Davis seems to think I belittled the efforts of the research worker. I did not do that. In speaking of the interrelation of this most important adjunct to clinical work I stated that the research man was pouring forth on us many things that were absolutely unproven, and that only occasionally could we pick up something that was valuable from the entire mass of material. Unquestionably the research workers are doing their best, but their premature exploitations are not of much help to us as practitioners; therefore, we must use our five senses. There is no doubt about the efficacy of laboratory work.

In these days we are confronted by many theories to explain facts known for many years, one of which is the demonstration of brain cells showing the effect of fear on the Purkinje cells. The possibility that fright might cause death has been known for a hundred years, and one of the earliest physiological stories I can remember is that of the student frightened to death by being slapped on the neck with a wet towel when he was expecting decapitation. The same thing is true with reference to the theory of acidosis. We have known for a great many years that patients who have been operated upon may starve to death on an insufficient liquid diet. Now we have a new fad the hydrogen ion concentration to explain it, but the fact remains precisely as was known before.

I quite agree with Dr. Bonifield that patients feel much better after their bowels move. If the intestinal tract has been tortured by the tenesmus following the administration of calomel and salts it is not at all strange that the patient feels better after the distress incident to their administration has passed off, but he would feel equally well if they had not been given at all and would have been spared that one day's discomfort.