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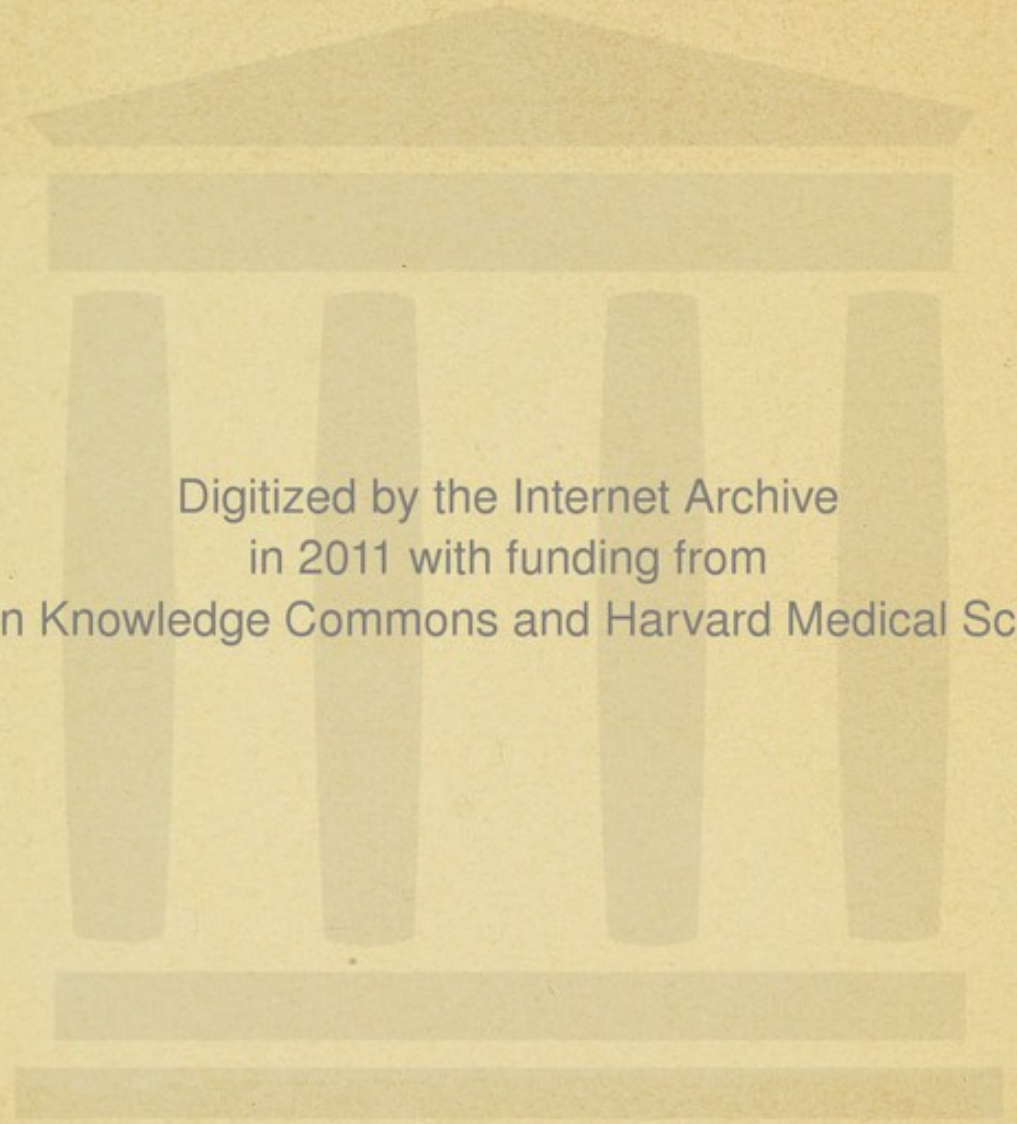
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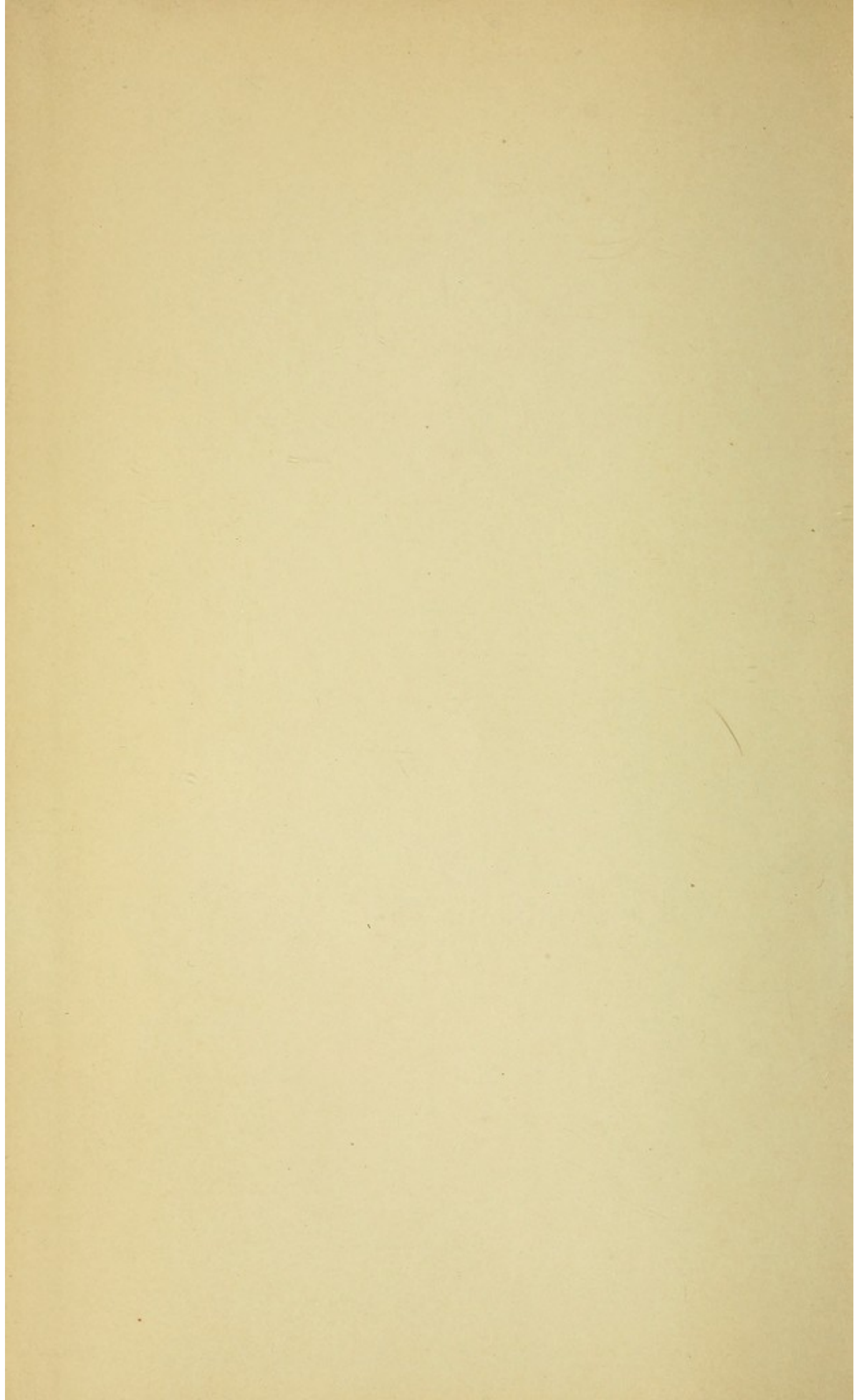
BORDERLAND SURGERY

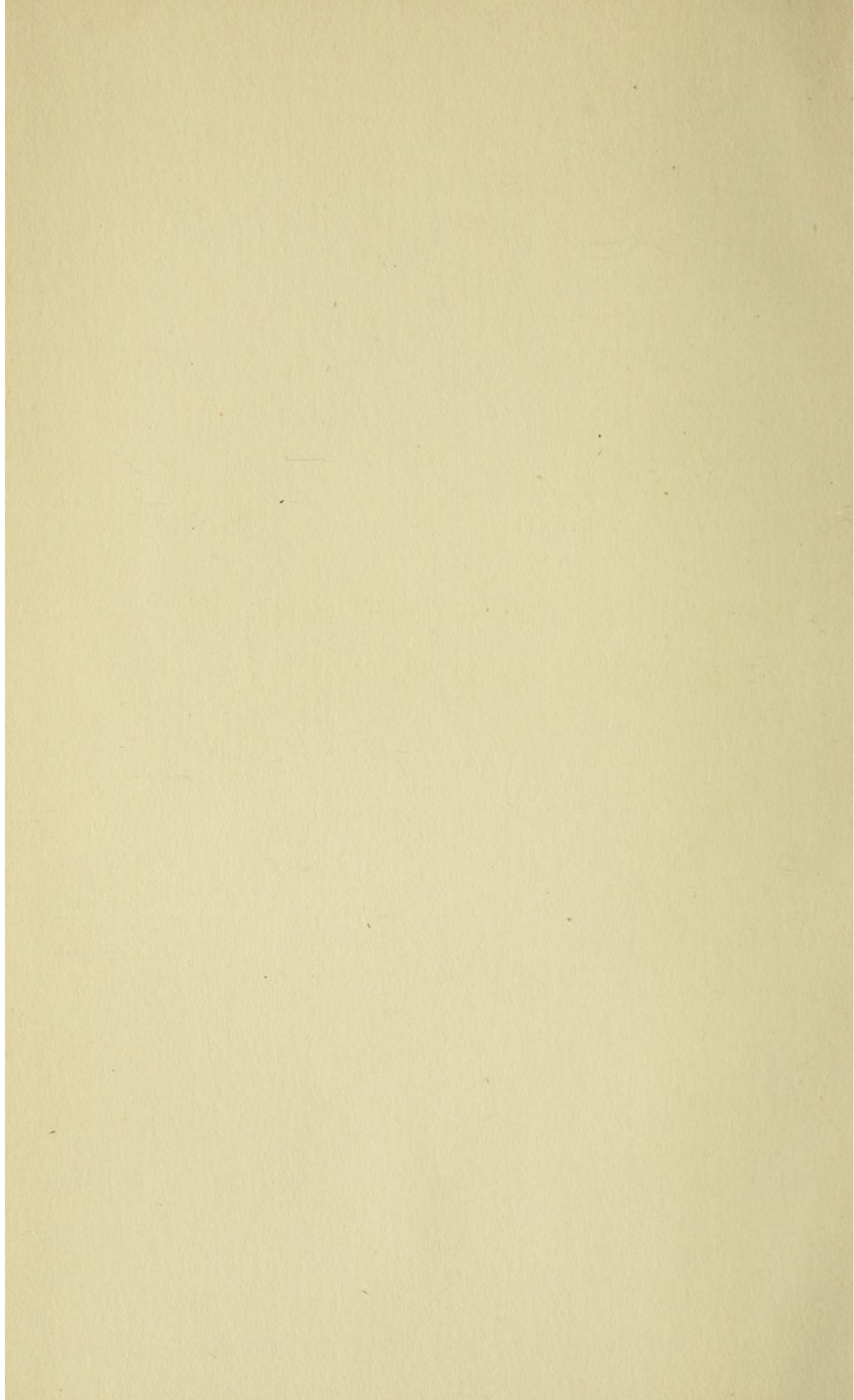
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PRACTICAL SUGGESTIONS IN
BORDERLAND SURGERY

TO
MAJOR CHARLES LYNCH
MEDICAL CORPS, U. S. ARMY
IN APPRECIATION OF HIS SIGNAL SERVICES
RENDERED THE SCIENCE OF MILITARY
SURGERY AND THE AMERICAN
RED CROSS

PRACTICAL SUGGESTIONS
IN
BORDERLAND SURGERY

FOR THE USE OF
STUDENTS AND PRACTITIONERS

BY

^e
GUSTAVUS M. BLECH, M. D.

Professor of Clinical Surgery, Medical Department Loyola
University, Chicago; Director-in-Chief Illinois
Legion American Red Cross; Sur-
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coln Hospital, Chicago,
etc., etc.

"Non medicamentis sed medica mentis."

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PUBLISHERS' NOTE.

In this big-little book by Dr. Blech, a surgeon more than usually observant, as will be readily seen, of the technical details of his profession, we think we have given to followers of his art a veritable *multum in parvo*. In no monograph of an equal size on the subject, we venture to assert, will be found so much that is eminently practical, so many invaluable points to guide the surgeon in those far from infrequent cases in which even the most experienced judgment will sometimes halt before the problem of operative or non-operative procedure. The book is brief, concise, and always to the point, and if the author's Continental training is exhibited in his undoubted leaning toward a greater conservatism in surgical practice, it must be remembered that a similar tendency is making itself felt among the brightest and most progressive minds of the profession in this country also; a natural and inevitable reaction from the somewhat unhealthy stimulation which has resulted from the marvelous surgical successes of recent years.

The original features of the manual are numerous and striking. To mention only a few—Freund's operation for emphysema, the X-ray treatment of prostatic hypertrophy, the injection of alien blood into that gland as a therapeutic measure—will be sufficient to direct attention to the great practical value of the work as a medium

of ready reference, especially when the conclusions arrived at are the result of long years of experience in the operating room, and not the mere theories of a speculative bookworm.

The publishers would have much preferred a more comprehensive work on the lines indicated, but the successful practical surgeon is not as a rule a prolific writer, although Dr. Blech's work is not amenable to criticism even in that respect; and it has taken us just one year of almost constant solicitation to worm out of the busy author sufficient copy for the little monograph herewith presented. But it is not an unusual thing to see a small tree bearing far more and better fruit than a big one, and we believe, as we said at the start, that there is more concentrated extract of good common sense crowded into this little volume than will be found in many of the fat octavos which waste so many hours of the busy surgeon's time in consultation; and common sense is, after all, an important element in successful surgery, as it is in every other department of life.

PROFESSIONAL PUBLISHING COMPANY.

FOREWORD.

It was with great reluctance that I accepted the urgent request of the publishers to contribute the present volume to contemporaneous surgical literature. Were it not for the fact that the subject-matter has always strongly appealed to me ever since I have begun to wield the scalpel the following lines would have never seen daylight.

This is a surgical age. One need only glance at periodicals intended for general practitioners to find that surgical themes predominate. The surgical wards in hospitals are nearly always full with patients, while many empty beds can be counted in the medical wards. Surgical clinics are crowded by eager students, while professors of internal medicine must thank the roll-call for whatever audiences they face. The recent graduate hangs out his shingle and from now on has but one aim—to operate. The exceptions only prove the rule.

Men like the late Senn have tried in vain to stem the tide of this gigantic wave, which he has aptly called *furor operativus*.

The recklessness with which unfortunate patients are urged to mount the operating table, the dire results following operative procedures, especially at the hands of the unskilled, are appalling. The invalids recruited from the surgical wards, the unfortunates who have gone to their graves after operations, form a mighty army that can

but serve to discredit an art and a science which, properly directed, should bring blessing to countless sufferers!

The present volume may be looked upon as an appeal for sane and rational surgery in that class of affections commonly designated as borderland diseases.

If I have succeeded in enabling the earnest general practitioner—the occasional operator—to properly answer the great question, when to operate and when not to operate, at least in some of the cases usually encountered in practice, my labor is more than amply repaid.

I have added a few hints, with a view of stimulating the novice to become a better and, therefore, a more successful surgeon. I trust no exception will be taken by the reader to this feature of the work.

I bespeak for my modest effort a reception with the same spirit in which it is tendered to my younger colleagues.

G. M. B.

72 East Madison St.,
Chicago, April, 1910.

CHAPTER I.

INTRODUCTORY REMARKS.

HISTORICAL RETROSPECT. Sixty-five years ago Dieffenbach, the foremost surgeon of Germany of his time, wrote in his "Operative Chirurgie": "Modern surgery has achieved the highest pinnacle as regards the magnitude of operations. * * * Looking around from this height one notices no more fertile soil at that altitude." In other words, surgery had nothing more left to conquer. The same author referred to hysterectomy as "one of the horrible operations, which should be banished from the domain of surgery, for the operation is equally as stupendous as if one wanted to remove the spleen, the kidney or some other diseased organ."

It did not take sixty-five years since the great master gave way to his sentiments in so drastic a language to see thousands of uteri, kidneys and spleens and "other diseased organs" successfully removed in thousands of modern hospitals. In fact, surgery of the twentieth century looks upon these achievements as scarcely of much importance, when compared with the advances made during the last decennium, and it is almost impossible for any one to predict when the "highest pinnacle" shall be reached.

The student of medical history will bow in reverence to the memory of those great path-

finders who have made possible these amazing advances. America has given the world ether, and with one stroke the horrors of the operating room have vanished. England and, indirectly, France contributed the discovery which has exterminated the scourge that has decimated the inmates of the surgical wards. Germany has taught us how to save the patient's strength by preventing the sapping of his vital fluid. America has of late shown the way to minimize the hazardous effects of extensive surgical dissections. Thus it would seem that we have now reached a stage where a human being can be subject to any surgical operation with scarcely any risk, since pain, hemorrhage and sepsis are virtually done away with. Surgery has ceased to be an art only, it has become a science, nay, almost an exact science! Theoretically all of that sounds very well indeed, but in practice the operator often enough sees the other side of the medal.

DANGERS AND DISADVANTAGES OF SURGICAL OPERATIONS. Every surgical operation of any magnitude—and by operation I mean the creation of surgical wounds—represents a distinct trauma, an injury to individual tissues directly and to the entire organism indirectly. In spite of all our advances, in spite of all our precautions, shock, hemorrhage, infection and embolism are dangers which make their appearance often when least expected. Death due to either of them or to the anesthesia is no great rarity

even to-day. To this must be added the fact that even under the most favorable conditions operation is at best a disagreeable therapeutic measure, not always sure to be followed by a cure of the affection for which it has been undertaken.

The decision to operate, therefore, except in such cases in which we have to deal with a vital indication (e. g., herniotomy for incarcerated hernia, tracheotomy, for laryngeal obstruction, etc.), should be rendered only after due and careful consideration.

The surgeon will do well to propose to himself in every doubtful case the following questions:

(1) Are there any non-operative methods known to medical science that have proved successful in similar cases, and, if so, have they been given a thorough trial?

(2) Assuming question 1 to be answered in the negative, what are the chances of a complete cure by an operation?

(3) If a complete cure is not to be expected, are the partial benefits to be derived from the proposed operative treatment such as to justify the risk and disadvantages incident to surgical therapy?

Could these questions be answered with any degree of certainty, our art would indeed be an "exact" science. But the fact is, the problems involved cannot be solved with mathemat-

ical precision, a circumstance which rather adds to than detracts from the dignity of our vocation."

Chemistry, physics, mathematics are sciences commanding universal laws which tolerate no deviation. Medicine has to deal with individuals, each a world of its own. The much abused and ridiculed word, "individualization," has a deep meaning. Just as the word "idiosyncrasy" has been dubbed an admission of our inability to explain phenomena which had not been anticipated, just so has the word "individualization" been characterized as our inability to apply "formulae" to given "cases." Boas¹ correctly says of it: "that which appears to one as a sort of mystic art with which the inexperienced does not know what to do, becomes in the hands of the experienced, trained physician a law acquired through knowledge, with which he can work successfully and produce efficient results." And while this shot is aimed at internal therapeutics, the genial author admits that the importance of individualization applies also to surgical diseases.

It would appear, therefore, that the element of "luck" has very much to do with successful issues. To a certain extent, it must be admitted no human being be he ever so trained and skillful can know with positive certainty how the very simplest of operations is going to terminate.

¹Grundlinien der therapeutischen Methodik in der inneren Medizin. By Prof. Dr. S. Boas, of Berlin, Leipsic, 1909.

But in a majority of instances the surgeon can predict, at least with a mathematical probability when success should follow operative procedures.

To do this the surgeon must not only possess diagnostic skill but must be familiar with the dangers of operations and the conditions required to bring about successful issues in the largest possible number of cases. These problems are taken up in the three subsequent chapters.

CHAPTER II.

DANGERS INCIDENT TO OPERATIONS;
THEIR REDUCTION TO A MINIMUM.

THE DANGERS OF ANESTHESIA. In a rather busy career I have had but one death case directly due to the anesthetic, and this with a procedure with which I was not familiar and under circumstances over which I had no control.

The patient was a middle-aged Greek merchant, to whom I was called in consultation by his physician, Dr. C. Petrulas, of this city. I arrived at the patient's house at about 7 A. M. The patient had not urinated all night. He seemed to be in a fair condition considering the gravity of the situation. The bladder was found empty. A history of "gravel" was given, extending over a period of several years. I diagnosed anuria due to impacted stones probably in the pelves of the kidneys. The man was in possession of all his faculties, and consented to his immediate removal to a neighboring hospital. At least a one-sided nephrotomy was decided upon as a life-saving measure. Patient arrived at the hospital about forty minutes after the termination of the consultation, and was immediately taken to the anesthesia room. His pulse, which had become worse during the trip in the ambulance, improved somewhat after the administration of an enema of physiologic salt solution. The region to be operated on was now being prepared and Dr. Petrulas and myself stepped into the dressing-room to scrub up. This over, we entered the operating room. The patient was on the operating table and the house anesthetist was administering gas and oxygen. While a gown was fastened on me I noticed the patient did not breathe. The mask

was ordered by me removed, but one glance at the patient's pupils convinced me the man was dead. Hoping against hope I resorted to all known measures of resuscitation—in vain. A partial necroscopy confirmed my diagnosis. The heart was not removed.

I shall comment on this case later on.

For years I had given chloroform, drop by drop, on an Esmarch mask without any trouble. The gentlemen who did this part of the work for me were carefully selected and had been cautioned again and again not to leave the patient out of sight even for an instant. The continued successes made me so bold as to say to all with whom I talked on the subject that deaths due to chloroform were to be laid to the carelessness of the anesthetist. I simply could not understand the frequent newspaper reports of deaths on the operating table before the surgeon had begun to operate. A few years ago a member of my wife's family entreated me to "curet her" for an annoying metrorrhagia which I believed was due to an endometritis. I agreed to do so at her house and took with me one of my best anesthetists. Everything went well and I began to dilate the cervix. I noticed that the abdomen ceased to move, as it were, for that was as much as I could observe in the sitting posture. I jumped up and saw my fears confirmed. The anesthetist, too, had noticed the cessation of breathing, and threw aside the mask. Pulse could not be felt. I do not know how much time elapsed, but after forcibly beating the heart region (Kœnig's massage) and practicing artificial respiration, etc., for what

seemed to me an eternity, the pulse reappeared and the patient gave at first a few jerky gasps and then resumed the proper respiratory function. I concluded the operation without an anesthetic.

The next case happened the very next day after I was through operating on a young woman. The dressings had been applied and the nurses were preparing to roll her out when I noticed that she stopped breathing. The pulse could scarcely be felt. She was resuscitated in a minute or so.

I was now completely cured of my folly. I had learned that chloroform is treacherous, and I made up my mind to give this subject serious attention. I began to study all the available literature on the subject, and finally decided to go to Germany and investigate the so-called drop method of ether anesthesia.

It is now over four years that I have followed this method without any trouble whatever. I am not prepared to say that it is an absolutely safe method, though we have used it in most desperate cases, but I can say with certainty that it is as safe a method as has been devised to date. One thing is positive, however; the sudden deaths on the operating table, due to chloroform (death often enough has taken place after the inhalation of the first three or four drops) are impossible. Paralysis of the heart cannot occur before the cessation of respiration. But even if the latter do occur, resuscitating measures—artificial respi-

ration, electricity, etc.—can be instituted with great promise of success.

Ether has been acknowledged to be relatively safer than chloroform, even at a time when the so-called drop method was not yet in vogue. Gurlt, who has collected statistics for the years 1891-1897, reports one chloroform death to 2075 anesthetics against one ether death to 5112 narcotics.

But these statistics have lost their value.

It has been held out against ether that it has a deleterious effect on the kidneys and the respiratory apparatus.

The former objection has been thrown out by several German observers, who have undertaken many series of painstaking and convincing experiments. I myself have never seen any changes in the urine of etherized patients, who have been normal before operation. Whenever albumen or pus was discovered before operation, quantitative analyses were made and recorded several times. Examination after operation showed no increase in albumen or pus.

Ether pneumonia cannot be denied. We have never seen it occur in patients with normal bronchi and lungs. An existing bronchitis is apt to be aggravated. If any of these patients have passed also a pneumonia, it has been so mild as to escape any notice. At any rate preventive treatment will do much to lessen the danger even in this respect.

“Gas and oxygen” have been recommended as

the safest of all general anesthetics. The death case reported in the beginning of this chapter has shaken my faith in it. True, the patient was in a precarious condition, and the presence of a heart lesion could neither be confirmed nor denied, but I cannot help thinking of the many patients with organic heart lesions on whom I have operated with fear and trepidation, and who seemed to bear the anesthetic no worse than the other patients. In plain language I am inclined to think that had the patient referred to been given ether by the drop method, he would not have died from the anesthetic. I am not prepared to say that he could have withstood the shock of the operation, but that is a different problem, with which we are not now concerned.

I have occasionally used ethyl bromide for operations requiring but a few moments. I do not like it. I don't think the anesthesia produced by it comes near the ideal—a sort of natural sleep—as is produced by ether if properly administered. Possibly I am wrong, but the methods used to introduce some of the preparations which have been labeled with some proprietary name, show the anxiety of the manufacturer to advertise his wares rather than the scientist's earnest search for truth.

The injection of cocaine or its surrogates, stovain and the like, after the method of Bier (subarachnoid anesthesia) is not entirely free from danger, and applicable only to operations of the lower extremities, perineum, and possibly

abdomen below the umbilicus. It must be conceded, however, that in elderly, decrepit persons Bier and his pupils have had excellent results, the bad results having occurred in younger adults.

Of late Jonnesco, of Bucharest, Roumania, has introduced a modification of Bier's method by adding strychnine to the stovain. By injecting this solution practically anywhere in the spine he is able to produce anesthesia throughout the abdomen and thorax.

Jonnesco's method has not found favor with American surgeons. We can ignore the strictly personal allusions that have been made against the man's methods of introducing his modification while a visitor in the United States, though these have served to prejudice many against the method. It seems to me that the method has not been tried sufficiently to justify any definite conclusion. One thing appeals to me as worthy of serious consideration, and that is the right of the patient to be unconscious of anything that is going on in the operating room. Ether narcosis is humane—subarachnoid analgesia is not.

This very principle prevents me from speaking as strongly in favor of local anesthesia as I personally would like to. In skillful hands the hypodermic needle proves an excellent anesthetizing instrument even for operations that have been designated as major. I have operated for all sorts of superficial tumors, hemorrhoids, hernia, under local infiltration anesthesia. Occasionally I have performed even laparotomies, resection of

ribs (the periosteum must be infiltrated before cutting the ribs!) with scarcely any trouble whatever. Often it has become apparent that the anesthesia would fail and I had to fall back on ether. In general I would say that given a phlegmatic patient and a region to be operated that is not acutely inflamed, local anesthesia is not only indicated but the safest and best method of preventing pains known to surgery.

The hypodermic injection of scopolamin, which created so much excitement three or four years ago as a general anesthetic, has assumed a definite place in narcology. No conscientious surgeon would dare depend on that drug only. Should intoxication occur then the surgeon is practically helpless, for we possess no antidote. At present scopolamin is used as a preliminary to ether anesthesia. It is claimed for it that it reduces the quantity of ether needed and lessens the post-operative thirst, nausea and vomiting. This claim is based on facts. Nevertheless I have returned to morphia and atropin whenever such a preliminary treatment seems indicated (goitre!).

For the benefit of such readers who are not thoroughly familiar with the so-called ether drop method I append our technique in a few brief sentences:

Every patient is thoroughly examined as soon as he enters the hospital. This includes examination of the nervous system, heart, lungs and kidneys. Special attention is paid in the anamnesis to whether the patient has ever had pneumonia, pleurisy, asthma and the like.

If a lesion be found, suitable internal medication and dietetico-hygienic treatment is instituted at once and the operation postponed, if possible. Catarrh of the nose and throat is treated with antiseptic and astringent sprays or gargles. Bronchitis is treated with an expectorant mixture and inhalation of turpentine vapors. For valvular disease, myocarditis, tachycardia and arterio-sclerosis we prescribe 10 drops of an equal mixture of tinct. digitalis and tinct. strophantus, t. i. d. Albumen in the urine leads me to put the patient on a milk and sterile water diet. Basham's mixture has been a sort of an old favorite of mine. Should sugar be found to some extent anti-diabetic treatment is instituted in all but "emergency" cases for at least a week. Finally before operations on the stomach and for peritonitis and ileus gastric lavage is practiced.

The patient is drilled by the nurse at some opportune moments to inhale and exhale repeatedly as deeply and as slowly as possible. These respiratory gymnastics at the command "breathe deeply!" are controlled by the nurse counting one, two! two! one being given for inspiration and two for expiration.

Antiseptic preparations are completed the evening before operation. On the morning of the operation the patient gets neither food nor drink. If the patient is very weak I give an enema of brandy and milk (an ounce of brandy to a glassful of milk). If it has been decided to give morphine (gr. 1-2) and atropin (gr. 1-100) the injection is made half an hour before the operation.

On the way to as well as from the operating room the patient is protected against chilling.

The anesthesia is begun in the operating room and all in it are cautioned to keep quiet.

We use an ordinary Esmarch mask with eight layers of sterile gauze. The patient's eye-lids, nose and lips are treated with some indifferent fat. False or loose teeth are removed. The mask is applied and ether dropped from a height of about one foot, drop by drop, at the rate of about 120 to the minute. The patient is instructed to count. When hundred is reached he is

told to count backwards. At this stage I usually order the ether discontinued and now ten drops of chloroform are slowly dropped on the same mask. After that the ether is resumed. In a few minutes the patient is ready for the operation.

Gagging, swallowing the tongue and laryngeal spasms are avoided by bringing the patient's head over the table and letting it sink down on one hand of the anesthetist (or a nurse) until the face forms an almost perpendicular line. This maneuver is undertaken only when the patient is beginning to "go under." From now on the cadence of dropping the ether is lessened. The anesthesia is discontinued when the wounds are sutured—in laparotomies when the peritoneum is closed. The patient should be awake when reaching his bed, if the anesthesia was properly administered.

The nurse now commands: breathe deeply! and it is surprising how promptly the patients will respond, even though they are apparently still under the influence of the drug.

The after treatment does not differ from that usually practiced, except that elderly persons and those suffering from respiratory disease are made to sit up in bed *immediately* after operation.

(Note: Ether is inflammable—hence open lamps should be kept above the level of the operating table. Pacquelin in thoracic surgery is apt to ignite the vapors in the lung and bronchi and cause instant death!)

DANGERS DUE TO SHOCK. Surgical shock is a formidable enemy encountered in every major operation of any magnitude, but occasionally making its appearance when least expected. Every operator must be prepared to meet this condition. Much has been written on the subject of preventing shock. I do not believe we can boast of a safe and reliable preventive. It is true that

prolonged anesthesia, loss of large quantities of blood, prolonged exposure of intestines and other abdominal viscera are singly and collectively apt to produce shock, but it is also a fact that a patient will show evidences of shock even in the most skilled hands either on the operating table or soon after the operation, when neither of the cited predisposing factors have been in evidence. Shock is especially frequent in amputations, exarticulations and resections. Let us not forget that any "autopsy in vivo" is a trauma to the nervous system in itself apt to produce shock even in a healthy person, the more so in one whose vitality has been enfeebled by disease.

From what has been said it can easily be seen that the following notes, if followed, will greatly reduce the frequency and intensity of shock.

(1) Administer the anesthetic as laid down in the preceding section. Patients must not be chilled before, during and after operation. The air in the operating room should be heated to 80 degrees F.

(2) Operate rapidly.

(3) Avoid hemorrhage.

(4) In laparotomies the abdominal viscera, whenever lifted out from the peritoneal cavity, should be wrapped in sterile gauze pads, wrung out in hot saline solution.

(5) In operations on the extremities the so-called blocking of the main nerves with cocain seems to be a valuable method of preventing shock.

As regards the treatment, I desire to caution against the use of stimulants. I have seen young surgeons order injections of strychnine, when morphine would have been the drug to be selected (one of the reasons why I prefer it to scopolomine as a preliminary anesthetic). The injection of ergot, transfusion (intravenous) with saline solution to which adrenalin has been added, external heat, posture (lowered head), inhalation of oxygen, compression of the abdomen, etc., are useful measures. As regards surgery of the chest and head a few useful hints will be found in the respective chapters.

DANGERS DUE TO HEMORRHAGE. The man who does not know how to control hemorrhage, arterial or venous, during an operation—primary hemorrhage—has no business taking the knife in his hands.

I recollect an experience some years ago that may well serve as a warning to knife-lovers. An elderly man consulted a medical neighbor of mine for a swelling in the axilla. The patient told the doctor that he had seen a few weeks ago another physician, who pronounced the case incurable. The physician looked at the swelling and promised to rid the patient of his trouble in a few seconds. He pushed a narrow bistouri into the swelling. A stream of blood, instead of the expected pus, nearly produced instant death. When I was sent for, the physician did not dare remove the compressing finger. Both

patient and physician looked pale, one from shock and the other from psychic shock. Fortunately the patient did not grasp the situation. I induced him eventually to be operated on, and thus effectively removed the evidence of my neighbor's stupidity and carelessness. The excuse of the physician that an existing redness (due to counterirritants) of the skin over the swelling misled him, is offset by his misinterpretation of pulsation as fluctuation. Apparently the first physician consulted suspected an aneurysm, which explains his verdict: "Incurable" (?).

Operations in the pelvis amputations and operations on the neck and head are apt to produce severe hemorrhages. The surgeon must never lose his head. Forceps, ligature and tamponade will suffice in almost all instances to control bleeding from injured vessels. Operations for the removal of the thyroid, aneurysmorrhaphies, trephining and resection of the skull, the extirpation of the Gasserian ganglion as preliminary steps, for temporary or permanent ligature of either arteries or veins.

A sad chapter in surgery is that of so-called secondary hemorrhage. Kelly says that such accidents are due to faulty technics, such as defective tying, cutting the ligature too close to the knot, undue traction on the ligature after tying, shrinkage of the tissues within the grasp of the ligature and extensive capillary oozing.

I would like to add tying silk ligatures so tight that they cut through the tissues.

It is not very unlikely that many cases that have been diagnosed as "late shock" are nothing else but secondary hemorrhages.

A hint about the prevention of death from this cause will be found in the next chapter.

I cannot conclude these remarks without referring to the great danger of operating on hemophilics. Fortunately hemophilia is a comparatively rare disease. The safest policy, of course, would be to inquire of every patient to be operated on with a view of excluding or suspecting this disease. As such an inquiry, if put bluntly, may lead the patient to fear that the proposed operation is especially bloody, the questions should be formulated in a manner to direct his or her attention to former illnesses and away from the operative procedures. (Extraction of teeth? Bleeding from the gums? Ecchymoses on the body?)

It goes without saying that in suspected hemophilia calcium chlorid should be given for a few days before operation.

DANGERS DUE TO EMBOLISM. No more tragic happening can befall a surgeon than sudden death of a patient about to leave the hospital, after convalescence from a successful operation. Lucky indeed is he who in a large surgical experience has never seen such a calamity. The suddenness of the attack and the rapidity of death—sometimes only a few seconds after the first signs have appeared—show conclusively that

medical help, even if accidentally at hand, will not avail. Fortunately those cases are not frequent.

The surgeon must bear the danger of embolism in mind when operating for septic conditions, malignant disease and when thrombosis exists somewhere. Prophylactic treatment, while not always effective, should be carried out rigidly. Special attention should be paid to an existing phlebitis. The nurses in attendance should be cautioned against rubbing the patient's extremities, such overzealousness having been the cause of embolism in some cases recorded in literature.

Pulmonary embolism has occurred after simple, bloodless and clean operations, such as a suspension of the uterus. It would seem that a really conscientious operator would consider his impotency when urging his patients to undergo operation for conditions that are not threatening life.

Milder attacks, that is, when the embolus or emboli are small, may get well under appropriate treatment. In one case where the dyspnea was very marked one of my nurses injected a quarter of a grain of morphia and the attack stopped a few minutes later. Although this nurse had never before seen an attack of pulmonary embolism, she had remembered the signs from her lectures.

Trendelenburg, of Leipsic, has operated for pulmonary embolism, exposing the pulmonary artery and removing the clots. In one instance the patient survived the operation some-

thing like 22 hours (I am citing from memory). This heroic operation, a marvel of surgical ingenuity, is no less desperate than the condition for which it has been attempted, but cannot become very popular.

DANGERS DUE TO SEPSIS can be reduced to a minimum by a proper application of severe aseptic technique. Slipshod methods will cause many a heartache that could be avoided.

The surgeon cannot be blamed for a sepsis (infection) he is called upon to relieve, but infection following a clean operation always reflects on the surgeon.

I have often heard it said that a reliable aseptic technique can be carried out only in large, costly hospitals, supplied with all the appliances for sterilization, disinfection, etc. I am fully in accord with the view that our modern hospitals, the construction and equipment of which have cost immense fortunes, offer ideal conditions to the operative surgeon, but I must condemn the view that asepsis is impossible elsewhere as not representing the truth.

It would be a sad thing for surgery if it had to depend for healing per primam on ten thousand dollar operating rooms. Our wounded on the battlefield, the patients in small towns not blessed with hospitals, would have cause to thank their stars if they got well per secundam. This is all rot. Asepsis is possible practically everywhere, provided the surgeon and his assistants

not only master its technic but have grasped the principles underlying each step. To operate without a mastery of both is, to say the least, reprehensible.

POST-OPERATIVE COMPLICATIONS, including adhesions, operative herniæ, recurrences, and last but not least *failure to subjectively cure* the patient through operation, do not come within the scope of this book. A few words may not be amiss, however. Adhesions and post-operative herniæ should not follow so-called clean cases. But even in pus cases they should follow operations only in the worst instances. Everything, naturally, depends on proper technics. The surgeon who leaves raw surfaces in the peritoneum, who sutures with infected catgut, or brings the wound margins together with knots tied to *compress* rather than *appose* the wound margins, must not be astonished to have adhesions, stitch-abscesses, and post-operative hernia crown his clumsy efforts.

RECURRENCES of inguinal and femoral hernia will be discussed in the special part. In malignant disease they often cannot be avoided, in spite of the most radical removal of the primary growth. This is one of the sad features of bold surgery, that in spite of all efforts, a carcinoma or sarcoma will have placed an offspring away from the seat of battle, to resume the deadly work of the apparently vanquished enemy a little time later.

The failure to *subjectively cure* a patient, if not due to organic complication or post-operative sequelæ, is often due to psychic or nervous derangements. The surgeon must either be in a position to meet such psychic and neuropathic conditions, or else secure competent aid.

Note.—For complications incident to special operations, such as paralysis of the N. recurrens, cachexia, etc., after goitre operations, ankylosis after operations on joints and the like, the reader is referred to the special part of this work.

CHAPTER III.

CONTRAINDICATIONS OF OPERATIONS
IN GENERAL.

The indications to operate in a given case are either positive (vital) or relative (subject to conditions).

It is needless to expatiate on positive indications. An individual suffering from an obstruction of the trachea or from an incarcerated hernia, to cite examples, will die unless his condition is relieved without delay. If this relief can be obtained by bloodless methods (mechanic removal of the obstructing agent from the trachea, taxis) well and good, but if not surgery here is imperative, irrespective of whatever contraindications may exist, that would have to be seriously considered in any other than emergency therapy.

In the so-called borderland diseases the decision to operate, as was pointed out in Chapter I, must be rendered carefully and with due regard to operative prognosis. How uncertain results may be in apparently favorable cases has been shown in Chapter II. To a certain extent, therefore, a favorable prognosis should not be made with assurance in any instance. Even so simple an operation as a plastic repair of a torn vagina (posterior colporrhaphy) has been followed by

death. Surely the surgeon who advised the operation must have laughed off the question of danger as too absurd for any consideration. But what afterwards? How did the surgeon meet the reproaches of the widower, of the parents and friends of the deceased? The unexpected, the improbable is bound to happen some one time in the career of a life, and I leave it to the judgment of the reader to decide whether patients are to be initiated into these "rare probabilities" or not. The fear that any pessimistic statement will drive the patient into the office of a more optimistic competitor is not groundless. The laymen have all sorts of notions about medicine and its disciples, and often enough act on impulses which appear erratic to the judicial mind of the trained physician.

Personally I use some diplomacy in the way I broach the subject. I mention this as a possible hint to newcomers in a small community. I tell the patient something like this:

"I have examined you thoroughly. Except for the * * * trouble, from which you suffer, you are in good condition. You need an operation. I am convinced other methods of treatment will not avail. The operation in itself is not very risky. You ought to stand it without much trouble. Of course, there is always a remote possibility of some complication that cannot be foreseen by any human being. I mention this only to you as a matter of principle. You have asked me whether I can guarantee a

cure. We human beings can guarantee nothing. I cannot even guarantee that I will live tomorrow to operate on you. You must take the very remote chance of failure into the bargain with the greater probability of success."

An intelligent patient will understand you and respect you all the more. With uneducated people—I must remind the reader of Schiller's dictum that the very gods fight stupidity in vain.

A familiarity with general contraindications is essential for the purpose of avoiding bad risks.

Generally speaking, any patient suffering from a serious constitutional disease is a poor risk. Among the affections that demand special carefulness on the part of the surgeon are:

- (a) Acute and subacute respiratory diseases.
- (b) Acute fevers, especially typhoid fever, influenza, malaria, etc.
- (c) Diarrheas.
- (d) Organic diseases of the heart.
- (e) Nephritis.
- (f) Diabetes.
- (g) Arterio-sclerosis.
- (h) Anemia, leukemia, hemophilia.
- (i) Syphilis.
- (j) Tuberculosis.

The presence of any of the above diseases does not always absolutely contraindicate surgical intervention, as was already alluded to in the beginning of this chapter.

Let us take them up seriatim.

(Ad. a) The presence of bronchitis and other

catarrhal and inflammatory diseases of the respiratory apparatus contraindicates surgical operations, principally because a bad effect is feared from the anesthetic. This danger is not so great if the precautions given in Chapter II are properly observed. Operations that can be postponed should be done only after preparatory treatment and at a place where the minutest details of technic can be strictly observed. The season of the year, too, plays an important role. (See below.)

(Ad. b) Any constitutional disease contraindicates facultative surgery, because the vitality of the patient is below par. Surgery of an imperative character, however, has been done successfully under such conditions, e. g., perforation of bowel in typhoid fever.

(Ad. c) Diarrhea per se is not a disease. Any affection which is characterized principally by diarrhea should be remedied before an operation is undertaken. An exception to this rule is the opening of liver abscess in amebic dysentery.

(Ad. d) This depends entirely on the intensity of the strain on the heart. Little is to be feared from ether anesthesia if the drop method is used, though whenever possible local analgesia is to be preferred. Much depends on the general condition of the patient, irrespective of the nature of the lesion. Dilation of the heart would contraindicate an operation where a valvular trouble with good compensation would cause us only to use extraordinary caution.

(Ad. c) Nephritis is also to be accepted as a generic term. A great mistake is often made by confounding a transient albuminuria with inflammation of the kidney. The general condition of the patient is the best index. The danger of post-operative anuria is, of course, present. Proper preparatory treatment and close observation of the chemic and microscopic features of the urine for some weeks, if need be, will serve as a reliable index. Operations on the kidneys (nephropexy, decortication) for nephritis are still held sub judice by clinicians of note. Tuberculosis of the kidney (even if complicated by pyelitis and ureteritis) practically indicates nephrotomy, nephrectomy, etc.

(Ad. f) Diabetes is serious enough a disease to contraindicate surgery. It is notorious that diabetics stand operations poorly. No operation except those of a life-saving character should be undertaken until the amount of sugar excreted in the urine has been reduced to a minimum by appropriate dietetic and other measures. The danger is still greater when the urine shows the presence of acetone or diacetic acid.

(Ad. g) Arterio-sclerosis is not to be conceived as a positive contraindication, when limited to superficial vessels. There is great danger of heart failure, thrombosis, embolism, apoplexy and gangrene, which may be hastened by the strain on the circulatory apparatus due to the operation.

Not much can be done to overcome atheroma

of the blood vessels, since it is in most instances the expression of degenerative changes due to senility. It goes without saying that where syphilis is suspected as a possible cause, a course of iodid of potassium should be prescribed.

Operations should be restricted as much as possible in patients of advanced age with demonstrable organic lesions of heart, kidneys or blood vessels.

(Ad. h) Hemophilia as a cause of danger has already been discussed in Chapter II. The ordinary anemias present relative contra-indications to operations. The splenic leukemia is condemned as a surgical affection by many clinicians. It goes without saying that a chlorotic or anemic patient needs suitable treatment for some time before a facultative operation.

(Ad. i) Syphilitic changes of a localized character may require surgical treatment. We have operated many times on syphilitics in whom the presence of this was not suspected at first, without any bad results whatever. Whenever known to exist an antiluetic course of treatment should precede non-imperative operations.

(Ad. j) Grave pulmonary tuberculosis contraindicates surgery. In the milder and chronic forms, especially when controlled by appropriate treatment, operations can be performed, provided care be taken not to subject the patient to chilling, concentrated ether vapors or severe shock. The removal of tuberculous processes (osteomyelitis, arthritis) is to be favored because the destruc-

tion of tubercular foci has been known to favorably influence pulmonary tuberculosis.

The *season* of the year is not without interest to surgeons. The prevalence of pneumonia in the early spring and late fall should cause us to postpone facultative operations to a time when climatic conditions are more favorable. Post-operative pneumonia, as such, should not be confounded with ether pneumonia. We have already seen that ether properly administered is not particularly harmful to the respiratory tract. The few cases of post-operative pneumonia I have had an opportunity to observe in my practice have impressed me as rather due to embolic processes.

One case forms an exception. It concerns a small child, breast-fed, that came to the hospital to be operated on for hare-lip. The anæsthetist, through some misunderstanding, gave chloroform (a few drops) instead of ether, a fortunate accident, because now the ether cannot be blamed. The operation was performed in seven minutes, as the little patient took the anæsthetic badly, but was technically successful. Immediate operative recovery good. On the fifth day the baby refused food and looked ill. I discovered some subcrepitant rales over the anterior aspect of the right lung, elevated temperature (103 degrees F.), and increased pulse. Expecto- rant mixture was prescribed. On the sixth day the mother took the baby home. I saw it on the eighth day at the hospital (to which it was taken by the mother), when I found the baby

bright. Breathing was still hurried, but, except some sign of consolidation in the lower lobe nothing special could be made out. Rapid death the following day. No details. The operation was performed in February. The weather was anything but favorable.

It must not be forgotten, however, that hare-lip operations are risky, especially when accompanied by cleft palate. A hare-lip with a fissure extending close to the nostril is apt, after repair, to so flatten the affected nostril that breathing space is lessened, hampering free and easy respiration.

I may add that I have a prejudice against operating on gloomy days, particularly when the operation is a serious one. It would be nonsensical to try to adduce any other reason that such weather has a depressing effect not only on the patient, but on the surgeon as well. We are all human beings, with a psyche easily affected by extraneous circumstances. It seems to me that when patient and surgeon can enter the operating room with a spirit of hopefulness and cheer half the battle is won. I am convinced that I have saved more than one life by postponing operations on such winter days when at eight o'clock in the morning lights were needed. The darkness outside has always depressed me, and unless the operation is not dangerous per se or imperative, I prefer to postpone it.

I also make it a rule to operate early. The patient is usually told the operation will be done

some time in the forenoon. When they awake they have no opportunity to worry while waiting. Besides the early hour is the best for good work.

This leads up to the great subject of psychic influence on the individual. The surgeon who is not a good psychologist (I do not care to go quite as far as to say alienist) will often fail to detect some great hidden sorrow that has tortured the patient. It is an unwise thing to dismiss psychic phenomena with a wave of the hand and the condemning diagnosis: *hysteria*. Post-operative insanity, to be sure, cannot always be foreseen, but should be thought of especially when operating for disease of the female genitals, for thyroid enlargement and for affections of the brain (including mastoiditis). I had once a patient who was delirious for ten days following a curettage for metrorrhagia after an abortion. The patient was introduced to me as a married woman, who had reason to keep her social status hidden from her family. She was an artist (painter) and extremely sensitive. I have reproached myself with negligence in this case. Had I known that she never was married and that this fact had preyed on her mind, I should have endeavored to bring her psyche into a better state before operation was done.

CHAPTER IV.

THE SURGEON AS A FACTOR IN SUCCESSFUL SURGERY.

Were this monograph intended for surgeons of experience I should have considered a discussion of the surgeon himself nothing more nor less than a bit of unwarranted arrogance. But as it is, the little work is primarily intended for the conscientious general practitioner, for the occasional operator, as surgeons of repute are wont to call him—and having been one myself, struggling to acquire a bit of surgical skill under adverse circumstances, I feel that I have a right to throw out a few well-meant suggestions.

The personality of the surgeon has very much to do with the possible outcome of a given case. Leaving aside such terrific accidents as embolism of the pulmonary artery, sudden death from other causes, etc., which no one can foresee or prevent, it is reasonable to assume that a patient stands a better chance of recovering at the hands of an expert than those of a novice. I hear some one suggest that the expert was a novice when he began—and that is where this some one is wrong. This subject appears to me of sufficient importance to merit special consideration.

The practice of surgery is an applied art, technical or mechanical, if you like. The surgeon,

as an operator, is an artist, and in a measure the saying that artists are born and not made is applicable also to surgeons. But carefully analyzed, the saying really means that some men are gifted while others are not. Gift without hard work and study is like a tree planted in clay. The future surgeon, be he ever so gifted by nature, will soon enough learn that to master surgery he has to devote his whole life to it, for the fund of scientific knowledge is so large that it is beyond human power for one man to digest it all, and what is more, the mental digestion of abstract learning is but part of a surgeon's duty, the application of theoretic knowledge to actual living conditions representing the acme of achievement.

Paderewski, undoubtedly the world's greatest pianist, renowned for his interpretation of the tone-poetry as well as for his technical skill in transmitting his interpretation to human hearers, is credited with saying: "If I don't practice one day no one notices it, if I don't practice two days I notice it, but if I have not practiced for three days everybody notices it."

Follow me in spirit to a surgical clinic presided over by a famous surgeon. A patient suffering from pyloric stenosis is to be relieved from his sad plight. The patient has been sick for some time and is greatly reduced in weight and strength. One look at the patient's face while he is being rolled into the operating room, convinces you that he represents anything but a

good risk. Yet everybody in the operating room seems confident. The patient is anesthetized and after a while you hear the word "ready." Meanwhile the preparatory surgical toilet has been completed. With one stroke the skin and fascia are divided and ere you realize it the surgeon has entered the peritoneal cavity. The stomach is exposed and covered with hot towels. In a second or two more the proper loop of jejunum is found. And now two rows of suture around the gastro-jejunal incisions are applied. The viscera are dropped into the abdomen, the peritoneum is closed. You hear the words, "stop the anesthetic." The wound is closed in two additional layers while the mask is off. By the time the assistants have finished the wound toilet the patient appears to wake up. Pulse good. If you visit the patient a week later you will find him resting comfortably, subjectively and objectively showing great improvement. In another week he is going home. Three weeks after that he has begun life anew. This was a surgical triumph. The great surgeon thinks little of the whole thing—he has simply added another case to his long record—that's all.

Now follow me to a private hospital. Same case and conditions. The operator is a young man, about a year in general practice. Try as he might to impress the anesthetist, internes and nurses with the dignity of his personality, you cannot help but notice that the very air is filled with anxiety. The anesthesia is complete, the

toilet made. Ready! The surgeon makes the incision through the abdomen. It is not a large incision, not as large as you have seen before. You will be surprised to hear the operator announce gravely: "I prefer small incisions. A small incision can be made larger, when needed, a large incision invites hernia." Words of wisdom, no doubt. Now don't be impatient because the young man has spent ten minutes dissecting his way down to the peritoneum. He announces: "A true surgeon dissects carefully, because accidental opening of the peritoneum may injure an adherent viscus," which, too, is wisdom. Now he enters the abdominal cavity and to your great relief the stomach has been pulled out and covered with hot wet gauze dressings. A minute or two are spent investigating the pylorus. The surgeon is jubilant that his diagnosis is correct. He will point out what he finds to you, to me, to the internes, and to every nurse in the room.

But now, what is it? The surgeon has a loop of bowel, but he wants to make sure whether it is ileum or jejunum. "You see," he advises us, "one may accidentally pick up a loop say half a foot from the cecum and thus kill the patient." While you are still admiring the operator's appreciation of the physiologic value of the ileum, he announces that he is sure he has jejunum in his fingers. All he has to do now is to determine which is the afferent and which the efferent part of the loop. Now he is sure. At last silk and thread are handed him and suturing of the

first serosal line begins. From now on you feel sorry for the surgeon, for what sort of a hospital is it he has fallen in. The needle is too thick, another is too thin. No, he cannot sew with his fingers—he wants the needle holder. The needle holder is too clumsy for so fine a needle—he'll try an artery forceps.

The anesthetist seems anxious. The pulse of the patient is not fair. The surgeon orders a saline injection. The nurses fly around filling hypodermics. Finally the last stitch is in, and the peritoneum is being closed. But the patient is straining and the surgeon has trouble in picking up the wound lips. The same trouble with the fascia. Magnanimously he turns the skin suturing over to the interne. You look at the watch—the patient has been one hour and forty minutes in the operating room. The next day you visit the same hospital. The patient, to your great relief, is living. He vomits a good deal, his pulse is 130, thready, he looks ill. The surgeon has made three visits since the operation. A week later the danger is over. Three weeks after the operation he is leaving the hospital—a bit shaky but much improved.

The above illustrations are typical of everyday experiences. Fortunately for many surgeons, *vis medicatrix naturæ* will get them out of many a scrape. It is of course impossible for the beginner to be as rapid and as perfect as the master, nor can it be reasonably expected; but what can be expected is that the difference in

skill between the two is not of so pronounced a degree as to jeopardize the life of the patient.

Nowadays, under a properly conducted anesthesia and with a reliable aseptic technique, ten or fifteen minutes do not play the role they used to years ago, when speed was everything, but even under modern favorable conditions there is a limit to the length of time which a patient can be kept on the operating table without incurring serious risk.

But speed is not the only condition for successful surgery. There are other qualifications equally paramount. How acquire them? It would not do to imitate the route taken by most men who have achieved great reputations, because theirs was one continuous way of training and preparation under the watchful eye of some older master. The practitioner residing in a small town or village has no opportunities to attend clinics. If he can go away for a few months and matriculates at some post-graduate school, he returns more inspired, more ambitious, familiar with such terms as agglutinins, vaccines, antibodies, he has seen over a hundred operations—from the tenth row in the amphitheater, he has made a number of rounds in the wards, he has even performed a Bassini, Kocher or Halstead (it is undignified in scientific parlance to add the term herniotomy), a resection of the elbow and an osteoplastic amputation—on the cadaver, and he has returned home—a surgeon. If you doubt

it, look at his beautifully engraved certificate of attendance.

After five years this same surgeon will confess that the only thing of any practical value he did bring back was the imposing certificate, which has produced some awe on the minds of many of his followers.

I do not desire to be misunderstood as denying the value of a good post-graduate training. The trouble is that post-graduate instruction as given in most schools is similar to that given seniors in medical colleges. If a physician-student desires to derive any benefit from a sojourn to a medical center, he should arrange to attend so-called individual classes, and secure an opportunity to directly assist at operations. The surgeon-teacher should permit him to see the patients from the time they enter until they convalesce. At least one country doctor was frank enough to admit that he derived valuable information from watching the nurses.

"I heard them talk of turpentine-stupes," he assured me, "and I was ashamed to have to ask the surgeon what a stupe was. He mumbled something and went to the next bed. I left him and followed the nurse who took his order. In five minutes I knew what a stupe was."

The gentleman who told me this had graduated in the eighties. He had practiced ever since in a small town in Iowa. His text-book of surgery gave him no information on that point. What he really should have sent for is a good text-

book written by some good nurse for nurses. The officer who does not know how to shoot cannot instruct his subordinates.

Hans Kehr, the famous German surgeon, especially noted for his work on the gall bladder, issued a now famous address, which he delivered in Berlin some few years ago, in which, among other important statements, he asked and answered the question: Who is to be permitted to operate for gall-bladder disease? His answer is: He who is competent. Kehr adds: I don't care how the operator acquired his knowledge, whether by the convenient method of an apprenticeship in a clinic or by the study of books and atlases, just so he has the necessary skill and knowledge.

I have not the address at hand, and quote from memory. I do not assert that the translation just given is strictly verbatim, but I certainly have not made any misstatement.

I cannot help but admire the great German surgeon—and great he is, in spite of much opposition at the hands of envious colleagues—who does not abrogate all the privileges of surgery to himself or men of his standing, and who, indirectly, and possibly unwittingly, holds out hope to ambitious, struggling general practitioners who desire to do good surgery, but who lack the opportunities of resorting to the “convenient method” of acquiring the requisite learning and skill.

To these I direct the following bit of advice:

Some years ago it was my good fortune to be called to operate on a patient in a small town in a neighboring State. The conditions of travel were such that I had to spend a night in that town. My host was a comparatively young physician, a graduate of a medical school, that can boast of a large number of alumni, who have become renowned specialists and famous professors in different branches of medical science.

The doctor had a small family and his home was one of the best in the town. He owned a drug store, sold all sorts of toilet articles, paints, cigars, tobacco. I noticed in the store a large switchboard. It was the telephone "central" for the town and neighboring farmhouses and villages. The doctor was a director in the local bank, a deacon in the church and a trustee of the school. I may add that he was the owner of two fine horses and that he often attended to the wants of these horses himself.

To my great surprise my medical host admitted that he had the ambition to become a surgeon. He asked me what to do in order to reach this goal. I was embarrassed, for to tell this man the truth meant a statement that could be construed as an insult, and I frankly told him so. But he insisted and promised to accept my advice. What I told him is, in substance, the same advice I would give to-day to physicians in similar circumstances:

"Sell your drug store and your telephone central. A physician's calling is such as to make

it incompatible with ordinary trade. The man who is bound to place his very life into your hands will not do so with respect and confidence when he has looked upon you as a tradesman. Resign your directorship in the bank and let others look after church quarrels. You will need every free minute, not occupied by practice, for yourself. Get a boy or man to look after your horses, and if you cannot do that never take the brush in your bare hands, but protect them with heavy gloves. You must enter the temple of the goddess of Asepsis, and she is mortally afraid of dirt and dust. The finger nails are your principal surgical instruments. 'Show me your finger nails and I will tell you what sort of a surgeon you are.' Secure the best text-books obtainable on anatomy, pathology, surgical diagnosis and surgery. One text-book will not do, get four or five. Get the latest. Subscribe to several journals on surgery. I will furnish you a list. Read them carefully. When you fail to understand a term look it up in a lately published medical dictionary. When you read an article on some unusual disease or on some new, complicated operation, don't lay it aside with the remark that this is intended for advanced specialists. You may have just such a case, and you must have all the information obtainable. Take up your works of reference and secure there all the information you can. Read and study all the time, except when sleeping or practicing.

“Establish a ‘hospital.’ Your barn has an upper story. Divide it in two. Put in a large window or two, paint ceiling, walls and floors. Put in a table, instrument stands, a sterilizer and washing apparatus. Get dogs and cats. Secure the services of some friendly physician. If this is not possible send for some senior of a medical school to spend the summer vacation with you. Let him be your anesthetist. Start in by preparing the animal as you would a human patient. Start in with abdominal surgery. Remove first a portion of the ileum. Look at the clock and note how much time it took you to perform the operation. See whether your animal makes a speedy recovery. If he dies, open up the wound. If you find peritonitis study your anastomosis. It will probably leak. Possibly your asepsis was at fault. Go over your aseptic preparations and try to discover where the break was. Try again. Next do a gastro-enterostomy. Remove the spleen. Extirpate a kidney. Open and drain the gall-bladder. Resect ribs. Perform tracheotomy. Next amputate at or through the hip-joint. Kill the dog after that. Perform resection of a joint and watch the results. See whether you can open the brain without killing the dog. After exposure of the brain use your faradic battery and study localization. Keep a record of all work done.

“After a while perform operations of a minor character on your patients. If a major operation is to be done secure the services of a com-

petent surgeon. Ask him to let you do the operation under his instruction. Most surgeons will be glad to act as "assistants" and at the same time instruct you. Meanwhile don't neglect your microscope, your urinary analysis, your blood-counts, your examinations of stomach contents. Purchase an X-ray apparatus. Study fractures and joint diseases as they appear on the Roentgenograph. Purchase atlases of normal and abnormal structures—compare them, and then observe what you find when the tissues are exposed by the knife.

"In other words sacrifice every earthly pleasure to the greatest pleasure of them all—work. If recreation proves necessary, attend meetings of surgeons, listen to the addresses and the discussions. Visit clinics. Ask yourself whether you could have made a like diagnosis and whether you could have performed the operations you have seen equally as well. Then go home and resume your old work with renewed vigor. I guarantee in five years you will have been the cause of making many afflicted men and women healthy and happy. You will be a surgeon then."

CHAPTER V.

DISEASES OF AND OPERATIONS ON
THE ABDOMEN.

EXPLORATORY LAPAROTOMY as a diagnostic operation, should be undertaken only when all other known methods have failed to enable us to form a definite opinion on the nature of the disease for which it is undertaken. The following conditions must be complied with:

(1) The patient should be prepared as thoroughly as for any other therapeutic abdominal section.

(2) The surgeon must be ready to proceed therapeutically immediately after the diagnosis has been cleared up; provided, of course, the disease is not inoperable, such as diffuse malignant disease, extensive intestinal adhesions, progressed tuberculosis, etc. Exploratory laparotomy has been defined as a confession of diagnostic weakness. This is not necessarily true. Even the most skillful diagnostician may be unable to determine at times the extent of pathologic processes until the abdomen has been opened. This holds especially good in surgical diseases of the gall-bladder, to which section the reader is referred for further details.

APPENDICITIS is a surgical disease. With this

dictum the question of operation would be disposed of simply enough, were it not that many clinicians still claim appendicitis as belonging to the domain of internal medicine. The treatment with ice-bag and opium is still in vogue in many quarters. To add to the confusion many general practitioners have, heaven knows how, gained the erroneous impression that the so-called Ochsner method of treatment (consisting of withholding food and drink) will cure every case of appendicitis, no matter how intense the infection may be. Such a misconception of Ochsner's contribution to the literature and therapy of appendicitis must necessarily result disastrously in at least some forms of appendiceal inflammation.

In the writer's opinion the only question as regards the treatment of appendicitis is not *whether* to operate, but *when* operation should be performed.

It cannot be denied that a comparatively large number of cases get well under appropriate medicinal and dietetic treatment—well in the sense that there has been no recurrence of the attacks for some time. Certain natural processes of "healing" may take place, such as obliteration of the appendiceal lumen, adhesions, constriction at the base, with necrosis, a sort of auto-amputation. All these are absolute, undeniable facts. Nevertheless they have only a relative value, because there is no way or guide justi-

ying us to hope that such an "auto-cure" will take place.

The statistics, too, prove of little interest to the general practitioner. Indeed, their study may lead to a good deal of confusion, for the mortality following operative therapy is vastly greater than that obtained by other methods of treatment. One example of statistical effort may not be amiss:

Sahli collected the histories of 7213 cases of appendicitis. Of these 6740 were not operated on, the balance (473) were subjected to operation, 561, or *only* 8.8 per cent. of the former died, with 101, or 21 per cent., deaths in operative cases. At first glance it, therefore, appears that inasmuch as the mortality rate after non-operative measures is far less (about 9 per cent.), as compared with that following operation (21 per cent.), there could be no reason for resorting to the knife. To the professional "hod carrier" such a figure may appear as conclusive; the thinker, however, will not be content with mere figures and propound the philosopher's why.

What becomes of our much vaunted individualization, if problems are to be solved by mere figures? Without underrating the value of statistics, we must never lose sight of the fact that the classification of diseases into stages and varieties is a difficult task, since in praxi we but seldom observe the "classic" phenomena as described in our text-books. This holds especially good with appendicitis. Appendicitis and appen-

dicitis may be two different things. In one individual we observe the so-called "catarrhal" type, with perhaps numberless but ill-defined attacks, scarcely amounting to more than the ordinary, vulgar "cramps." In another we find the opposite extreme. The patient has a severe attack, the pulse is accelerated, there is little rise of temperature, but the expression in the face belies the patient's statement that he feels fine. In a few hours the patient is dead. Post-mortem reveals no serious organic lesions, perhaps only an inflamed vermiform appendix and a slight hyperemia of the adjacent serosa. It is remarkable that often the clinical phenomena give us no clue to the pathologic changes in and about the appendix, and that the anatomic diagnosis before operation may tax the skill of experts. As a rule, however—granting that appendicitis has been correctly diagnosed—it is not difficult to differentiate between "acute" and "chronic" cases.

This division is of utmost importance. Assuming that we have to deal with an acute attack (which often appears suddenly, without any warning while the patient is apparently in the best of health) the question arises whether we shall operate at once or assume a more conservative attitude.

It is astonishing to note how widely the opinions of surgeons diverge. Against the demand by the internist Dieulafoy to operate on every case without delay, as delay means exposing the

patient to the risk of death, may be placed the advice of many great surgeons who counsel patience until the acute process has subsided.

I know of no problem in surgery that offers more difficulties than this one. A study of clinical reports (not mere figures) shows that not all cases operated on in the first twenty-four hours get well, the mortality averaging the frightfully large figure of 16 per cent. Yet it must not be forgotten that there are so-called foudroyant cases with so severe a toxicity that death would occur whether the patient be operated on or not.

The following case brilliantly illustrates our inability to judge the pathologic changes from the clinical symptoms. I mention this case because it converted the famous internist Tyson to an advocate of early operation:

"Pat, aged 18, male, was taken seriously ill on his way to Princeton, September 13th (1903?). He was seized with severe abdominal pain, which grew rapidly worse, forcing him to consult a physician, immediately after his arrival. The next day he grew worse and sent for the physician the same evening. He had pain in the right iliac region, nausea and vomiting, lasting three days, but on Thursday following, i. e., on the fifth day, he was so much better that he went home. Was out of bed Saturday and Sunday, but felt badly on that day. Pain and vomiting came back Sunday evening. Tyson saw him Monday evening. Temperature was 100.5 deg. F. No active pain, but pressure at McBurney's

point elicited pain. *No tumor*, but slight rigidity of rectus muscle. The diagnosis of appendicitis that was subsiding was made. Next day the patient was also seen by Deaver, when the patient was much better, and it required a good deal of pressure at McBurney's point to elicit some pain. Operation was decided on and postponed for a short time. The next day the patient had a natural bowel movement, temperature was normal and he seemed quite well. He was operated on Friday, the 28th. To the surprise of the physicians, who had expected to find the remnants of a catarrhal appendicitis, a large abscess was found, which burst at the touch with the finger. The pus was fetid. Appendix gangrenous. Drainage. Recovery within a month." (Medicine, July, 1904.)

Comment seems superfluous. Had operation been postponed a few days more, peritonitis and possibly death would have been the result!

As regards, then, appendicitis, barring external circumstances, I believe that the earlier the abdomen is opened the greater the chance for the patient. I am inclined to think, though my own experience in this respect is rather limited, that even the most virulent type could be controlled were operation to be performed in the first two hours.

The occurrence of just such cases has led some one to advance the proposition that it would mean a great gain to mankind if the vermiform appen-

dix were extirpated in early youth as a prophylactic measure.

That a diseased appendix remains a constant source of danger is illustrated by the following case:

I was called to Pittsburg, Pa., to see a young man, the son of a Chicago physician. When I arrived at the hospital an abscess, pointing an inch above the umbilicus in the median line had been incised and drained. The patient seemed to do fairly well. He was removed to Chicago. I urged removal of the appendix, but this the family refused. Under proper care he recovered and returned to work.

His history is vague. He has had repeated attacks of colicky pains, extending over a period of several years. These pains used to last but a few hours, and the attacks then subsided. A diagnosis of appendicitis was not made until he was stricken in Pittsburg.

About five months later he had another attack and I had him at once sent to the West Side Hospital and operated on him an hour later.

Cecum buried in a mass of broad adhesions, which were easily separated. Instead of an oblong appendix a triangular, thick body was found attached to the cecum. The short lumen showed an ulcerative process.

Since that time the patient has been free from attacks (now about five years).

A word in regard to so-called "interval" operations and such for chronic appendicitis. Their

mortality should be nil. While in acute cases the skill of the surgeon has much to do with the outcome, the shock incident to prolonged operation, rough handling of the bowels, careless manipulation in the presence of pus or localized peritonitis, attempts to remove the appendix when incision and drainage only should be made, having been responsible for the loss of lives that in the hands of skilled and careful operators would have been saved, in chronic cases practically every operator of average skill should bring about a complete cure. In such cases the time element is not so important, and the peritoneum is in better shape to withstand manipulation. One should learn to get along with short incisions (in one hundred operations I have been compelled but twice to make a two-inch incision, one and one-half inches having sufficed in the rest), and thus avoid the risk of subsequent ventral hernia.

While there exists no vital indications for operation in chronic appendicitis, the operation frees the sufferer from a state of semi-invalidism.

I can cite many cases in which no positive diagnosis having been made, repeated attacks of "indigestion" were vainly treated for periods extending as long as ten years, with all sorts of drugs and dietetic measures.

Operation usually revealed an adherent, kinked appendix, or one attached to some neighboring organ by a fibrous band, with but insignificant histologic changes in the mucosa. Extirpation

of the appendices was followed by prompt and lasting relief in every instance.

In conclusion, the reader must not forget that any other than operative therapy can be directed only against the attacks, as such. The disease proper is removable only by extirpation of the appendix. That early extirpation necessarily must reduce such complications as suppuration, peritonitis, subphrenic abscess and septicemia is self-evident, though, on the other hand, thrombophlebitis, embolism and ventral hernia are post-operative sequelæ which cannot always be avoided, even if operation be done an hour after the beginning of the attack.

CHOLELITHIASIS. Gall-stones are very often found in post-mortem examinations, when least expected, their presence in the gall bladder or cystic duct having produced no symptoms during the life of the patient. As long as the stones do not obstruct the flow of bile by occluding the ducts, and as long as there exists no inflammatory process, their presence is harmless. The diagnosis of "gall-stones" is easy, difficult or impossible. Easy, when the classical symptoms can leave no doubt as to the nature of the disease; difficult, when the symptoms are obscure, and impossible when concomitant disease of kidneys, bowels or pancreas prove misleading. We cannot enter into a discussion of the diagnostic difficulties except insofar as their appreciation may have a bearing on the question of therapy.

Internists and surgeons alike claim this disease

as their field. The physicians are supported in their claims by eminent authorities residing at certain noted "Kurorte." It is also a known fact that not a few eminent surgeons, ever ready to preach the gospel of cholecystostomy and cholecystectomy, prefer a sojourn in Karlsbad, when their own gall bladders become the hosts of unwelcome calculi.

So-called "cures" of gall-stone disease, not only by mineral waters, but by all sorts of medicinal preparations, legitimate as well as "patent," have been given the widest possible publicity, so that the average practitioner, when called to attend a case of cholelithiasis, will meet with decided opposition if he choose to advise an operation. And in reality the indiscriminate advice of surgical therapy is not at all in accord with scientific facts. In disease of the gall bladder, aside from the difficulties of diagnosis, each individual case must be judged "as a class in itself."

In this respect appendicitis and cholelithiasis differ so widely that no parallel can be drawn between the two affections.

Naturally we must first ask ourselves the important question whether non-operative therapy can offer anything at all that can be depended upon to cure the disease. A careful study of all methods that have ever been proposed must lead the unbiased student to admit that there is no such a thing as a specific which will rid the human economy of biliary calculi, either in the gall bladder or in the ducts. That gall-stones are

occasionally expelled per vias naturales no one will deny, but that even a protracted course of medication, no matter of what character, is directly responsible for such a fortunate outcome must be strenuously denied. Blame vis medicatrix naturæ—chemistry can only offer “symptomatic” relief. I say symptomatic advisedly, for what we can possibly accomplish is to allay the accompanying inflammation in the biliary passages. This is not to be despised. The claim on the part of certain drug manufacturers that with their products gall-stones have been expelled, has proved to be a plain fraud, chemical analysis having shown the “concretions” to be nothing else but the drugs in a saponified condition, plus fecal matter or other organic substances. And this must be borne in mind, that a complete cure can be talked of only then, when stones are definitely removed. It would appear, therefore, that, barring the spontaneous expulsion or—as does happen—the spontaneous disintegration of the biliary calculi, a palliative result is the only one possible with hygienic, dietetic and medicinal measures, and that a radical cure can be produced only by mechanical removal—that is to say, bloody intervention with knife and spoon. Internists will consider this statement untrue. It would be easy to fill a large-size volume with mere citations from the literary products of enthusiastic internists. Many have “built up” regular therapeutic “systems,” for which they claim well-nigh infallibility. It cer-

tainly is beyond the frame of this monograph to enter into a discussion of all these "systems," but the subject is of such great importance to the general practitioner, because of the great frequency of the disease, that it certainly is worth while to pay attention to some of the most prominent representatives of either side.

Osler and Tyson think very little of olive oil. The latter author has seen good results from sodium succinate, but cannot guarantee permanency, as he has been unable to observe the patients for any length of time. Strict attention must be paid to diet, rest and exercise. In this all are agreed. The most enthusiastic internist is Dr. Walther Nic. Clemm, of Darmstadt¹, who has gone out of his way to decry surgery in language unbecoming a scientist, a blunder which exposes him to the risk of being looked upon as a "scientific" quack. In addition to dietetic measures he places great reliance on non-irritant soap—eunatrol. I myself have seen good results from probilin—a similar preparation, good, to the extent that the attacks were lessened in frequency and intensity, but, of course, I lay no claim to having cured any case without operation.

Among surgeons who have done much to develop gall-bladder surgery rank highest Hans Kehr, of Halberstadt, Germany, and Mayo Robson, of Leeds, England. The latter devotes in

¹Dr. Walther Nic. Clemm. Die Gallensteinkrankheit. Berlin, 1903.

his latest work² several pages to the medicinal treatment of gall stones, and, while admitting that certain drugs may be useful, he doubts their ability to disintegrate or expel the calculi.

Undoubtedly the ablest and most authoritative word on the subject was spoken by Kehr. In a dignified address on the internal and surgical treatment of gall-stone disease, delivered at Berlin in 1906, and since published as a monograph of 176 pages³, he treats the disputed points in an interesting manner. Indeed, Kehr has so fully covered the subject that a translation of the address must be looked upon as a great desideratum for the English-speaking profession. In the following I shall closely adhere to Kehr's classic teachings.

In order to decide in which cases internal treatment is indicated and in which the knife is to be resorted to, we must discuss (a) the prognosis, (b) the remedies which internal medicine offers us to combat the disease, and (c) the operations which the surgeon may undertake for the removal of the gall-stones.

PROGNOSIS. Text-books on internal medicine teach us that the prognosis is good, but surgical

²A. W. Mayo Robson and J. F. Dobson. Diseases of the Gall-Bladder and Bile-Ducts, including Gall-Stones. New York, Wm. Wood & Co., 1904.

³Prof. Dr. Hans Kehr. Die interne und chirurgische Behandlung der Gallensteinkrankheit. Munich, 1906. (An address delivered by invitation in the Empress Frederic House for medical post-graduate study in Prussia.)

text-books tell us the opposite. Which of the two is right? If we consider the cases seen in the stage of latency, and those with the mild forms of catarrhal cholecystitis, the prognosis is very good. But things are different when the stones cause trouble. In such cases it all depends whether we have to deal with a case of acute catarrhal or gangrenous cholecystitis, or acute or chronic occlusion of the choledochus; also how much the liver and pancreas are affected. It is self-evident that while an acute attack of catarrhal cholecystitis is, as a rule, free from danger, a gangrenous inflammation is very serious. Chronic cholecystitis becomes dangerous only when complicated by perforation or carcinoma. While rupture of the gall bladder is very infrequent in acute obstruction of the choledochus, the chronic form has many serious dangers (cholangitis, cholemia). But even when there is no immediate danger to life an existence that is characterized by almost constant suffering is worse than death.

My own experience with cholelithiasis is not extensive. After looking over all my notes, I can speak with some degree of certainty of but eleven cases, nine of whom have been operated on by me (eight cholecystostomies, one cholecystectomy). The other two are still under observation (over five years). One of them, a man of about 38 (he has been at Battle Creek and has visited many resorts) has finally decided to accept operation under local anesthesia. The other case, that of a neurasthenic woman, man-

ages to obtain relief during attacks by gastric lavage and starvation, and in the intervals from artificial Carlsbad salt and probilin pills. I have observed, in addition, about sixteen cases, for periods ranging from one month to about a year, when they disappeared from view. Surgical results were good in all cases except one, but in this case adhesions of the omentum left from a former laparotomy (hysterectomy) may account for the absence of good health. The typical gall-stone colics, however, have disappeared.

INTERNAL TREATMENT. When a student, the writer listened to an able address on gall-stones by his professor of clinical medicines. The lecturer was paying great attention to the prophylaxis of the disease. I left the classroom smiling. In the corridor I met my revered teacher of surgery, Professor Pinckney French, and told him this: "Professor, I just heard an excellent lecture on the prophylactic treatment of gall stones. Will you kindly tell me how many patients have called on you during your career as a practitioner for prophylactic treatment?" It was amusing to see how hard the doctor fought to keep his dignified mien, while inwardly convulsing with laughter.

Kehr, Naunyn and others consider drugs incapable of producing a cure in the fullest sense of the word. Even if the stones are disintegrated, the olive oil, oleic acid and other drugs have had nothing to do with it, for operations

after repeated courses of treatment have shown their inefficiency. As already pointed out by me, hygienic and medicinal measures may prevent infection of the bile passages and place the disease in the stage of latency. With the relief of pain the patient is satisfied. That is about all that can be accomplished by internal treatment.

Surgery, naturally, enables us to bring about an ideal cure, a *restitutio ad integrum*. The ordinary incision into the gall bladder and drainage is a simple operation; in fact, much simpler than an appendicectomy. Assuming that there are no general and specific contraindications, any man of average ability ought to be able to do this operation without great risk to the patient.

But the trouble with the surgical treatment of gall-stones is that after the upper abdomen has been opened no one can tell what he is going to encounter. The operation for gall-stones is not complete until the operator has satisfied himself that the common, cystic and hepatic ducts are free from stones, that the papilla of Vater is free, that there are no abnormal relations of the duodenum with the gall bladder, and, finally, that there is no concomitant disease of liver, stomach and pancreas.

From this it can be easily seen that he who is not able or prepared to free the choledochus from impaction, to establish hepatic drainage, to incise the pancreas or to perform pyloroplasty or gastro-enterostomy, has no right to begin an operation for gall-stones. I have known able

and strong surgeons to leave the operating room after a choledochotomy and pyloroplasty in a state of physical exhaustion, the operation having taxed their strength for almost two hours. With our present demands for speed to lessen shock, the occasional operator, even if a good technician, may have to spend three hours and thus risk the life of a patient. Unless, therefore, an excellent surgeon can be had, I would advise the general practitioner to resort, at least for a time, to less radical measures.

We must not forget that in practically eight out of ten cases the tendency of gall-stone disease is to become latent. With some rational procedures (rest, diet, heat applied to the abdomen from without and per os, lavage of the stomach, the administration of atropin and alkaline waters, etc.) this percentage may possibly be increased. Even an empyema of the gall bladder may become "sterile" after such treatment, though, of course, too much time should not be wasted with non-operative measures.

The indications and contraindications to operation for gall-stone disease may, therefore, be summed up as follows:

(1) An acute "attack" calls for non-operative therapy. It is conceded that it is not advisable to operate *during* the attacks.

(2) Exhausted, septic individuals or such having petechiæ, are poor subjects for operation. If there exists a vital indication for operation,

the opening and drainage of the gall-bladder is about all that should be done.

(3) Icterus has been accepted as a contra-indication to operation.

(4) Cancer of the gall-bladder, which is usually talked about in text-books in connection with gall-stone disease, has no relation whatever with cholelithiasis and must be treated along lines laid down for carcinoma of other abdominal organs.

(5) Occlusion of the choledochus, suppuration in the liver, subphrenic abscess, constriction of the pylorus, perforation of the bladder, ileus and pancreatitis call for operation.

(6) Obesity, diabetes, arterio-sclerosis, diseases of the heart, lungs and kidneys are general contraindications.

(7) Medicinal, hygienic and dietetic treatment is to be given a thorough trial. If it becomes evident that the inflammatory processes or mechanic disturbances in the bladder, cysticus, choledochus or adjacent organs are not combated in a reasonable time (about one month), if the attacks continue to undermine the patient's general health, further conservatism is criminal, for an operation executed in the proper time by competent hands may save life, whereas one undertaken when the patient has been subdued by pain and infection *may* be too late.

(8) No dependence can be placed on statistics, unless it is borne in mind that the great majority of cases incline to become latent, so

that *any treatment* at all would do good (?), while it is only the rest, running a fatal course, that come under the surgeon's knife.

(9) In all obscure abdominal troubles, in all gastro-intestinal troubles of the sub-acute and chronic type, the possibility of gall-stones should be borne in mind to enable the attendant to make such a diagnosis at the earliest possible moment. Early diagnosis, in my opinion, is the best prophylaxis now available.

TUBERCULOUS PERITONITIS. In no other disease has opinion as to the advisability of operation been so diametrically opposite as in practically all forms of tuberculous peritonitis. It will be found on perusal of even the most recent literature that there are as many famous surgeons in favor of laparotomy as there are equally famous internists absolutely and unreservedly condemning operative therapy.

It will be recalled that the first laparotomy for tuberculous peritonitis was accidentally performed by Sir Spencer Wells in 1862. The section was done on a mistaken diagnosis of ovarian tumor. The patient made a splendid recovery, and, while systematic treatment of this malady by laparotomy has been first advocated by König in 1884, Sir Spencer Wells must be looked upon as the originator. Fairly large numbers of cures have been reported from many clinics ever since 1890. The writer (then a student) was impressed by the dictum that if one allowed the sun-

light to fall into the peritoneal cavity for a few seconds, an existing tuberculosis was as good as cured. I remember how we used to quarrel with some of our "philosopher" comrades as to what was the real cause of cure after "a mere incision." One in particular, I recollect, wisely nodded his head and used to say: "You are all fools to believe what the professor said, for I can assure you that it is the relief of tension that has all to do with it." I then used to imagine that there was a world of wisdom in that theory, conceived in the brain of a mere fledgling.

But we were all enthusiastic and the first time I encountered a case which I had recognized as tuberculous peritonitis I was so confident of success that I urged "a mere incision," and the family, to my great delight, consented. I opened the abdomen, allowed the ascitic fluid to escape and closed the wound by layers. Imagine my chagrin when I observed that the temperature did not cease to fluctuate, nor could I see any improvement. In about two months I had the extreme pleasure of being asked by the patient's father to sign a death certificate for his only son, whom I "was so sure of curing."

That such an experience is enough to cool the operative ardor of a beginner no one will deny. Nor was this the only case I have failed to cure. True, it is only in the last five years that I have seriously endeavored to select the "desirables" from the "undesirables," but my prognosis has

been more guarded, no matter what course I pursue.

I confess that, in my own mind, I have been unable to formulate a statement as to which cases had best be operated on and which not, since in their choice the *general condition* of the patient has been the only factor. My experience has led me to classify progressed cases as hopeless. In other words: if I could suspect the patient of being tuberculous on the first glance at his face I would refuse any operation except tapping to bring relief from the pressure symptoms.

I have seen a goodly number of all forms of so-called surgical tuberculosis cases. One sees this class of cases among the laboring people in the densely populated districts, where most of us not favored with rich families or influential alliances begin our careers, and this, by the way, is no misfortune, for it is in just such localities that we have an opportunity of studying the most varying diseases in many aspects, and gaining an experience for which many a colleague on a hospital staff might envy us.

In all my experience I have never seen a so-called *primary* case of tuberculous peritonitis. I have never been fortunate enough to open the abdomen for tub. peritonitis and find a primary focus in the appendix, tube or ovary. By this I do not mean to imply that primary tuberculous peritonitis does not exist, but that it is very rare. Most of my patients had pulmonary tuberculosis,

tuberculosis of the lymph-glands or tubercular osteomyelitis.

As regards the question of therapy, one will find little definite advice from a study of even the most exhaustive treatises. Many ideas have been advanced by authors, who show prejudice for whatever favorite treatment they happen to be interested in. It is but natural that he who has "utmost faith" in the fresh-air treatment of tuberculosis will advocate this remedy for tuberculosis of other organs than the lungs, while the dyed-in-the-wool surgeon can see salvation only in the knife, irrespective of what form of peritonitis we have to deal with. Again one is likely to hear a good deal of the great usefulness of vaccine and biologic therapy from those who pay special attention to the serum treatment. I have seen little good from it. Taking everything in consideration, I submit the following theses:

(1) The only form of tuberculous peritonitis in which laparotomy promises to prove effective is that accompanied by free fluid—ascites—provided the disease has not been very long in existence and there are no other serious tuberculous lesions elsewhere.

(2) The treatment with fresh air, rest and overfeeding is indicated in all cases.

(3) Tuberculin therapy should be tried in the early stages.

(4) Drugs and local measures (Roentgen rays to the abdomen, injection of iodoform in

emulsion into the peritoneal cavity) are useless, some even harmful.

(5) In all cases in which a laparotomy is performed, the incision should be large enough to enable the surgeon to inspect the bowels, appendix, and in women also the uterine adnexa. Drainage is unnecessary.

(6) Paracentesis is only a palliative measure with a view of freeing the patient from the pressure symptoms due to large quantities of ascitic fluid. Care should be taken not to wound the bowel—an accident that is very likely to occur in even trained hands, with fatal results.

(7) If on operation adhesions are encountered, the best treatment is to leave them alone. The only additional operation to a simple laparotomy that is justifiable is the extirpation of a tuberculous focus—wherever found.

ULCER OF THE STOMACH. Up to about ten years ago no physician would have thought of referring a case of "chronic" ulcer of the stomach to a surgeon for operation. As a rule these cases were treated by dietetic measures and by the administration of silver nitrate, bismuth, etc. With the advances made and excellent results obtained by surgery of the stomach the question of operation is now quite frequently considered by practitioners.

The diagnosis of ulcer of the stomach is either comparatively easy or quite difficult. It may tax the ingenuity of even the most skilled diagnos-

tician to differentiate between ulcer and erosion, pyloric stenosis and incipient carcinoma. The physician who is called upon to treat a stomach case with pain, vomiting and possible hematemesis must bear all these diseases in mind and resort to all known diagnostic methods to clear up obscure points.

Internists are now agreed that operation is the only means of saving life *after they have failed*. Surgeons maintain that their mortality statistics would be excellent if they were given a chance to operate at an early stage of the disease.

Let us hear a few authorities on the subject. Leube undoubtedly has earned a place in the foremost ranks of gastrologists, and he has given the following indications and contraindications:

(1) In hemorrhages of the stomach surgical treatment is indicated *absolutely* when the hemorrhages are practically continuous, and especially when dilatation of the stomach exists at the same time; relatively when profuse hemorrhages occur repeatedly. One profuse hemorrhage contraindicates operation.

(2) In intense pains, prolonged vomiting, with resulting inanition, gastro-enterostomy is relatively indicated after internal therapy has proved useless.

(3) In perigastritis, adhesions of the stomach, subphrenic and other peritonic abscesses, operation is positively indicated, when inflammatory thickening can be palpated as "tumors." When the adhesions cannot be palpated, though sus-

pected, operation is contra-indicated, except possibly after internal therapy has proved of no value.

(4) In perforation of the stomach into the free abdominal cavity, operation is positively indicated, and should be performed, if possible, within ten hours, though one must wait until the first shock has subsided. "Threatening perforation" is no indication for surgical intervention.

Practically all clinicians agree on three things:

(1) The initial stages of gastric ulcer of the stomach belong to internal medicine.

(2) Operation is indicated absolutely, that is to say, to save life, in phenomena due to the ulcer perforation, (hemorrhages, etc.) which threaten life, and

(3) When internal therapy fails to give relief and the patient becomes incapacitated from the disease.

Surgeons, as a rule, agree with the above indications.

A study of the "statistics" of gastric ulcer with a view of determining which method, internal and dietetic medication or surgery, is followed by the best results, would prove absolutely fruitless. The main reasons for this are (1) that the diagnosis is not infrequently very uncertain, and (2) gastric surgery, including also the surgery of the duodenum, which organ, like the stomach is frequently attacked by ulcer, is but a few years old and the statistics collected several years ago cannot possibly hold good, because with

greater experience and better development of technic, operative results are naturally much better now than in the past.

An operation like gastro-enterostomy by placing the stomach at rest, will undoubtedly cure many cases of chronic ulcer, provided the technic of the operation was above criticism. A so-called "vicious circle" will aggravate the trouble, and may kill the patient, unless quickly remedied. It follows that only he should undertake an operation for gastric ulcer, who can diagnose the condition in the stomach and neighboring organs when they are exposed, who can quickly decide what particular operation is indicated, and finally who is absolutely able to properly perform any of the known methods of gastro-jejunosomy or gastro-enterostomy.

For illustration I need only call attention to what I have said about the diagnostic difficulties. It is liable to happen that we open the upper abdomen for a condition that seemed to justify the diagnosis of gastric ulcer, to find absolutely nothing. The diagnosis of hysteria, after section, does not reflect creditably on any surgeon. That a hysterical woman can have pain, vomiting and even "slight" hemorrhages from the stomach (?) is well known. Again hematemesis may be due to other causes. Not infrequently an incipient carcinoma is encountered and a boldly performed gastrectomy (partial) may prolong life. The finding of an ulcer or ulcers is not always easy, especially when they do not represent the

so-called indurated forms. Spasm of the pylorus may call for pyloroplasty. Again the duodenum may have to become the organ of attack. It is evident from these remarks that he who would undertake gastric surgery must not belong to the class of surgeons commonly alluded to as "occasional operators." It is immaterial how many operations one has done, the main thing is that one have the knowledge of pathology and operative technic required to meet unexpected conditions.

I have nothing to add to the indications laid down by Leuke. It is plain that where we have to deal with a disease not mechanic in character (hyperacidity, ulceration of the mucosa) diet and medicines may cure. Even one profuse hemorrhage may be followed by a cure. But the improvement must be noticeable. It will be folly to expect anything from internal medicine if it fails to produce improvement and prevent the patient from losing ground. Where, however, the symptoms are due to mechanic disease (obstruction, adhesions and stenosis) only the "mechanic" removal of the causative factors will put an end to the patient's sufferings.

The patient, therefore, rather than the disease per se, indicates to us when an operation is needed. As a rule the suffering is so intense and annoying that consent to operation is willingly given.

CARCINOMA OF THE STOMACH is, strictly speaking a surgical disease. There is no remedy

known to internal medicine that has any influence whatever on this affection. Nor can anything be expected from the so-called physical agents. The Roentgen rays have proved useless. Internal medicine can offer but palliation of the symptoms until death closes the scene.

On the other hand surgery can offer a ray of hope only when performed in the very beginning of the disease. A carcinoma that has existed for a month or two has in all probability become so advanced that the best the surgeon can offer is a palliative operation—gastro-enterostomy. A partial gastrectomy is not promising of success when metastatic involvement of neighboring organs, especially the liver, has already taken place. Schlatter's epoch-making total gastrectomy has found few followers. The risk is too great, that's all there is to it, and between that and the comparative relief and possible prolongation of life that is offered by gastro-enterostomy there can be but one choice for the general practitioner.

The greatest attention should be paid to early diagnosis. I have seen so many cases of middle-aged men and women who have been treated by their physicians for chronic gastritis—"dyspepsia," the patients reported—which proved to be malignant and advanced to an inoperable stage, that too much emphasis cannot be laid on diagnosis.

It is true that the diagnosis in incipient cancer of the stomach is at times very difficult, if not demonstrated in the test-meal. But it can be ex-

pected of the practitioner that he at least suspect the presence of something more serious than catarrh, when the patient has failed to obtain relief from routine treatment. Given a man or woman over 35, with a history of pain after meals, referred to the region of the stomach, with or without vomiting, that does not yield within two weeks to dietetic and medicinal measures, and the physician must think of pyloric stenosis, ulcer or carcinoma ventriculi.

No special table of "differential symptoms" can be formulated to be of any practical use to the practitioner. It is well known that carcinoma of the stomach may run for some time and give no evidence on which anything else but the diagnosis of chronic gastric catarrh could be made. The classic "coffee ground" vomit cannot always be seen, simply because there is often no vomiting, the "tumor" on which so much diagnostic ingenuity has been expended to enable us to differentiate it from tumor of the pancreas or gall bladder, cannot help us, for the simple reason that no growth whatever can be palpated, and when any or all of these clinical phenomena are in evidence, then there is no more surgical problem—the case has passed the operative stage, except possibly palliative surgery. A ray of hope is held out in the microscope. If the Oppler-Boas bacillus can be demonstrated in the stomach contents, irrespective of the results of chemic analysis, we have a reason to suspect carcinoma, and should urge an exploratory operation, pro-

vided the patient is also willing to have partial gastrectomy performed if the diagnosis be verified.

The dangers of an exploratory laparotomy are not great at the hands of a competent operator. Even in feeble people I have had no death cases from it alone, though I remember one particular case where the difficulty seemed to be with the anesthetic. The patient appeared not to breathe as soon as ether was administered. I completed the operation under local infiltration anesthesia. The woman is still living, though over three years have elapsed.

It is my belief that a gastrectomy should not be undertaken by an occasional operator. There exists a necessity for rapid work to lessen shock and that requires special surgical skill.

CIRRHOSIS OF LIVER (ASCITES). It is generally conceded that the prognosis of cirrhosis of the liver, especially when it has reached the stage where there is an ascites, is bad. Sooner or later, in spite of hygienic dietetic and medicinal measures, the patient dies. Paracentesis or tapping is not a surgical operation in a curative sense of the word, since it is a very simple, minor procedure to relieve the patient from the pressure phenomena due to the accumulated fluid in the abdomen. It is the rule that this fluid once removed through the trocar re-accumulates rapidly. Tapping per se has no effect whatever on

the progress of the disease, and is simply a temporary palliative.

In my early career I was under the impression that possibly cirrhosis is a tertiary form of syphilis, and not at all due to alcoholism. I came to this conclusion when I had an opportunity to observe a painter, 42 years old, who admitted excesses in *venere* but stoutly denied excesses in *baccho*. Anti-luetic treatment failed to produce the decided improvement I had hoped for.

The Talma-Drummond operation (omenteropexy) which is too well known to need description, has not proved as successful as was first anticipated. Possibly the patients are operated on at a time when a *restitutio ad integrum* in the liver is out of the question. I have failed with it four times. A fifth observation came to my service in Lincoln Hospital through the courtesy of Dr. Christos Petoulas. The patient had been operated on elsewhere six weeks before admission, but failed to find relief. Tapping and energetic medication failed to prevent death, which came in about three weeks. On post-mortem no changes in the kidneys, adrenals and spleen were noticed. The peritoneum, both parietal and visceral, was congested but shining. Typical liver changes. Examination of heart not permitted by relatives.

In 1907 Route pointed out that by establishing an anastomosis between the large saphenous vein and the peritoneal cavity re-accumulation of ascitic fluid is prevented in cirrhosis of the liver.

Personally I am inclined to view the operation with a good deal of skepticism. But the hopelessness of the situation justifies any reasonable attempt at prolonging life. That a complete cure is impossible, at least by the operation alone, I am satisfied.

Soyesima reports from Ito's clinic two failures and one success. The successful case is especially noteworthy because a series of different operations have failed to produce any favorable results.

Space forbids the recital of all details, and I shall limit myself to the most salient features:

Patient, 38 years old, was admitted viii, 28, 1906, with the diagnosis of cirrhosis of the liver. The patient had measles in childhood; at 20, chancre and falling out of hair. For the past seven years symptoms of catarrh of the stomach (fullness in epigastrium, pyrosis, eructations, constipation.) In January, 1906, pneumonia, and shortly afterwards he noticed swelling of the abdomen. Medication useless. Was tapped seven times since February. Was no drinker and never had malaria. Appetite fair. Bowels move once daily.

Status: Poorly nourished man, anemic, skin dry, fat diminished, pulse regular, small, tongue clear and moist. No adenopathy. Liver-lung boundary lies in the right mamillary line in the fifth intercostal space. Abdomen fairly distended, subcutaneous veins not particularly dilated. Percussion dullness almost everywhere

except in the region of the stomach and umbilicus. Fluctuation evident. Spleen somewhat enlarged and palpable, liver and kidneys cannot be palpated. Circumference at umbilicus 80 cm. Distance between umbilicus and xiphoid cartilage, 18 cm.; between umbilicus and symphysis, 19 cm.; distance between umbilicus and a. s. spine of the ilium right, 21 cm.; left, 23 cm. After tapping great reduction of the distances, but margin of liver cannot be felt. Evacuated fluid clear, pale yellowish, sp. gravity, 1009. No edema in extremities. Urine normal.

VIII 31, 1906. Laparotomy (under chloroform anesthesia) above umbilicus. Ascitic fluid escapes freely. Liver somewhat diminished, of tough consistency. Spleen twice as large as a fist. Stomach and intestines normal. Omentum (large) pulled out and fixed subcutaneously by a few interrupted sutures. Abdomen closed in three layers.

Course afterwards usual. Circumference of abdomen has increased again.

X 9, 1906. Decapsulation of left kidney. Gauze drain. Closure of wound. This operation failed to stop the re-accumulation of the ascitic fluid like the first operation, so that repeated tappings had to be resorted to. The observers also noticed edematous swelling of both feet (dorsum).

XI 21, 1906. Decapsulation of right kidney. Unlike previous operation capsule strips off easily

from the parenchyma, gauze drainage, suture of wound.

In less than a month ascites quickly reappears. Patient passes on the average 360 ccm. urine per day.

XII 17, 1906. Under Schleich's infiltration analgesia an incision 4 cm. long is made in the ileo-cecal region through the skin. Fascia, muscle and peritoneum is perforated with a trocar. After emptying the ascitic fluid a silver canula 2 cm. long and fenestrated is introduced into the abdominal cavity through the puncture, the round, flat end of the canula lies subcutaneously, so that the instrument cannot slip into the abdomen. Suture. Dressing.

XII 7, 1907. After the insertion of the canula the neighboring skin showed for some time a slight edematous swelling, a few small subcutaneous veins developed, and it seemed as if the ascitic fluid would be drained permanently. The favorable phenomena, however, did not last long; the edema of the skin disappeared, and the site of the operation became transformed into a tough scar. During the year the general condition of the patient became worse, he was reduced to a mere skeleton. Ascites and edema of extremities and scrotum reappeared. Tapping has to be done about once a week.

XII 10, 1907. Under chloroform anesthesia, cutaneous incision at the upper, inner surface of the left thigh, corresponding to the course of the large saphenous vein, beginning 2 cm. above

Poupart's ligament obliquely from above outward to down inward, for 17 cms. The vein is dissected free from point of termination into the femoral for 8 cm. in the peripheral direction and divided somewhat obliquely. The peripheral stump is ligated, the central one is turned upwards over Poupart's ligament, close to which the peritoneum is incised for 1 cm., the obliquely cut stump of the vein is so apposed to the peritoneal opening that when it is fixed by five interrupted sutures (catgut No. 0) not a drop of ascitic fluid escapes. Gauze drainage, continuous suture of the skin. Drain removed the next day.

XII 18, 1907. Healing per primam. Since the last operation the quantity of urine has become somewhat increased, but the abdominal circumference gradually becomes larger, for which reason on the following day practically the same operation performed nine days ago is repeated on the right side. In a week sutures are removed and healing has been per primam.

January 24, 1908. Circumference at umbilicus, 97 cm. Distance between umbilicus and xiphoid process, $22\frac{1}{2}$ cm.; between umbilicus and symphysics, $22\frac{1}{2}$ cm., and on the right between umbilicus and ant. sup. spine of ilium, $25\frac{1}{2}$, on the left, $27\frac{1}{2}$, and since the last operation the daily quantity of urine has become increased, the average being 900 ccm.; pulse has become a little stronger.

March 17, 1908. Circumference at umbilicus

lessened by 10 cm. and other measurements correspondingly. Daily average quantity of urine, 1650 ccm. Edema of lower extremities has disappeared without a trace.

The canula was eventually dissected out from the scar under local analgesia.

Patient is kept in the hospital until July 7, 1908, when he is discharged considerably improved. All objective and subjective phenomena have practically disappeared, and after about a year since the last operation the patient writes that he feels well, and that the circumference of the abdomen is getting less and less.

As already alluded to, the other two cases proved unsuccessful. The Rutte operation can be done under local anesthesia, and seems to me to be preferable in many respects to the Talma operation, splenopexy, hepatopexy or decortication of the kidneys. The rationale of the last operation is not quite clear to me. In view of the above case it would be a sin of omission not to give it a trial in the ascites due to liver cirrhosis. Unless one is absolutely devoid of anatomic knowledge and ability to wield scalpel and needle he should be able to do the operation in about fifteen minutes.

It goes without saying that medicinal and dietetic measures should not be neglected at the same time.

HERNIA (inguinal) is, strictly speaking, a surgical disease, and is considered only in this monograph for several reasons:

First, the mere presence of a reducible hernia is not incompatible with good health.

Second, complications, to a certain extent, can be prevented by the continual use of retentive appliances.

Third, the operation, especially in the very young and aged, is not to be undertaken lightly.

It goes without saying that an irreducible, incarcerated hernia imperatively demands surgical relief. Not to operate means to cause the death of the afflicted individual. Nor should too much time be wasted with attempts at reduction (taxis). If after the administration of an opiate, possibly also while the patient is in a warm bath, reduction does not take place after gentle attempts for half an hour, operation must be resorted to as a life-saving measure, and this irrespective of whatever general contra-indications may be present.

Everything possible should be done to prevent shock. The casual operator who has not done many herniotomies and who is not familiar with the technique of infiltration anesthesia, according to the methods of Schleich or Braun, should not undertake the operation in the aged or very young, especially when the general condition is bad for even an experienced surgeon will have a serious task before him.

Case. The writer was called in the winter of 1904 by Dr. Dolamore, of this city, to see an old man who for three days had suffered from an irreducible inguinal hernia. The hernia had existed for many years. Pulse

was bad. In spite of all protests on my part the family and the patient refused to immediately go to the hospital. The patient, getting weaker and worse, went the next day. Infiltration anesthesia after Schleich proved but partially successful, the patient moaning at every step of the dissection. A small quantity of ether had to be administered. As soon as the sac was opened congested loops of the bowels presented themselves. They seemed to do well after the application of sponges wrung out in hot saline solution and a typical Bassini was concluded in a very few minutes.

The patient did well after the operation, but died in the evening, ten hours after the operation, undoubtedly from asthenia.

I have not the least doubt that had this same operation, with the comparatively good condition of the bowels, been performed while the patient's general condition was not so greatly taxed, say two days previously, he could have awaited death from natural causes or from some other disease common to old age.

The surgeon may find partial gangrene, even though the incarceration is but a few hours old, everything depending on the degree of pressure on the "locked" bowel loop or loops. In such cases the anchoring of the affected bowel with or without enterostomy should be considered rather than resection of the bowel, unless the condition of the patient permits such a risk.

Given a young or middle-aged man or woman without any organic lesion usually accepted as a contraindication to serious operations, there is no reason to my mind why any of the modern methods of herniotomy (radical operation) should have any mortality, especially when due attention has been paid to asepsis and anesthesia. The operation is practically an extra-peritoneal

one, and should never be followed by peritonitis. Local suppuration, however, will occur even in the most careful hands, and is almost always due to the catgut. Silk or any other non-absorbable suturing material is not ideal for hernia operations. Possibly the Davidson stitch will prove ideal in such cases, but my experience is too limited to express a positive opinion. Except the case above referred to, I have had one more death case in an infant two months old, a twin, much below standard in development. The congenital hernia was discovered by me at birth—I having delivered the mother—and immediately guarded against by the application of an improvised cotton-truss. The mother, however, in spite of all warning, became careless and often removed the appliance. When the patient was seen at my office at a late hour I ordered the mother to remove it immediately to the hospital. I followed and operated an hour later. The operation proved very difficult, the distended bowels coming through the opened sack with force and in “torrents.” In spite of a larger incision and able assistance (Dr. Theodore) I simply could not bring the bowels back into the abdomen and had to puncture them and evacuate the flatus before this could be done (a turpentine enema given before the operation failed to bring down the abdominal distention). This case, in spite of the difficulties, promised to be successful. I remained with the little, marantic infant for a few hours and felt so encouraged that I left it

in charge of the nurse. The next morning at 9 A. M. the little patient, who seemed bright and had taken the mother's breast, began to moan, and died within a few minutes. Post-mortem examination was not permitted, except to reopen the wound, but nothing could be found, even after practically the entire ileum had been removed.

My total herniotomies are 176. Up to 1905 I did the Bassini operation, since then I have modified the operation by utilizing the sac below the ligature as a "pad," fastening it to the external oblique as high over the inner ring as possible, and by leaving the cord in the original position (Ferguson).

I have had no recurrences. In one case a woman did return seven months after herniotomy, but examination showed conclusively that the "returned" hernia was a new femoral rupture.

As a matter of curiosity I report that in one instance a diagnosis of inguinal hernia made by me proved on operation a hydrocele of the cord. (J. K., Oct. 16, Park Ave. Hospital).

The fact that the "tumor" over Poupart's ligament could be reduced by manipulation threw me off my guard. Such blunders are fortunately followed only by good results, in so far as the real condition is remediable only by operation.

My own experience, coupled with the opinions of competent and reliable observers leads me to submit the following theses:

- (1) In incarcerated, non-reducible hernia,

don't waste too much time with taxis, but operate without another hour's delay. Age is no contra-indication. The older the patient the earlier the operation should be performed. Constitutional diseases cannot be accepted as contraindications in such cases, the certainty of death making any risk compulsory.

(2) A truss (properly applied to a reduced hernia) may have a positively curative result in very young individuals with small hernias. Obliteration of the hernial sack may result in time. In adults, under similar conditions the truss is merely a mechanical device to hold back the hernial sac. A well-made truss properly fitted will prove serviceable with people who do not have to do heavy work and who have the time and inclination to frequently resort to hygienic measures to prevent irritation of the skin. Hard working men and women will do better to undergo an operation.

(3) Other methods, except operation or the truss, such as injection of irritant solutions, paraffin prothesis and the like, must be condemned as unsurgical, unscientific and dangerous (thrombosis, embolism!).

(4) Very large hernias are not to be operated on, because the mortality due to the operation (which naturally proves extensive as a procedure) is rather high. As a rule the men and women having voluminous hernias are obese and of an age which for want of a better term we may call "arterio-sclerotic." In such cases the general

practitioner will do well to order a suitable suspensory, since reduction is not always possible, and, therefore, a truss cannot be applied without producing undue pressure. If operation becomes necessary a specialistically trained surgeon is apt to save life where the casual operator would doubtlessly experience bad results.

(5) The general contraindications (diabetes, heart disease, etc.) to facultative operations, are applicable to all reducible hernias.

FEMORAL HERNIA cannot be cured except by a surgical operation. Practically all that has been said with reference to inguinal hernia holds good for this form of rupture.

UMBILICAL HERNIA is an affection whose therapeutic problem is easily enough disposed of by the experienced operator. If seen when the hernia is comparatively small and not strangulated, few surgeons will give the advice to bother with anything else than an operation.

The general practitioner naturally would hold a similar view if the operation would always prove successful, and permanently so. But what are the facts with regard to mortality and recurrence? Both are high enough to warrant caution.

In my opinion operation is imperatively indicated only in the event of strangulation.

If the umbilical hernia is not too large and can be reduced, a suitable truss may prove all that can be desired. In obese individuals the retention of the truss in situ may prove impossi-

ble, in which cases an abdominal belt, to which a compression pad is attached in a manner to fit over the hernia, will prove ideal.

If an umbilical hernia in infants (congenital) does not disappear after a year, in spite of careful strapping, I would suggest subcutaneous prosthesis by means of paraffin.

Whenever operation is decided on, be it because there exists a vital indication or because the patient desires it in order to be rid of the annoyance due to trusses, bandages, etc., Mayo's technique should invariably be followed, as undoubtedly the best planned to guard against recurrence.

TYPHOID FEVER COMPLICATIONS. Typhoid fever may become complicated by (1) perforation of the intestine, due to ulcer, (2) by infection of the gall bladder and (3) by thrombosis. That typhoid fever may be complicated by a good many strictly surgical and internal diseases is self-understood, but they have, of course, no relation to typhoid fever as such. We shall therefore limit our discussion to the complications proper.

PERFORATION OF THE BOWEL is a serious complication, often leading to a fatal issue. Laparotomy in the median line search for the perforation, which may be in any part of the ileum, cecum, colon or appendix, excision and suture, or even resection of a part of the bowel, if there are several perforations close together, are sur-

gically sound procedures from a theoretic point of view.

My own experience with typhoid perforating ulcer of the intestine is so limited that I can discuss this subject only in the abstract, basing on the contemporaneous literature.

In the first place the diagnosis of perforation of the bowel is no easy matter. Hemorrhage from the bowel with collapse is, in my opinion, no absolute proof of perforation. Pain and tenderness are characteristic, provided they have not existed previously. A man in stupor can, of course, aid the diagnostician very little. Cessation of liver dullness is a valuable diagnostic feature, but unreliable when meteorism has been in existence for some time previous. The physician will become sure of the diagnosis by detecting the appearance of *peritonitis*, which is always general in these cases.

Assuming that a patient really has a perforation, what is the physician to advise? On one hand we have the assurance of a man like Keen that unless a patient is operated on within 24 hours he is practically doomed. On the other hand, the success of an operation is extremely problematic. The statistics of even the most expert operators show that their fatalities are enormous, even when the operation has been done very early. What chances, therefore, would a patient already sapped in strength by a serious systemic disease have with the occasional operator? I fear none. Again there is the pos-

sibility of a small ulcer that has perforated healing under appropriate internal medication.

The question of laparotomy for typhoid perforation, in my opinion, can be summed up as follows:

(1) Diagnosis must be positive, if need be, verified by an experienced surgeon.

(2) The general condition of the patient must be taken into account under all circumstances.

(3) Operation for perforation during the acute stage of the disease is practically contraindicated, for the intestine is in no condition during the first four weeks of the disease to hold sutures.

(4) Operations should be done only when perforation has occurred during convalescence.

(5) The operator must be rapid and command competent assistance.

(6) The seriousness of the situation must be laid before the relatives and their full consent obtained.

Unless the physician can command the services of a competent abdominal surgeon and secure the unconditional consent of the patient or his family, after the bad prognosis has been explained to them, he will have done all in his power when he limits his treatment to absolute rest (morphine hypodermatically!) withholding of food for ten hours (though I should not hesitate to inject a few ounces of milk and brandy per rectum), and to heroic stimulation (saline

transfusion with adrenalin, hypodermatic injection, of nitroglycerin, camphorated oil, strophanthus, etc.).

CHOLECYSTITIS DUE TO TYPHOID INFECTION. All that has been said under "gall-stones" holds good also in typhoid cholecystitis. Not much time should be wasted with ice-bag or poultices, calomel and other medicines. Cholecystostomy will save life when the treatment with medicines does not produce prompt amelioration of the symptoms.

As a rule this form of cholecystitis sets in suddenly while the patient is convalescing and with all the ear marks of an acute infection. The so-called catarrhal jaundice, of course, should be treated non-surgically.

Caution! The operation must be done under local anesthesia.

THROMBOSIS of the crural vein is not so rare a complication as we are led to believe. I myself have seen five cases. Nothing can be done to reduce the size of the enlarged limb. I have tried hot air for months in one case, but the enlarged limb remained a fait accompli. Rest, elevation and symptomatic treatment is the armamentarium at our disposal.

CHAPTER VI.

DISEASES OF THE CHEST.

PNEUMONIA. This disease, which belongs to the domain of internal medicine, may become complicated and require surgical therapy. I have no reference to venesection, a procedure, by the way, which is undeservedly neglected, since in properly selected cases it may prove a veritable life-saver, but to operative procedures directed to the lung proper or its enveloping membranes, the pleurae.

As a complication of pneumonia in which operation may become necessary, we need only consider suppuration. The presence of one or several abscesses in the lung can frequently be diagnosed with comparative ease, and should always be suspected in pneumonia, which runs a "hectic" course, when improvement would ordinarily be expected.

Operation can be considered only when the abscesses are fairly large and superficial. The central abscesses are practically out of consideration because, as a rule, they are small. The physical phenomena are very valuable from a diagnostic point of view. With the development of Roentgenography much can be expected in the near future from that diagnostic agent. The employment of the positive and negative pressure cabinets will prove of value therapeutically, an

acquisition, by the way, which may mark great strides forward in lung surgery, in the very near future.

To a certain extent the above brief remarks pertain also to

TUBERCULOSIS. It will be recalled that surgery has not hesitated to attack certain phases of pulmonary tuberculosis. To-day no one would seriously consider operative therapy for this malady, for the excision of the apices, the collapse of the lung by the injection of N-gas (Murphy) have all been abandoned. But I venture to predict that surgery will yet claim localized tuberculous processes—as properly coming within its domain. Just now we are all absorbed with the fresh-air treatment—not only in pulmonary, but also in surgical tuberculosis. Of the value of fresh air there can be no question, but it is by no means a cure-all, even when combined with other rational measures (rest, overfeeding, tuberculin-vaccine-therapy, etc.). Possibly much good may yet come from hyperemization of the lungs in accordance with Bier's teaching. Masks, enabling rarefaction of the air in the respiratory organs, have been devised. We know that this method would render the affected parts hyperemic. Whether or not in practice this method will be as useful as passive hyperemia in tuberculous extremities, time only will tell, for the data on hand are not sufficient to enable one to form a decisive opinion.

I have had one observation only. This concerned a young woman who had both lungs involved. I improvised a mask and, after about ten treatments, thought I noticed some improvement. At any rate the night sweats and the temperature decreased somewhat. The physical phenomena on auscultation and percussion, remained the same. I did not like the patient's appearance. (I may add en passant that I have great faith in estimating the gravity of a case by the facial expression, something like the "facies" in peritonitis), and hesitated to permit the patient's removal to Colorado. But the family was insistent, and she died there a few months later.

(For Freund's operation for apical phthisis see "Emphysema of the lung" in this chapter.)

GANGRENE OF THE LUNG. The average case of "gangrene" of the lung is easily diagnosed. The microscopic findings of the sputum (absence of *Tb. bacilli!*) the characteristic fetor and the Roentgen photograph can leave no doubt as to the nature of this rather uncommon disease.

There can naturally be no other than surgical treatment, and I am satisfied that if operation be done before the patient's condition has become so bad that he cannot withstand the shock of any serious operation, the fatality of gangrene of the lung could be considerably lessened.

The operation has as its aim the drainage of the gangrenous part. Thorough exposure of the

tate considerable resection of the ribs, either anteriorly or posteriorly. The exact localization of the gangrenous process is essential before any operation can or should be undertaken. This can be achieved only by means of Roentgenography. Exposures of this kind, however, require expert knowledge, for X-ray photography of the lung affected region is essential, and this may necessarily not an easy matter, nor can it be accomplished with an ordinary apparatus that would do for the extremities. Finally several photographs, in different positions, must be made, and the developed plates properly interpreted. (I rely of late more on fluoroscopy, provided the patient can be made to sit up for a few minutes.)

EMPHYSEMA. In most text-books on internal medicine emphysema is treated as a purely internal disease, with no mention whatever of any surgical procedure as indicated for it, nor have I been able to see any reference of that character in standard works of surgery of very recent date. This is all the more noteworthy since W. A. Freund has proposed and advocated an operation of the thorax for emphysema (and tuberculosis) as early as 1859. The first operation, however, was done only a little over three years ago by Hildebrand (Charité Hospital, Berlin).

Let us, therefore, first review the technique of Freund's operation:

A transverse incision, 10 centimeters in length, is made along the course of the first rib, a lon-

gitudinal, curved incision is made downward over the boundaries of the cartilages to the fifth rib. The fibres of the pectoralis major and minor are partially severed with the knife, or are pushed aside externally and in the axillary direction by any blunt instrument, to enable the resection of the cartilages of the second, third and fourth ribs. This is done for a distance of about 3 cm.; that is to say, close to their osseous borders. Any rib scissors is suitable for that part of the operation. It can be noted that after the removal of a cartilage the rib pertaining thereto takes part in the respiratory movements. The perichondrium that is left after the resection must be carefully removed. The next step is the removal of a piece of the cartilage of the first rib at the osseous border. This is best accomplished by a Gigli saw, introduced through a grooved director or strong aneurysm (pedicle) needle. The pleura has practically remained intact so far. If the pleura is very thin the lung can be easily recognized beneath it and its inflation during respiration noted. The extensive wound is closed except to permit the exit of a small drain. Suturing must be done in such a way that the stumps of both pectorals cover the remaining cartilaginous and osseous raw stumps, to prevent union of the cartilaginous ends. Catgut is, of course, best for this. The skin can be sutured in any way preferred by the operator. To insure prompt healing, hemorrhage must have been fully controlled before the wound is closed.

If the above operation can really relieve the sufferers from emphysema, with its annoying and depressing phenomena, it should become very popular. As I have absolutely no experience with it except as obtained from a perusal of recent literature, I must confine myself to conclusions derived therefrom, though it is admitted that they are only theoretic in character.

The following brief clinical reports will, perhaps, enable the reader to differ with me. They are cited because so far they form the only available material.

(1) Hildebrand operated on a man 46 years old. Barrel-shaped thorax, heart lesion with edema of the extremities. Under local anesthesia the second and third ribs (right side) were exposed and a piece $1\frac{1}{2}$ centimeters in length resected from each cartilage. Temporary improvement after operation. Two months later condition worse. Same operation performed on the second, third and fourth ribs on the opposite side. Improvement afterward lasting. Thorax expanded considerably on inspiration, capacity of lung being almost doubled.

(2) Patient, glazier by occupation, 46 years old. (Operated on in the surgical clinic at Halle.) Suffered for five years from pronounced phenomena of emphysema. Rigid thorax, cartilages 2-5 considerably thickened. First operation April, 1907. $1\frac{1}{2}$ cm. are resected from the right second and third cartilages at the osseous border. Immediately after operation striking

improvement, respiration less labored, attacks of dyspnea ceased. Trouble recurs about a month later. Now 2 centimeters are removed from the left second, third, fourth and fifth cartilages. Immediately after resection the ribs retracted in expiratory position. Cure lasting.

(3) Pæssler-Seidel describes this case. Barrel-shaped thorax, positively rigid. At the least exertion intense dyspnea. Patient was so sick that he requested to be retired on a pension. As all medication had proved valueless, the patient consented to risk the operation. Resection of 2 cm. long pieces from first and fifth ribs. The first rib cartilage was calcified and as hard as bone. After resection the ribs became movable in expiratory position. The patient is now able to do all sorts of heavy work and undergo all sorts of physical exertion without any discomfort whatever. Indeed a marvelous recovery.

(4) Stieda's patient suffered for the past three years from ever increasing difficulty in breathing. Inspiratory dilatation of the thorax only one centimeter. Resection of pieces with perichondrium from the second, third and fourth ribs on either side. Gradual improvement of symptoms as well as increase in respiratory circumference up to four centimeters.

(5) Prof. Gottstein, of Breslau, reports an interesting case. A woman 54 years old suffered from the well-known symptoms of emphysema: Dyspnea (almost to suffocation), palpitation of the heart, intense cough, profuse expectoration.

etc. The extent of expansion two centimeters above the mammilla amounted to five centimeters. Operation was done because the trouble forced the woman to remain in bed. At first $1\frac{1}{2}$ centimeters were removed from the second and third rib cartilages, and then a piece from the first rib, during which the pleura was torn, so that an extensive resection had to be desisted from. After removal of the pieces of cartilage the ribs increased in mobility.

Three weeks after operation no improvement could be noticed, but after six months improvement was pronounced. Patient can ascend stairs and walk about for some time without complaining of shortness of breath, the operated half of the thorax moves considerably more than the other side. Gottstein considers this case a "late" result of the operation.

(6) C. Rath is the only one who had the courage to report a bad result. His patient is a salesman, 37 years old, who was admitted to the hospital April 3, 1909. Patient claims to have coughed for many years. The trouble became worse during the colder season. Since three years increasing shortness of breath. At 20 pleuro-pneumonia. He was operated on at that time, a rib being removed, probably for empyema. Patient had scarlet fever and diphtheria in childhood, gonorrhoea and soft chancre as a young man; syphilis, however, denied. For years patient has been a "barker" in front of some place of amusement. On account of his trouble he had

repeatedly spent some time in hospitals. On the day of admission he had on the street a severe attack of dyspnea, so that he had to be taken to the hospital in an ambulance.

Status praesens: Medium-sized, nutrition moderate, skin dry, relaxed, pale, face slightly cyanotic. Respiration extremely labored. The patient has to sit up in bed and has to resort to the use of all auxiliary muscles during respiration. Thorax has a pronounced barrel-shape. Diameter of depth at the height of the nipple, 25 centimeters, lateral diameter at same height, $26\frac{1}{2}$ cm.; pronounced inspiratory position, on both sides pronounced inspiratory retraction. In the right axillary line at the sixth rib an old scar, due to resection of the rib. Both sterno-cleido-mastoidei muscles appear prominently during inspiration. Expansion of thorax is reduced to less than 1 cm. (86: 87 cm. in the mammillary line).

The boundaries of the lungs are decidedly expanded, corresponding anteriorly to the lower margin of the seventh rib. Mobility of the lung margins absent.

Percussion over both lungs pronouncedly hypersonorous. Inspiration on auscultation of indefinite character mixed with fine râles, expiration prolonged and feeble.

Apex beat cannot be palpated. On the other hand pulsation of the epigastrium can be plainly observed. The hand applied to this region feels plainly the pulsation of the heart, which has been

forced downward. Absolute dullness on percussion over the sternum only in a width of $5\frac{1}{2}$ cm. and height of $4\frac{1}{2}$ cm., the relative dullness extends over the median line to the right by $4\frac{1}{2}$ cm. to the left by 11 cm. at the level of the fourth rib. At the apex one hears somewhat muffled but pure sounds. Pulse, 90-100, regular, compressible, small. Abdominal muscles used to a great extent during respiration, on expiration a ring-shaped retraction is noted above the umbilicus. The ribs of the lower thorax border are pulled outward during inspiration.

Liver enlarged. Spleen cannot be plainly palpated. Abdomen soft, nowhere sensitive to pressure. Tongue moist, somewhat coated. Bowels regular. Appetite fair. Sleep bad—the patient must sit up in bed for hours because he cannot get air.

Patellar, plantar, tendon and cutaneous reflexes somewhat exaggerated. The left pupil is a little larger than the right—both react promptly.

The patient, who was admitted in a state of intense dyspnea with cyanosis, recovers soon, and is able to give information.

April 5. No fever. Urine normal. No edema. Blood-pressure 130-140 H₂O. Feels better, coughs much, expectorates muco-pus of tenacious consistency. Tubercle bacilli cannot be demonstrated. Pirquet's reaction negative. He breathes with the aid of the auxiliary respiratory muscles and abdominal pressure, with the upper

part of the body bent forward. Roentgenography shows almost no difference between the cartilages and the ribs proper. Fluoroscopy shows a limited mobility of the diaphragm.

The patient is operated upon under ether-oxygen anesthesia (very little ether!) according to the method described above. The extirpated pieces of cartilage are easily cut with a knife. The cartilage itself is of brown-yellow color, calcium deposits cannot be demonstrated macroscopically. Microscopically nothing abnormal is shown.

After the operation the patient does not vomit. In the evening pronounced dyspnea. Patient has to sit up in bed, is very restless, pulse 100, no temperature. The day following patient is quieter. Sputum muco-purulent, tinged with blood and profuse. Pulse accelerated to 120. An emphysema of the skin which begins on the left side of the chest, extends considerably during the day to the other side, downwards to the costal arch and upward to the zygoma, which deforms the face, because it is bloated. Bad air-hunger with attacks of dyspnea. The cutaneous emphysema extends during the night up to the orbital margin. It can also be demonstrated in the axilla. Patient died about 40 hours after operation.

Post-mortem report: In the place of the resected ribs (cartilages) one sees the pleura, which is covered with blood coagula. Water test shows at no place a perforation. After removal of

the sternum the lungs retract but very little. In the anterior mediastium air is contained, also in the connective tissue. Both lungs are firmly adherent, especially posteriorly and at the apices to the costal pleura by thick strands and scars, and can be separated only with loss of substance. Lungs on both sides fairly voluminous. To each apex a cavity of the size of a cherry, with smooth walls. The other parts of all lobes show everywhere small, disseminated, partially confluent nodules.

Anatomic diagnosis: Cutaneous emphysema, chronic indurating and ulcerative tuberculosis of both apices, subacute, disseminated tuberculous broncho-pneumonic foci in all lobes, extensive adhesive pleuritis (both sides).

I have cited the last case almost as fully as given in the original report, because it shows that an error of diagnosis was made. This error does not at all reflect on the surgeon, because the same diagnosis was made by the eminent clinician-internist, who saw the patient when first admitted. Finally, the symptoms were such as to lead to the diagnosis of emphysema pulmonum, the only other condition with which it could possibly have been confounded is: bronchiectasis.

Professor Gottstein says that Freund's operation, at the time he reported his case, had been done on a total of ten cases with more or less favorable results. I have no access to the other five. Rath properly remarks that with the ten-

dency of surgeons to keep their failures to themselves no one can tell how many times Freund's operation has been performed without success.

With so limited a number of observations definite conclusions are scarcely possible.

The diagnosis is often uncertain, as can be seen from Rath's case. The general practitioner will do well to secure the co-operation of colleagues noted for their ability to correctly interpret the objective phenomena revealed on physical examination of the thorax. That medicinal measures, aëro-therapy, etc., as given in standard text-books should be tried exhaustively goes without saying.

Young men are not good subjects for Freund's operation, and I would select middle-aged persons with rigid thoraces (or with extremely little mobility), whose cartilages show calcareous degeneration. I doubt very much whether the last can be diagnosed from a Roentgenograph.

Possibly the only way out is to select the second or third rib and make an "exploratory" section. This could be done without risk under local infiltration analgesia, especially if some adrenalin be added to a weak solution of cocain or its surrogates. Extirpation can be accomplished with the rib-shears absolutely painlessly if the solution has also been properly deposited under the perichondrium or periosteum, as the case may be. I can testify to that from a number of thoracotomies undertaken for the relief of empyema. I distinctly recollect the case of a highly nervous young college boy, who squirmed

when I inserted the hypodermic needle, but who evinced no sign of pain after the operation proper had been under way.

The operation should always be done under local analgesia in preference to general anesthesia, for obvious reasons.

Freund suggested the above operation also for apical phthisis. In my judgment it is absolutely valueless for this affection, the ingenious theories advanced by him and others to the contrary notwithstanding. We know from experience that a tubercular focus can be prevented from spreading only when it is directly attacked, be that attack in the form of a curettage (excochleation) or by the mediate application of suitable antiseptics, especially iodoform.

CHAPTER VII.

DISEASES OF DUCTLESS GLANDS.

(Note.—Ductless glands, physiologically considered, are those that do not yield any excretion. As their very name implies, they have no excretory ducts, such as is possessed by the pancreas or liver. They furnish the human economy with secretions—the so-called “inner secretion”—the exact role of which has of late been made the object of much investigation. The principal ductless glands are: the thyroid, the spleen, the adrenals, the thymus and the hypophysis cerebri. In the following diseases the function of the glands under discussion is but lightly touched upon, since any attempt at thorough discussion would mean the preparation of a large-sized volume. Excellent monographs have appeared on the subject, to which the interested reader is referred.)

GOITRE (Struma) is simple enlargement of the thyroid gland, accompanied by degenerative processes. Inflammation of the gland and malignant disease involving the thyroid are separate and distinct affections. Whether or not a simple goitre can produce the syndrome of symptoms known as exophthalmic goitre (see next section) is questionable. Some authors have held that pressure of the enlarged gland on the pneumo-

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gastric and sympathicus can produce tachycardia and exophthalmus.

The diagnosis of simple struma offers no special difficulties, except when the swelling has its seat low down, behind the sternum.

A simple goitre may produce no other phenomena than that of deformity of the neck. I have often been appealed to to operate by young women, whose only complaint was that they could not wear a tight-fitting collar. The operation in such cases becomes virtually a cosmetic one, and as such does not interest us here.

Struma that produces no symptoms can be let alone. I would not advise such a policy, however, for several reasons.

In the first place goitre is a disease, and therefore should be remedied, especially since the physician commands several legitimate non-operative measures. In the second place the growth may increase and produce symptoms of a threatening character, after having remained stationary for many years. The patients should be advised of this possibility.

Goitre producing pressure on the trachea, esophagus, veins and nerves of the neck becomes at once a surgical disease. Pressure can be recognized by difficulty in breathing (dyspnea), difficulty in swallowing (dysphagia), congestion (venous) of the head (headache, vertigo, lassitude, drowsiness), changes in speech (paralysis of the vocal cords), etc.

Non-operative measures are indicated only in

mild cases. These are: (1) Administration of preparations containing iodine, such as potassium iodid, thyroid tablets, applications of ungt. iodi. Injections of solutions of iodine into the goitre, in my opinion, are not entirely harmless. There is always the possibility of injuring a blood vessel or nerve, with disastrous results. It is neither a sound internal nor surgical method. The only time it can be used with any degree of safety is in cystic struma, but even then it is better to incise and drain the cyst on surgical principles.

While it is easy to establish the indication of operation it is difficult to answer the question as to whether the "occasional" operator is to be allowed to undertake the excision of the thyroid. The answer to this question must be left to the individual practitioner.

I must protest, though, against approaching the thyroid with knife in hand, without at least appreciating the fact that one has to deal with an operation that cannot be compared with the extirpation of superficial cervical glands or of a superficial lipoma, yet I have seen several young members of the profession undertake a thyroidectomy with a nonchalance that betrayed their utter ignorance of the dangers they were risking.

It is not the purpose of this little work to teach surgical technics, but I urge the thorough study and perusal of available anatomic and surgical atlases and specialistic textbooks before undertaking the operation.

How would you feel after boarding a yacht

for a sea-cruise, if you learned that the captain had neither compass nor chart showing the cliffs and submerged rocks?

A familiarity with the general principles of asepsis, dissection and hemostasis does not suffice. One must know something of the physiology of the gland, the anatomy of all the structures involved, especially the blood-vessels, the recurrent laryngeal nerve and the pleura and the possible dangers incident to the operation per se.

Experience has taught us that the complete removal of the thyroid gland is often followed by a systemic condition of the individual resembling myxedema—the so-called cachexia strumipriva. Total extirpation is permissible only in malignant disease of the gland, even at the risk of a subsequent cachexia, which, by the way, can be controlled to a certain extent by the administration of thyroid preparations.

Technically the operation may be very easy or extremely difficult. The latter will happen when we have to deal with "vascular tumors." Ligature of the supplying blood vessels before splitting the capsule will prevent a useless and dangerous hemorrhage. Care should be taken to ligate at two places and to sever the blood vessel between the ligatures. This is the only safe measure to prevent air embolism. The entrance of air into an accidentally opened vein may cause collapse and sudden death.

A danger that has been a bugbear of even the most expert surgeons is the accidental injury of

the recurrent laryngeal nerve. When this nerve is pulled or otherwise roughly handled, paresis of the vocal cords on the affected side is sure to follow. This may disappear after some time. Where the nerve has been cut or caught in a ligature permanent paralysis is the usual result. That this means a change of profession to those who earn their living with the voice (singers, actors, speakers, teachers, etc.) is self-understood.

The court annals are full of malpractice suits, instituted against unfortunate surgeons who could not be accused of incompetence. This has led many surgeons, especially Kocher and Roux, to devise operative methods which will exclude the possibility of injuring the recurrent laryngeal. But the best safeguard will not avail when anatomic knowledge and careful operative technic are lacking. Finally the surgeon should never begin a thyroidectomy without being ready to perform tracheotomy.

Patients who show signs of impaired speech should be examined laryngoscopically before and after operation by a competent laryngologist. This as a matter of self-protection.

CARCINOMA AND SARCOMA of the thyroid offer a bad outlook, whatever form of treatment be instituted. If there are no positive contraindications complete extirpation should be done, and the region at once submitted to the Roentgen-rays.

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A tracheotomy may have to be made as a life-saving operation. Often enough it will be a preliminary step for extensive resections, including the trachea. Such surgery should be done only by the most experienced surgeons.

EXOPHTHALMIC GOITRE, also known as Graves' or Basedow's Disease, is a goitre characterized by protrusion of the eyeballs (exophthalmus) and by heart-phenomena (tachycardia). The enlargement of the thyroid gland may be so insignificant as to escape palpation.

In pronounced cases an error of diagnosis is impossible. Seniors, who had never seen a case before, have diagnosed exophthalmic goitre in my clinics. Of course, when the phenomena are limited to the heart, a positive diagnosis will often enough be impossible, for a while at least.

I have often enough seen young women who have consulted a number of general practitioners by whom they were treated for "nervous heart trouble." Close observation revealed the true state of affairs.

The disease is in all probability a pure thyroid intoxication, the secretion of the gland being pathologically altered or possibly increased to excess.

Exophthalmic goitre is a true borderland disease in that it is claimed by internists and surgeons alike. Of late internists and neurologists are inclined to yield many of their exophthalmic goitre cases to the surgeon.

Operation consists in the partial removal of the thyroid gland. If I may be accused of being an alarmist by having called attention to the dangers of partial thyroidectomy for ordinary struma, no one will deny that an operation for exophthalmic goitre is a very serious procedure. To be sure the statistics of the surgeons have greatly improved since the "toxemia" of the "morbid chemic activity" of the thyroid has been better appreciated. Kocher, no doubt the greatest living authority on goitre, shows a mortality of over four per cent. Of 319 operations reported by Rehn, 43 died, and 13 did not improve.

Carl Beck, of New York, in his masterly monograph on the Surgical Diseases of the Chest, while favoring ligature of the enlarged blood vessels and extirpation of half of the gland as a logical procedure, does not fail to caution that in 75 per cent. of all cases grave sequelæ appeared after operation. He especially mentions: inclination to psychoses, increased excitation, interrupted by coma, congestion of the face, palpitation of the heart, irregularity of the pulse, tremor, vomiting, cold perspiration, cyanosis, dyspnea, toothache, earache, fever and liver affections.

Truly a formidable array of post-operative complications, in three-quarters of all operated cases, that may well bring down the wrath of patient and friends.

The general practitioner should therefore think twice before advising an operation.

What are the therapeutic resources of the in-

ternists? What, if any, beneficial effects have been obtained by them?

Rest, medicines and serotherapy, is the answer to the first question.

Let us investigate these measures with a view of answering the last of the two questions.

Rest is undoubtedly beneficial. But in order to be so it must be enforced with an almost cruel exactness. The patient, we are told, is to be placed in bed for three months. And this rest cure is not to be interrupted during that time by even as much as raising him or herself out of bed to urinate or to take nourishment. Rest, absolute, in the sense taught by Weir Mitchel, for three months, if you want results.

I have three objections.

First, no positive and lasting cure has been reported of any pronounced case.

Second, very few patients are economically so situated as to carry out such a treatment, and I doubt very much that there are any charitable institutions that would care to encourage such expensive treatment, for one patient will require a good deal of attention by a nurse, if the treatment is to be rigidly adhered to.

Third, even among patients who could afford such a luxurious therapy, few will be found who will become worse than prisoners for a quarter of a year.

I may add that I personally abhor the bed. Surgeons of note, whom I have learned to esteem as independent investigators with broad

conceptions of the surgical art, believe with me that prolonged stay in bed produces a condition of invalidism out of proportion to the disease with which they are or have been afflicted.

I do not deny the value of rest, be it understood. But just as we have ceased to encase a broken extremity into rigid plaster-of-paris casts, and to resort to passive and active movements long before the union is complete, just so do I believe is active and passive exercise useful, if not carried to excess in many internal and surgical affections. Is it not a fact that good results are obtained by "resistance" exercises in the treatment of certain heart lesions? Our present conception of exophthalmic goitre justifies this analogy.

Among medicines aconite, digitalis, bromides, ergot and nux vomica have been recommended. I need not expatiate on these remedies. Their value is that of symptomatic treatment. I do not believe any one of them can influence the course of the disease. Tyson, in his excellent text-book on the practice of medicine, reports that Dr. Hunsberger, of Skippack, Pa., claims to have cured a pronounced case by the administration of the tincture of nux vomica in three months. The initial dose of twenty-five drops was increased to fifty.

I regret to have to report that I failed utterly in a case with this remedy.

A diet of milk has been recommended to be kept up for two years. I cannot subscribe to

this unconditionally. It should be tried, however, as much as possible.

Sero-therapy, consists of the administration of serum obtained from thyroidectomized sheep.

This comparatively new method of treatment, even if we allow for the enthusiasm of the clinicians, has certainly proved beneficial in some cases. At least I have been able to observe decided improvement. Again in many others only temporary improvement is the best that could be said of the results.

The objections to this form of treatment are twofold; first, the remedy is comparatively expensive, and, as a good many injections have to be administered, practically out of reach for those depending on wages or small salaries; second, the length of time required. To judge from the numerous reports already published, the curative effect of this serum is very problematic.

Judging from my own experience in two cases treated during the last year, I am inclined to think that the application of the Roentgen rays holds out the hope of great and quick relief, if not a cure in most cases, that are not of too pronounced a degree.

Case I. M. T., aged 24, female, single, school teacher. Sick for about four months. Was treated for neurasthenia by three physicians. Bromides and tonics, cold sponge baths and static electricity were given by each of the practitioners.

The patient complains of "palpitation of the heart," occasionally "shortness of breath," a

prickling, burning sensation all over her body, and tremor, coming on when attempting to write. She considers her condition due to overwork, and believes herself as being in danger of an attack of "nervous prostration."

Examination reveals a heart-beat of 120 without demonstrable lesion. Lungs normal. Abdomen normal. Inquiry gives no cause for pelvic examination, which was omitted. Patellar reflexes exaggerated. Babinski's phenomenon absent.

Examination for adenopathy negative. Urine normal, except for a fairly large quantity of earthy phosphates. A blood-count was not made. The external appearances did not point to anemia.

Thyroid gland slightly enlarged. The exophthalmus decided, but when the patient's attention was called to it she could not recognize it as anything different from the normal. She attributed the "looks" to her nervousness.

In view of her previous medicinal treatment, I placed her on a milk diet, and prescribed Fowler's solution for one week.

She came back after that and reported herself worse. She was considerably nauseated and her tremors were increased, both in severity and frequency.

I gave her a Roentgen treatment, using a large, soft, water-cooled Mueller tube. Seance, five minutes. This treatment was repeated the two following days. To my great joy the patient admitted she was better.

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Treatments now every other day—four seances. Still greater improvement.

From now on the patient was treated twice weekly for about a month. The exophthalmus had almost disappeared. Diet discontinued.

Patient left for a two-months vacation.

When she returned all traces of the disease had disappeared except the exaggerated patellar reflex. Pulse 90. No dyspnea, no tremors.

Patient was cautioned to return for treatment at the least sign of trouble. I see her occasionally. She is well.

Case 2. Clerk, 18, of tuberculous family, born in Silesia, 5 years in the United States.

Pronounced exophthalmos, goitre small. Pulse, 130. Was treated in spite of these symptoms for pseudo angina and for endocarditis.

His physician gave as the reason for the latter diagnosis the presence of edematous swelling of the skin of the thighs (not legs), and frequent sweating. The physician confirmed that the patient would experience "cramps" in the legs and then be unable to stand up. Several times his mother caught him when he was about to fall.

The patient presented otherwise all the appearances of a neurotic.

When I told the physician that this man had a case of Basedow's disease he was not fully convinced (on account of the absence of perceptible thyroid enlargement) until I called his attention to the tumultuous heart-beat at the apex,

while the volume of the pulse was small. There was no systolic murmur.

This patient was too ill to be moved about. I ordered full doses of aconite and an ice-bag to be applied over the neck over a piece of cloth for 30 minutes every three hours. He improved in five or six days to be able to come to the office. The treatments with the Roentgen rays improved his condition in about two weeks. When he came to the office his pulse was still 130. After two weeks' treatment it came down to 100. He decided to return to Europe.

The man is now serving in the German army.

My experience with the Roentgen rays is limited to these two cases. Prof. Carl Beck, however, reports many successful results. My operative cases have had no mortality, and all have made a fairly good recovery. The exophthalmos, curiously, was only lessened by the operation. In not a single case have I seen its complete disappearance in six months after operation. I may add that I have also tried the Roentgen rays in two cases of simple goitre of the so-called vascular type, proved as such by operation, but the results have not been satisfactory. The size of the swelling was not reduced. Possibly in one case an amelioration of an existing neurasthenia was noticeable, but as this patient owed her neurasthenia to extraneous causes, the time element may have to be given full credit.

To recapitulate:

There are "acutest," acute, subacute, and no

doubt chronic forms of Basedow's disease, beginning as such at the very onset.

I have seen only one case of "acutest" goitre in the practice of a colleague. This man was operated on and died very soon after the operation. The definition of "acutest" is difficult to give. I mean by that foudroyant forms, running a stormy course, due to an intense intoxication, the prognosis of which is grave under any method of treatment. Operative therapy is no doubt indicated in such cases. The general practitioner should by all means secure the services of a professional surgeon, or else protect himself by warning the patient and his or her family of the great risk.

In the milder forms the Roentgen treatment and other non-operative therapeutic methods should be given a thorough trial. Here, like elsewhere, the rule holds good not to lose too much valuable time. If the course of treatment adopted seems to be effective and the patient is gaining rather than "holding his own," operation is unnecessary. If after a few weeks' treatment any of the non-operative measures fail to produce the anticipated effect, surgery is indicated.

Great care must be taken to exclude an organic heart lesion, which contraindicates operation. Another feature spelling danger is low blood-pressure. Such patients need preparatory treatment for some time.

Finally the technic, as regards anesthesia (injection of morphine and atropin before the ad-

ministration of ether) and operation (control of hemorrhage, hot applications to the raw gland surface, drainage) differing considerably from ordinary excision or enucleation operations must be borne in mind. Great skill, knowledge and good nursing may prove the patient's salvation—their absence his death.

ENLARGED SPLEEN. The question of removal of an enlarged spleen—splenectomy—is at times a very difficult one. Splenectomy is a serious, though under certain conditions a perfectly legitimate, operation. It is a serious operation, though technically not as difficult as is usually believed. The great danger of this operation is to be found in the hemorrhage that is rather difficult to control.

It is needless to add that enlarged spleen per se is not a disease, but one of the prominent phenomena of a variety of local and systemic affections, which shall be grouped together in this section, for the purpose of convenience.

Enlarged spleen is due to

(1) Toxemia (typhoid fever, malaria, sepsis, diphtheria).

(2) Congenital syphilis, organic heart disease, cirrhosis of the liver, leukemia and pseudo-leukemia, chronic malaria and tuberculosis.

(3) Neoplasms.

The above division is not a very fortunate one, but will best serve our purposes.

It is self-evident that the enlargement of the

spleen in the acute forms of constitutional infectious diseases belongs strictly to the domain of internal medicine. Surgery may have to be resorted to even in this form of splenic enlargement if an abscess of that organ develop. The presence of an abscess can but rarely be diagnosed with any degree of certainty. It should be suspected, however, when the usual indications of the presence of pus in the system are manifest when all other organs seem normal. The enlarged spleen will prove tender on deep palpation, though in a centrally located abscess even this phenomenon may be absent. My experience is too limited to permit me to speak authoritatively on this subject.

When the enlargement is due to a growth, be that a benign or malignant one, the only thing to be considered is the surgical removal of the growth and, if need be, the spleen. In a fairly large practice, extending over sixteen years, I have seen but one case of tumor, and that was an echinococcus. The patient was a Danish woman, a cook, about six months in the United States at the time she came under my observation. The rarity of tumors of the spleen is generally conceded by many surgical writers.

The affections enumerated under 2 are true borderland diseases.

That the spleen can be spared by the human economy surgery has demonstrated by splenectomy for traumatic injuries. Temporary changes in the quality of blood have been noticed for a

while after operation, but very soon, and in fact in several cases immediately after, operation no changes whatever were demonstrable.

This has led to splenectomy for some of the affections mentioned under 2 in the hope that by it the annoying enlarged organ will not only be removed, but the disease favorably influenced.

The only excuse for such reasoning is a belief that the spleen in some not fully explained manner influences the general system. Clinical experience has shown the fallacy of such reasoning.

It will be worth our while to briefly review the indications and contraindications of operative therapy in the individual forms.

SPLENIC HYPERTROPHY DUE TO CHRONIC MALARIA. This is essentially a medical disease. The enlargement of the spleen is secondary. We have an acknowledged specific for acute malaria; it is doubtful if we can say the same for the malarial intoxications of the chronic type. However, medical measures must be given a thorough trial. I would add to these the application of the Roentgen rays over the region of the spleen.

Extirpation of the spleen becomes a justifiable procedure in the event of failure to obtain relief from these measures. The disposition to hemorrhage, however, makes the operation a formidable one. The presence of any affection usually accepted as a contraindication to a major operation, excludes the operation. In their absence, an operation is positively indicated when the

enlarged organ produces pressure or circulatory symptoms endangering life.

SPLenic HYPERTROPHY DUE TO LEUKEMIA AND PSEUDOLEUKEMIA. The diagnosis of either form is easy, if one resort to the microscope. The prognosis of this etiologically still obscure affection is bad. Operation is not only contra-indicated, but means almost certain death. A ray of hope is held out by proper diet and the systematic application of the Roentgen rays. I prescribe potassium iodid and mercury, irrespective whether there exists a previous history of syphilis or not. Of special interest to us is a somewhat different form of pseudo-leukemia known as *Banti's disease*. In the text-books published ten years ago nothing is said of this disease. Of late I have heard a few young surgeons (?) "talk" a good deal about Banti's disease. It was my good fortune to see a patient who had been labeled "Banti" by one of these knife heroes, whom he urged to undergo a splenectomy. The surgeon (?), by the way, a recent graduate with good hospital training, had told me but a few days before I was consulted about this very patient. My examination led me to diagnose an ordinary, vulgar ascites, due to cirrhosis of the liver.

There seems to be much confusion as to what really constitutes Banti's disease. It is usually described as a chronic anemia plus splenic tumor, plus ascites, with cirrhosis of the liver. Banti described three stages of this disease:

(1) Anemia with gradual enlargement of the spleen to a large size. Spleen becomes hard with a smooth surface. Duration of this stage about five years. All clinical phenomena of anemia, such as exhaustion, palpitation of the heart, epistaxis, edema of the lower extremities, etc. There is no fever, no decrease of the normal urine, no abdominal effusion. The lymph glands are not swollen.

(2) A transition stage, lasting a few months. Quantity of urine diminished, jaundice (skin and mucous membranes), gastro-intestinal symptoms.

(3) Final stage, characterized by ascites (secondary cirrhosis of the liver), evening rise of temperature, tendency to hemorrhages, plus the above-named symptoms. Death usually in about a year.

There can be no indication for operation in the first and second stages. Cures by splenectomy in the third stage have been reported. All that has been said in connection with splenectomy in splenic enlargement due to chronic malaria holds good here, too. The danger of a false diagnosis should be borne in mind. The chronic course, the absence of adenopathy and of a history of malarial intoxication, are the principal points to be considered.

In splenic enlargement due to circulatory affections (passive congestion), lues and tuberculosis, and secondary to cirrhosis of the liver (obstruction of the portal circulation) the treat-

ment, of course, is that of the primary condition only.

MOVABLE SPLEEN. Unless adhesions have formed an easily movable tumor in the abdomen will always be recognized as a migratory spleen if the position of the blood vessels be borne in mind. Finally the absence of splenic dullness in the region of the normally situated spleen will leave no doubt as to the diagnosis.

I have seen three cases. A properly applied bandage or binder relieved the patients almost at once. In one instance a history of malaria was obtained. Quinine and arsenic were prescribed. There was no doubt left in my mind that the size of the enlarged and displaced organ was reduced.

Splenectomy is a legitimate operation, and not quite as dangerous as when performed for enlargement. The prolonged displacement lengthens the "pedicle" of the spleen, enabling the surgeon to provide it with ligatures that will better guard against hemorrhage. The symptoms must be urgent indeed to indicate so formidable an operation. For contraindications the surgeon must look to each individual patient.

ADDISON'S DISEASE embraces a good many pathologic conditions of the adrenals. In Tyson's latest classic work on Internal Medicine he says that under the above term any disease of the suprarenal capsule is to be applied.

Anatomically he includes tuberculosis, atrophy, fatty and cystic degenerations, interstitial inflammation, malignant disease, including carcinoma and sarcoma and embolism.

In the text-books on the practice of medicine not a word can be found hinting at surgical intervention. The treatment consists of rest, diet and the administration of iron and drugs to relieve the distressing symptoms. The addition of an organic preparation of the adrenals, gained somewhat in the same manner as the thyroid preparations for the relief of myxedema, cretinism and cachexia strumipriva concludes the up-to-date treatment of this disease.

In the past few years, however, surgeons have successfully operated for Addison's disease. I myself can report one case, which caused me a good deal of anxiety, because I was unable to make a diagnosis for about two weeks.

My own experience has confirmed the assertion of several surgical writers that Addison's disease is not always associated with the typical bronzing of the skin. Once this pigmentation is to be seen there is no other disease with which it can be confounded. Still, years ago I was called in consultation by a physician who had been in practice for a good many years who had submitted a diagnosis of carcinoma of the stomach. The bronzing of the skin was regarded by him as the expression of a cachexia.

As is well known, in addition to the bronzing of the skin, which as already alluded to, may be

absent, the clinical symptoms show anemia, great emaciation, catarrh of the stomach and bowels, palpitation of the heart, dyspnea and sharp, lancinating pains in the upper part of the abdomen and in the sacral region.

My case was that of a young man, a plumber by trade, who had anemia, diarrhea, pains in the sacral region, and such a pronounced degree of weakness that he could scarcely walk into the office. He had been sick for some time, and was treated by a physician for the past two weeks for "kidney trouble." I suspected, of course, lead poisoning, but there was lacking the characteristic changes in the gums. He had colicky pains only when attacked by diarrhea. As the urine proved normal on examination, I concluded that the trouble was probably in the bowels, and prescribed salol and bismuth with good effect. The diarrhea ceased, but the emaciation and sacral pains persisted. Suspecting tuberculous peritonitis, I watched him for a few days. Finally I felt an irregularly shaped tumor on deep abdominal palpation. This tumor seemed attached to the left kidney. The patient did not consent to an operation, though I cautioned him of the gravity of the case.

He went to several other physicians, and—*mirabile dictu*—they could feel no tumor and added to their prescriptions certain epithets intended to cool my surgical ardor. One had the kindness to tell the patient that he is lucky he came to him, because I would have "butchered" him to death.

A month later the patient reappeared at my office with distinct evidence of bronzing. He thought he had jaundice. This time it was I who hesitated to recommend an operation—my failure at making a correct diagnosis having discouraged me. I took the man into my confidence and explained the situation. I operated on him three days later through a large lumbar incision. The operation was extremely difficult, as I had a good deal of trouble with severing the adrenal gland from the diaphragm, to which it was adherent. The diagnosis of tuberculosis was made at the time of operation and confirmed by the microscope.

To my great surprise the patient recovered fully within three weeks. The bronzing disappeared and he gained twenty pounds in two months. The operation was done in the spring. In September he showed some cough and a rather suspicious paleness. Physical examination of the lungs negative.

He is doing well, living part of the time in Phoenix, Arizona; part of the time at El Paso, Texas.

This case can well serve as an index regarding operative intervention.

Operation, in my opinion, is contra-indicated in malignant disease, principally because of the hopelessness of the situation. In my own case I was rather afraid of malignant disease and undertook the operation merely for exploratory purposes. The macroscopic appearance of the

gland led me to conclude the operation by its extirpation, for up to that stage the patient had stood the operation very well.

Again, when the disease has existed for some time, operation is as good as useless. If tuberculosis of the adrenal is suspected I can see no reason why injections with tuberculin should not be given a thorough trial.

Fortunately this affection is quite rare. Even if the large clinics cannot boast of a large material, the next five years will undoubtedly bring valuable data, both diagnostic and therapeutic. Internal medicine will have little to add to what it has already given us, and new information is to be anticipated from surgical sources only.

The removal of one adrenal gland, in conclusion, seems to have no deleterious effect on the human economy. I have been unable for extraneous reasons to make comparative blood-pressure tests in my case, but if the plain observation of the pulse is any criterion at all, I can say that three days after operation the pulse of my patient which was 90 and feeble before operation, improved considerably. A week post operationem it was normal.

CHAPTER VIII.

THE GENITO-URINARY ORGANS.

NEPHROLITHIASIS is a surgical disease. There is no remedy known that will dissolve and remove a well-formed stone in the kidney except the knife. With this remark the subject could be dismissed as not properly coming within the scope of our inquiry, were it not for the fact that nephrolithiasis may exist, under certain conditions, without seriously annoying the patient, and that surgical operation for stone in the kidney is not devoid of danger. This danger, however, seems to me greatly exaggerated by certain writers. Thus over 7% has been given as the mortality of nephro-lithotomy. In my opinion, if an extra-peritoneal operation is performed on a patient in fair general condition the mortality should be nil. Of course when the patient has been allowed to come near death's door by serious infection, or anuria, or when there are co-existent serious lesions in other organs which contra-indicate any major operation, a mortality is to be anticipated. This would indicate that an operation should be recommended as soon as the diagnosis of stone in the kidney has been made, but even the most enthusiastic operator will not always find blind followers, unless the symptoms drive the patient into the operating room. I remember an experience which may well serve

as a warning, especially to my younger confreres. A young woman consulted me nine or ten years ago for what I diagnosed as nephrolithiasis. She claimed to have had an attack previous to my arrival, with intense, colicky pains, radiating toward the pubes. Colicky palpation over the gall bladder and appendiceal regions elicited nothing abnormal. but deep, bimanual pressure over the right kidney caused the woman a "sickening" pain. Urine, if I remember correctly, contained albumen, pus and blood cells in small quantities. No radiograph was made, as I was positive of my diagnosis. I advised an operation, as this had been her third attack within a year. The family promised to let me know their decision, but I heard nothing directly from them. A little later I heard that another physician was called into the case and had promised to cure by medicines. My informant advised me that the patient was ordered to drink enormous quantities of some mineral water. I met the patient again a few months ago, on the occasion of attendance on a relative of hers, and she told me that she was entirely free from attacks and in the best of health (she has since married and given birth to two healthy children) and that since taking the water she has had a severe attack, after which many "little stones" had passed off.

As over seven years have elapsed since the last attack, a cure must be accepted as having actually occurred. Had I at that time insisted on a Roentgen photograph and no stone of any size

would have been shown, I, too, would have recommended an "expectant" plan of treatment and would have avoided incurring the displeasure of a large family, who for years have spread the opinion among their friends that I "like to cut up all my patients," a reproach which I certainly have not merited.

I must, therefore, heartily agree with Quervain who says that in nephrolithiasis the Roentgen rays have the last word in diagnosis.

As a counterpart, I may relate another case equally of interest from a diagnostic and therapeutic point of view:

Miss L—, aged 18, a hard-working department store clerk, anemic (hemoglobin 40%) had complained of dull pains in the right side of the abdomen, not specially localized, for over three years. At times these pains would become so intense that she would have to lie down for several hours. She had been treated by about a dozen physicians in her neighborhood and had taken enormous quantities of medicines, without result. Finally a young physician was called during one of the attacks, and after diagnosing appendicitis had her removed to a private hospital, where the appendix was removed. An unusually large scar was the only result—the trouble continued unabated and the surgeon said something to her of "nerves."

A few months' continued suffering finally drove her to my clinic.

As there was no indication of gall-bladder

trouble nor of hepatic disease, I made the tentative diagnosis of stone in the kidney. The urinalysis seemed to confirm that. I then took a Roentgenograph, by means of a medium water-cooled tube and compression-diaphragm. To my great surprise I found a light shadow and diagnosed a phosphatic stone, but to my greater surprise a few days later I could discover nothing in the kidney nor in the ureter (as much as could be reached through the lumbar incision), not even after bisection of the kidney. The kidney appeared normal and bled profusely. There was at no place evidence of pus or degeneration; the only pathologic condition which possibly could have passed as such, was a passive hyperemia, since the kidney was about a sixth larger than I have usually seen, and was slightly purplish in some parts of the parenchyma. I closed the kidney with deep catgut sutures, and the muscles and skin with interrupted silkworm gut sutures. Gauze drainage. Uneventful recovery. Since the operation the patient has been entirely free from pain (over 4 years).

I would urge an attempt to first make sure of the diagnosis in every instance, to avoid therapeutic errors. By excluding appendicitis and gall-stones, by carefully subjecting the affected kidney or kidneys to a thorough physical examination, by studying the symptoms, analyzing the urine, chemically and microscopically, and by confirming the clinical findings with the Roentgenograph at the hands of an expert Roentgen-

ologist, a correct diagnosis should be arrived at in almost all instances.

Assuming that the diagnosis is established, an acute attack should be treated by rest, opiates, restriction of diet, hot applications, etc. A single or occasional attack cannot be accepted as a positive indication for operation, provided the patient enjoys good health in the long intervals.

Frequent recurrence of the attacks, continuous pain, exhaustion, inability to work, positively indicate operation. Infection and anuria must be prevented by early operation. When they have occurred, operation is *vitaly* indicated.

FLOATING KIDNEY. Floating or movable kidney may exist without causing any symptoms whatever. Obscure gastric symptoms and pains anywhere in the abdomen should cause the physician to think of a possible nephroptosis, in fact no abdominal examination is complete until the kidneys have been palpated. Normally situated, the kidneys can neither be felt by the palpating fingers nor will pressure elicit any decided pain. The diagnosis of floating kidney should be extremely easy, except in very obese individuals. The kidney-shaped "tumor" is felt abnormally low, and as a rule can be "dislocated." Of course other structures may simulate a displaced kidney, but their differentiation should offer no particular difficulties if the examination be carefully made. After the establishment of the diagnosis of floating kidney the question must be answered

whether this abnormality is responsible for the symptoms complained of by the patient or whether some organic disease—possibly of the kidney itself—is the causative factor.

This question, in all doubtful cases, can be answered without difficulty in the affirmative if by rest and “reposition” of the kidney or kidneys the symptoms cease. A suitable abdominal belt with kidney pads to keep the displaced organs in their proper position should be worn for some time. Freedom from the symptoms previously complained of still further augments the diagnosis.

If the belt gives relief and the patient is satisfied to continue its use the “cure” is accomplished. Nephropexy is indicated if the patient is unwilling to depend on the belt. The mortality should be nil. Unless a method of deeply-applied sutures be chosen and the kidney be properly anchored, recurrence is not impossible.

NEPHRITIS (ACUTE).—The inflammation of the kidney not due to stone or infection is a disease properly belonging to the domain of internal medicine. Nor does nephritis assume a surgical aspect because we are often called upon to relieve the system of an anasarca by tapping, incisions or scarification. Internal medication, diet, hot baths, etc., constitute the treatment of the acute form of nephritis, and few will give the question of operation on the acutely inflamed kidney serious thought. Nevertheless, operation may prove life-

saving, especially when the patient is in danger of death from anuria.

I am inclined to the belief that an incision of the kidney or decortication will produce changes in the circulation of the kidney, which influence the kidney function to a great extent. A reference to the case above cited will show that a cure was brought about by a simple nephrotomy when practically no pathologic change save that of a "congestion" was found. There is sufficient evidence in the literature to show that a relief of tension in or about the kidney will be followed by favorable results, even when no organic lesion be found. Pain and hemorrhages cease like magic. Why, then, should decortication not be tried in most forms of nephritis? I am aware that there are not sufficient reports on hand to warrant definite conclusions, for which reason I ask for the privilege of a little "theorizing."

It is well known that many undoubted cases of acute parenchymatous nephritis get well under appropriate internal treatment, and even under no treatment. The disease, however, is a grave one and many die from uremia or other complications. Uremia is the most frequent, the others, such as edema of the lungs, being exceedingly rare. What can internal medicine do for uremia? I doubt very much whether we have any drug that can restore kidney function when it is completely suppressed. The bowels and skin are forced to take up the burden of excretion by powerful cathartics and diaphoretics. Failing

with this "vicarious" urination, a heroic measure remains: bloodletting and intravenous infusion of physiological saline solution. Failing with this the patient is doomed to death. Assuming that the friends of a patient can be made to realize the gravity of the situation, is it not humane to accept an operation that may possibly save life after all? I am sure I would not hesitate one minute if a member of my family were in such a condition. It may be held out that the operation is not a trifling matter and that the shock due to the anesthetic and the operation may even shorten life. I cannot accept such an argument as valid. In the first place no anesthetic is required because the uremic patients, even while suffering from convulsions, are unconscious. Should the incisions through the lumbar muscles cause pain unexpectedly, infiltration with plain saline solution will enable separation of the muscles painlessly. Once the kidney is delivered through the wound, division or separation of the fatty capsule and fibrous capsule can be performed without any pain, as I had occasion to convince myself on one patient who took the anesthetic so badly that I had it stopped as soon as the kidney was delivered. The patient cried out when the muscles were sutured, but not at all while I was exploring the pelvis of the kidney, though he was awake when that was done. In reply to the argument about shock proper, I must express the belief that an extra-peritoneal operation which at the utmost should not last more

than 7-10 minutes, will not add much risk to a nervous system blunted by a systemic poison, The hopelessness of the case without operation, after failure with non-operative methods, justifies any risk, no matter how grave. Even if all cannot be saved, nay, even if one out of twenty only be saved, the risk is worth while. The possible shortening of a state of unconsciousness by a few hours will be looked upon as a "shortening of life" only by sentimentalists.

CHRONIC NEPHRITIS.—As regards *chronic Bright's* disease, the prognosis is unfavorable even under the best care. Clinicians are agreed that mild cases may run a course of a few years—but as for ultimate recovery little if any hope is held out. I confess that I have been very unfortunate with the few cases of chronic parenchymatous nephritis under my care. In the past five years I have seen relatively few cases, as compared with the preceding years, and then only as a consultant. My advice to these patients to have decapsulation done was not heeded when other physicians refused to sanction such a course. At least three are reposing in mother earth careless about the wrangles of therapists while a fourth one is still existing, in spite of Basham's mixture and repeatedappings. My personal experience, therefore, is nil. The literature, however, holds out hope.

HYPERTROPHY OF THE PROSTATE.—This disease does not properly belong to the so-called

borderland diseases, it being a purely surgical affection. Prostatectomy, whether through the perineal route or through the opened bladder, is a justifiable operation, but the general practitioner must always ask himself whether the operation is promising of success. It must not be forgotten that we have to deal with elderly patients, perhaps suffering from arterio-sclerosis, not to mention the possible involvement of bladder, ureters and kidneys, on whom an operation like prostatectomy is apt to be followed by death. Indeed, the mortality is none too small, even in the hands of the most expert operators.

The text-books tell us something of "catheter-life." Prolonged catheterization is at best a palliative measure with a vengeance. Even the most careful patients will be unable to strictly observe the aseptic precautions, so imperatively indicated in this procedure, with the inevitable result of infecting a clean bladder. To expect a patient, especially a wage-earner, to come three or four times a day to the physician to have the catheter inserted into the bladder is as unreasonable as it is impracticable. In my opinion the catheter is but a temporary makeshift to be discarded as soon as possible.

The Bottini operation, or one of its modifications, has been advocated as a milder "operative" measure. I am glad that it has not found much favor in this country, nor is it likely to be resorted to by the occasional operator. The special cautery outfit is comparatively expensive, as are the bat-

teries or the rheostats when a street current is used. Besides, the technique, while not exactly difficult, is of such a nature as to make any conscientious general practitioner hesitate, lest he burn the floor of the bladder and urethra rather than the enlarged gland. To make the cup full the specialists themselves admit that this operation has but a limited range of usefulness, its indication being restricted to such cases in which the prostate is enlarged only in the vesical part. I would heartily recommend the application of the Roentgen rays. To be sure, I personally have had but one case in which this agent has been tried, with marked success, but the reports published by other observers are encouraging indeed. This case is not without interest.

R. S., aged 61, retired attorney, came into my office (Sept. 16, 1907) and demanded relief. He suffered acutely from retention of urine. A physician in the neighborhood, he told me, had tried to pass a catheter, but failed, meeting "resistance," and had advised him to go to the hospital.

I introduced a prostatic catheter and emptied the bladder. The urine was turbid.

The patient gave the following history: He never had an attack of gonorrhoea. He was a married man up to about five years ago, when his wife died from diabetic coma. Sexual congress was never practiced to excess. The patient drank occasionally at his meals, but barring one or two exceptions was never drunk throughout his whole life.

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His present illness dates back about a year. He began to notice that he had a "burning sensation in the rectum" before and after urinating, and that the desire to micturate awoke him from his slumber. Truly as classical a picture of enlarged prostate as any one could desire, yet regularly licensed physicians had treated him for "piles" and "cold in the bladder" without ever taking the trouble of examining the patient, except in one instance, when one physician had "boiled" the urine in a test tube and had assured him that it was normal.

These symptoms grew worse, in spite of much medicine and pile salves. Where before he would have to get up but once during the night, eventually he had to arise two, and lately three, times. At times he would be overcome by the desire to urinate and yet unable to express more than a few drops, during which he suffered the "agonies of the damned."

I examined the rectum, but could not palpate any specially large prostate. The introduction of a thick urethral sound (size 17 American), however, enabled me to map out the enlarged gland.

Analysis of the urine showed pus-cells and bacteriuria, reaction alkaline, odor slightly ammoniacal, traces of albumen, no sugar.

Repeated examinations brought the same result. The patient was advised in regard to the seriousness of the case. He consented to any method of treatment I may propose, except a "cutting" operation. "I feel I will not survive

one," he said. And indeed his general appearance fully supported this claim.

Here indeed was a progressed case with infection of the urinary apparatus.

Diet, rest, urotropin and irrigation of the bladder with weak silver solutions constituted the treatment for two weeks. There was a noticeable improvement soon after this method of therapy was adopted and I began to build air castles. After the two weeks, especially since his urine had cleared up, I omitted the bladder irrigations. Two or three days later he sent for me, complaining that he had passed a miserable night and, in fact, while I was in his house he tried to urinate, but the pain and spasm were excessive and I had to again resort to the catheter.

It was then that I proposed treatment with the X-rays and, I confess, with no hope whatever. Treatments were given through a rectal speculum of lead-glass, the tube being so placed that the primary rays were focussed on the prostate. Seances last five minutes. Treatments were given every other day. After seventeen seances the patient complained of a diarrhea, which was easily controlled by a laxative, followed by large doses of bismuth subnitrate and Dover's powder. Since that time there was no recurrence of the disease, improvement having become apparent after the fifth seance. The patient died in California in November, 1908, from pneumonia, which lasted only three days, according to a letter from one of his daughters. Up to the time he was stricken

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he enjoyed total relief from his urinary phenomena, according to his occasional reports, the last one of which came in August, 1908.

Now I am fully aware that one swallow does not make a summer, and I cannot say whether the X-rays will do good in all instances, but they certainly are worthy a serious trial.

This much is certain, that no harm can come from the treatment above outlined. To be sure, too much time should not be spent on it. If it be found that results are not prompt and lasting, operation must be resorted to. The trouble is that we see the patients after they have been sick for some time, thus increasing the risk due to operation. Perhaps the mortality could be lessened when the bladder is already involved by performing cystostomy (suprapubic) under infiltration anesthesia.

Permanent drainage of the bladder for, say, two weeks may so improve the bladder that it can be entered into for the removal of the enlarged lobes of the prostate with less risk to the patient.

A method of treatment of prostatic hypertrophy that is practically without danger and within easy grasp of the general practitioner is that of injecting alien blood into the tumor, as advocated by Bier.

As this method cannot be found in text-books I shall give the exact technic:

The blood, whether from a pig or lamb, must be caught from the severed blood-vessels of the neck directly in a sterile flask. The flask is at once

corked with a sterile cotton plug and thoroughly shaken for about 4 minutes. The blood is defibrinated by this manipulation, but must be filtered through a sterile sieve before use. It is advisable that the physician remain in the slaughter-house until the animal from which the blood has been obtained is eviscerated. In the event evidence of disease be found, the blood, of course, cannot be used.

An asepticable, hypodermic syringe, with a capacity of 15 ccm. (half an ounce), supplied with a needle of about 10 cm. length is the best instrument. It goes without saying that the instrument as well as the entire procedure must be aseptic. The syringe is filled, the needle adjusted and all air expelled. The patient must be in the knee-chest position. The surgeon who stands behind the patient introduces the index finger of the left hand into the rectum, up to a point where he can map out the lowered margin of the prostate. The other hand pushes the needle through the previously sterilized perineum into a lobe of the prostate. The direction for this is given the operator by the finger in the rectum. About $2\frac{1}{2}$ ccm. are injected into the lobe; the needle is now slowly withdrawn until the point has reached the lower margin of the prostate, when additional $2\frac{1}{2}$ ccm. are injected into the periprostatic tissues. Now the needle is withdrawn a little more, the direction changed and in a manner described above, forced into the lobe of the other side, and the maneuver repeated exactly

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as on the opposite side, thus 4 injections of $2\frac{1}{2}$ ccm.—a total of 10 ccm.—have been made. To avoid injury of the urethra the needle should not be inserted in the median line, but somewhat laterally. It is advisable to apply a collodion dressing over the puncture.

The patient should remain half an hour or more in the recumbent posture, depending, of course, on his general condition.

Injections should not be repeated in less than 8 days.

As an illustration I cite the following report from Professor Bier's clinic:

"Laborer, aged 67. Admitted May 28, '07. In 1905 he was a month in the hospital for sudden retention of the urine. In 1906 he spent six weeks in the hospital for trouble in the bladder. On the 12th he had again difficulty of urination. The patient could void urine only in drops and with pain. This condition became aggravated until complete retention, for which he was admitted to the clinic.

The bladder is tensely filled and has to be emptied with the catheter. Urine is turbid, ill-smelling, alkaline. No albumen, no sugar. After catheterization a few drops of blood are voided. Prostata greatly enlarged, especially the right lobe, upper margin cannot be reached; toward the right the prostata passes into a diffuse hardness. Pat. is catheterized daily. Urine blood tinged.

First injection June 6: 10 ccm. lamb blood.

After the injection patient feels subjectively well. Urine on catheterization intensely bloody. Two days after the injection the patient, for the first time, voids spontaneously a teaspoonful of urine. The rest is withdrawn by catheter. Urine alkaline. June 10 the prostata appears to be softer and smaller (upper margin can be reached). Daily the patient voids urine spontaneously in increasing quantities, so that on the 13th he passes $\frac{1}{4}$ liter. From this day on the urine shows acid reaction and is less turbid. On the 18th the patient voids spontaneously a whole liter of urine. The upper margin of the prostata can be reached, the diffuse hardness into which the gland passed upward has completely disappeared.

2nd injection June 18: 10 ccm. lamb blood.

On the day of the injection but one teaspoonful of bloody urine spontaneously. In the subsequent days increase of the quantity of urine voided spontaneously so that the patient does not have to be catheterized at all, beginning with the 24th, that is to say, 6 days after the last injection. The process of urination takes place without any pain.

3rd injection June 25: 10 ccm. lamb blood.

Voids urine after the injection in a thin stream. June 27, burning sensation when voiding urine. Urine acid, but contains much mucus. Some fever, which is reduced to normal in the following days. The mucus becomes less and the burning sensation disappears.

4th injection July 4: 10 ccm. lamb blood.

General condition satisfactory; continued decrease in frequency of the micturition (of late 3, since July 6 only one urination during the night). July 9 the prostata is still enlarged; the upper margin of the left lobe can be touched with ease; that of the right lobe, too, can be reached, though not quite so easily. Discharged at his own request.

Examination Aug. 13. No difficulties whatever during micturition. Voids urine twice during the night. Urine comes at once and in a large stream. Prostata is but slightly enlarged, flat, upper margin easily reached. Urine has some albumen, a few leucocytes, no casts.

January 9, 1908. Patient voids urine on the average 6 times throughout the day and 3 times during the night. He has to "press" somewhat before urine appears. At first the urine appears in drops, then in a stream, repeatedly interrupted. Prostata increased on both sides, fairly hard, right lobe somewhat more prominent than the left. Upper margin cannot be reached."

I have cited the above case with no other intent except to show the frequency with which intra-glandular injections have been made by Prof. Bier. The termination of this case is, of course, far from satisfactory, though no one familiar with the clinical picture of prostata-hypertrophy when it causes retention and dysuria can deny that the temporary effect produced by the injection of lamb blood even in that case is marvelous. Nor can it be denied that on January 8 the patient's condition was a thousand times

better than when he entered the hospital in May of the previous year.

Whether a combination of lamb-blood injection and Roentgenotherapy would produce far better results than either of the remedies applied singly can achieve, actual experience only can tell. On theoretic grounds I should judge the combination well worthy of trial.

RETENTION OF URINE.—Acute retention of urine, no matter to what cause due, does not always call for catheterization. Of course, where an aseptic catheter can be introduced without undue difficulty relief is instantaneous, but the physician will do well to avoid using force, because a damaged urethra may be harmed by "false passages" and a bad condition of affairs made worse. A hot sitz bath, the administration of a diuretic and alkaline will very often relieve a retention. Where both measures fail and there is danger from an overdistended bladder, tapping of the bladder with a fine trocar inserted above the pubic bone will give relief. The procedure is harmless if done aseptically, because the peritoneal cavity is avoided.

An acute retention must be differentiated from an exacerbation of an existing cystitis. The spasms of the sphincter subjectively resemble an attack of cystitis.

CHAPTER IX.

INFLAMMATORY DISEASES OF THE JOINTS.

GENERAL TREATMENT.—The treatment of infections and inflammations of the large and small articulations is undergoing quite a change. We are gradually turning from the radical therapy by “destructive” operations (amputations, resections) to more conservative measures. We owe it to the genius of August Bier, who has systematized the application of artificial hyperemia, a remedy, as ancient as the human race, which is bound to revolutionize our conception of “inflammation” and modify our treatment of many surgical infections and inflammations.

Bier makes use of three forms of hyperemia: 1. active, 2. passive and 3. mixed.

Active hyperemia is produced by the action of heat. Heat in any form increases arterial flow. The best agent is dry heat, since the absence of moisture prevents burns, thus enabling the human body to tolerate comparatively high degrees. The best way to apply this heat is in the form of heated air. Bier has devised suitably shaped “boxes,” into which the extremities or certain bodily parts can be placed. The air in that box is heated by a lamp or burner connected with the box by a “pipe” or chimney. Hot air

apparatus are very popular in this country and need no special description. The main thing is that they be inexpensive, easy of manipulation, simple in construction, easily transportable and so constructed as to reduce the danger of burning the patient's skin to a minimum. The extremities or parts subject to active hyperemia must be wrapped in a towel or absorbing cotton to prevent evaporation of the cutaneous excretion. The disadvantage of this treatment consists mainly in the dependence on more or less large appliances and the presence of the physician or an attendant for the time of the seance, which amounts to about an hour daily. There are practically no decided contraindications to this method of treatment, though patients with arterio-sclerosis and organic heart disease must be handled with care. In such cases the heat should be increased from comparatively low temperatures gradually; the seances should be very short at first (15-20 minutes) and increased every day by 5 minutes until the point of tolerance has been determined. Syncope must be avoided by the applications of cold compresses to the forehead. If the patients do not do well with such precautions it is not a good plan to rely on stimulation, and some other form of treatment had best be chosen.

PASSIVE OR VENOUS OR CONGESTION HYPEREMIA is produced by constriction of the extremity above the lesion or lesions by means of a rubber (elastic) bandage. The simple bandage as sold

in surgical houses will do for the upper and lower extremities, except the shoulder and hip joints, for such a bandage could not be placed above, i. e., proximally to the joints. For these joints soft rubber tubing, padded with flannel or cotton, is best. Much good can be accomplished by the proper use of this simple device, but improperly applied, harm can be done. As this agent is comparatively new, at least in the United States, I shall call attention to some features of the technic when speaking of the diverse affections in which congestion hyperemia is indicated.

The so-called "mixed" hyperemia had best be described as "suction" hyperemia, since hyperemia is produced by a simple cupping device in which the air is rarefied by suction (rubber-bulb, air pump, etc.). The large suction apparatus intended for the large joints are very expensive, and are applicable as orthopedic measures for stiffened joints, irrespective of what has produced the ankylosis. In true bony ankylosis, as can be easily imagined, they are useless. The smaller appliances are used for fistulæ, abscesses, furuncles, etc. It is doubtful what form of hyperemia is produced by suction, as it resembles both the arterial and venous forms. Personally I am inclined to think that we produce a passive hyperemia.

Among other conservative measures which must be mentioned as applicable in the treatment of articular affections are: rest and immobilization by splints or plaster-of-paris cast. Minor

surgical procedures are aspiration of joints with or without irrigation with medicinal solutions, and arthrotomy with curettage, the latter, of course, is a not altogether harmless operation, but of less importance than resection.

ARTHRITIS.—For our purpose it suffices to classify inflammatory diseases of the joints into:

(1) Arthritis due to metabolic or constitutional diseases (gout, scurvy, etc.).

(2) Arthritis due to pyogenic infection, and

(3) Arthritis due to disease of the nervous system. Either of them may be acute, subacute, or chronic. Anatomically we must separate a true arthritis from a synovitis, and clinically the "dry" form of inflammation from those accompanied by exudation (effusion), which latter may be simply serous or purulent. The last form is, of course, the most serious of all.

Those mentioned sub. 1. belong to the domain of internal medicine. Under this caption acute and chronic articular rheumatism *may* be considered. A close study of acute rheumatism of the joints will convince any unbiased observer that the whole clinical picture resembles that of a mild, metastatic infection. Chronic rheumatism of the joints, when not following an acute attack, is in all probability a disease due to metabolic causes. Our whole conception of the etiology of rheumatism is as yet based on theories not substantiated by the positive proof bacteriology has given for other infections. As regards the

treatment the salicylates still enjoy a good reputation in this malady. I cannot subscribe to their being considered as "specifics" in the sense that is employed for quinine in malaria and mercury in lues. That sodium salicylate is useful in acute rheumatism of the joints cannot be doubted. Bier thinks that the good effect may possibly be due to a hyperemia produced by that drug. Bier, undoubtedly, is a bit too enthusiastic, and reasons that if hyperemia relieves an inflammatory disease of the joint a drug that will do the same no doubt owes its effect to—hyperemia. This means fitting the system into things that do not fit into the system.

In the chronic forms the salicylates are valueless. I remember that years ago I have given enormous doses of sodium salicylate without any perceptible effect. Neither did I obtain any decided results from other drugs, such as potassium iodide, colchicum, etc. Some patients got well after going through a thorough course of hydrotherapy, massage, exercises, etc.

The production of active hyperemia by means of air heated to high temperature has proven useful in many cases, if persistently carried out for months. In others it has failed. It is a cumbersome method, but is very much appreciated by the patients because it relieves pain. I have often used it to "soften" stiff joints before breaking up the adhesions and immediately afterwards to reduce the phenomena of reaction, especially the pain. An otherwise healthy individual

can submit to one hour's application daily. More than that, in my opinion, is useless, if not harmful.

GOUTY ARTHRITIS requires a strict diet and the administration of alkalines, while the articular affections of *scurvy* can be cured with comparative ease by the administration of ordinary orange-juice and a liberal vegetable diet.

Local applications of any kind (compresses, liniments, alcohol, iodine, etc.) may be employed to advantage.

Where all these remedies fail, after persistent use, surgery must be resorted to. At first the intra-articular injections of weak solutions of carbolic acid or iodine may be tried, finally an arthrotomy may become necessary. This holds especially good as regards the so-called *rheumatoid arthritis*. I have never been able to make up my mind that there is a difference between ordinary chronic articular rheumatism and rheumatoid arthritis, except that the latter is characterized by deformity—for which reason this disease is also known as arthritis deformans. At any rate the treatment is the same.

Between the affections mentioned sub 1 and those sub 2 may be classed the ordinary traumatic synovitis. Effusion frequently follows any trauma to a joint, the popular "sprain" being an example of this class. As a rule we try to cause absorption of the effusion by massage, strapping and counter-irritants. This is especially success-

ful in the wrist and ankle. In the knee these remedies fail often enough, so that tapping of the joint or aspiration becomes necessary. No doubt every practitioner has met with such cases in which the knee joint, after an apparently thorough evacuation fills up again within a few days. In such cases I have succeeded in preventing recurrence of the effusion by subjecting the knee to hot air treatment for one hour daily. After 10 or 12 treatment the joint, as a rule, becomes normal

Among the forms mentioned sub 2, *tubercular inflammation* is of special importance. All of us remember the frequency with which resection and amputation has been resorted to and still is resorted to in tuberculosis of the joints. The most conservative treatment consists of the intra-articular injection of a 10 per cent. emulsion of iodoform (usually 1 part iodoform to 10 parts olive oil, which should be sterilized by boiling before use) with or without subsequent immobilization. Any one who has had any experience knows the intense reaction which follows this treatment. This reaction came so regularly that when patients were treated by me at my office, I used to give them a prescription to "have ready" in case they had chills or pain, to avoid being sent for unnecessarily and at unseemly hours. And this precaution has saved me many a trip.

The question that presents itself, in view of the above statement about the revolutionary in-

fluence of hyperemia in conservative therapy is: Can we depend on hyperemia to an extent that will make radical measures unnecessary?

Clinical experience, the only safe and reliable standard, answers to this question, "yes," with a proviso or two. It is necessary for me, even at the risk of repeating myself, to call attention to one great truth in medicine, viz., that we have no "panaceas" in either our medical or surgical armamentarium, and that it is a gross error to throw together under one head a disease, which is not always one and the same in intensity and extent in all individuals. I may go a step further and say: We have no "specifics" in medicine. Who has not seen mild cases of syphilis get well after a brief stage of secondary symptoms, never to return, without any treatment, or with the faultiest possible treatment (a circumstance taken advantage of by "anti-drug" quacks), and of such cases which destroy the human being afflicted with it in spite of the most systematic treatment by competent men? And so it is with hyperemia. It is not a panacea. It is not always effective, and, what is more, under certain circumstances, I believe it even contraindicated.

In the first place I have never succeeded in accomplishing any good with it in diseases of the knee. It cannot be said that I am prejudiced or incompetent, because I was the first in the United States to show appreciation of the value of Bier's efforts by translating the first edition of Bier's monograph, as soon as it appeared on the German

market. I have not lost faith in it, because I have added another translation of his last German edition, which is practically a new work, almost three times as large as the first one, which was published last year in London. And as for my mastering the technic I have been in Bonn and attended the clinic under the direction of Klapp, where I had abundant opportunity to become familiar with the diverse steps and where my attention was called to the errors made by the profession at large. Bier himself performs resection of the knee joint for tuberculosis, admitting that the knee defies the anti-bacterial powers of venous congestion. We may, therefore, safely lay down the rule that in tuberculosis of the knee no time should be wasted with the elastic constrictor.

Again, the extent of the disease has a certain bearing on our therapy. Take an ankle which is honeycombed with fistulæ, where the tuberculous processes have made severe inroads on the bones—and what else remains to be considered but a resection if not amputation?

You take an elderly person, with a bad constitution, one in poor economic circumstances, are you going to have this man come to your office for weeks and instruct him how to treat himself for months, with a remedy which, at best, requires some time to produce the desired effect, when an operation, even though it be a mutilating one, may improve his general condition and enable him to go to work after three

or four weeks? I am sure, no doubt can be left in such a case as to the proper course.

Bier himself acknowledges as contraindications: incipient amyloid degeneration, advanced pulmonary phthisis, large, cold abscesses filling the entire cavity of a joint (rare, and as a rule limited to the knee) and faulty positions of the joints. On the other hand, Bier properly rejects any consideration of age, treating old people and children alike, nor does he make any difference between simple forms of tuberculosis and those associated with sinuses or cold abscesses—the so-called “open” tuberculosis. Even if under the treatment with congestion cold abscesses develop and the trouble apparently becomes aggravated, he persists in the treatment, though attention must be paid to the complications.

Failures, according to Bier, are the result of faulty technics. I fully concur in this opinion. Apparently the technic is simplicity itself, but in practice beginners will be astonished at the amount of “trying” that is necessary in order to accomplish what seems a very small affair.

For the benefit of those who are not familiar with the artificial, passive hyperemia, as prescribed by the originator, I will briefly give the technic for all joints of the upper extremities except the shoulder. The same technic naturally holds good also for the corresponding joints of the lower extremity.

The appliance required is a simple, elastic rubber bandage, which is applied high up, best

at the junction of the upper and middle thirds of the humerus (or femur), by two or three turns.

If this bandage is applied with a degree of pressure by stretching the rubber during the application, and fastening it in any desired manner (safety pin, piece of muslin, etc.) very soon the veins become distended and the distal part of the extremity discolored throughout, an experiment which any physician can and at first should try on himself. There is no machine, measuring instrument or device that can register and control the degree of compression. This must be estimated from objective and subjective phenomena produced. The most important rule to observe is: *that under no circumstances must the patient complain of pain.* And let it be understood that it is the patient and he only who determines this. The patient should be warned that the treatment must lessen the pain, at any rate not increase it and should be requested to state without hesitation when there is pain. If there is, the bandage has been applied too firmly. Much "experimenting" has to be done at times to find the right degree of compression. Another thing to be guarded against is the so-called cold stasis. What is aimed at is the production of heat, appreciable by touching the skin of the part distal to the constrictor, but this is not always possible, especially so in the chronic diseases. But under no circumstances must the extremity subjected to artificial hyperemia feel colder than its untreated neighbor.

The time element varies with the disease. I begin in all forms of surgical tuberculosis with two hours per day. Gradually this is increased to four hours.

Care should be taken that during the treatment the bandage remain fairly uniform as regards the degree of compression, for a loose bandage has no effect at all.

The technic for the shoulder joint does not vary from that just described, except that the conditions are such to make the application of the ordinary elastic bandage above, that is to say central to the joints very difficult, if not impossible. A long piece of gauze, a small towel, or a large handkerchief is loosely wound around the neck like a necktie. A piece of thick rubber tubing is applied to encircle the axilla and shoulder, one end passing beneath the neck-cloth the other above. When the tubing is drawn taut until the right degree of venous congestion is obtained, the ends are clamped by an ordinary artery forceps (or broad ligament clamp). Two pieces of tape are fastened to the tubing beneath the axilla and knotted in the healthy axilla. The method of preventing the rubber tubing from slipping off, naturally, can be modified by all sorts of attachments. It is practically impossible to render the hip joint hyperemic by this method.

To prevent pressure necrosis, the rubber tubing can be padded by a piece of felt, either in part or throughout.

COLD ABSCESSSES AND FISTULAE.—Cold ab-

scesses must be recognized and treated early. This is so important that it is better to err in the diagnosis when there is the least suspicion of fluctuation than to wait until the presence of an abscess can be positively recognized. Every abscess must be incised and the pus evacuated by "squeezing" or by suction. Large incisions are unnecessary, a stab with a sharp, narrow bistouri being ample. The filling of the abscess cavity with antiseptic preparations or solutions is unnecessary. A piece of dry, plain, sterile gauze is the only dressing needed for the incisions.

The diverse appliances used for suction need no special description. They are cupping glasses, suitably shaped and provided with a rubber ball or syringe for the rarefaction of the air.

Tuberculous fistulæ, too, are treated by suction. Curettage is to be omitted. Loose sequestra can be removed with an ordinary pair of dressing forceps. An ordinary aseptic dressing suffices, drains and tampons are superfluous.

The length of the suction treatment depends somewhat on the case. An abscess is sucked long enough until pus is removed. This treatment is continued every day until bloody serum only is evacuated. A few days more to stimulate granulation suffices.

Fistulæ are washed with alcohol before and after treatment for some distance around the opening. Suction is employed as follows: Three minutes on, one minute off, again three minutes

on, etc., until the cup has been applied four or five times. At the conclusion of the treatment sterile vaseline is smeared around the rims to prevent infection by the discharges. The length of treatment depends on the closure of the sinus.

Under the above treatment immobilization of the affected extremity becomes practically unnecessary. That prolonged immobilization is very often followed by muscular atrophy and stiffened joints is well known. Rest in the grave forms of tuberculosis is essential in the beginning of the treatment. I confine my patients to bed for about four or five days. Then I begin with passive motions at first gently, gradually increasing them in range and force. It will surprise those accustomed to the old standard of immobilization treatment how painlessly this can be accomplished. Patients are allowed to walk on crutches with a supporting splint after the first week. Of course the results must be noted, and some caution is necessary to prevent overdoing things on the part of the patient. Arms are worn in a simple sling and a cardboard splint, which is frequently removed for the purpose of active (gentle!) and passive exercises.

As regards anatomic and functional recoveries the results are far superior to operative and other conservative methods.

GONOCOCCIC ARTHRITIS. In four cases under my observation I have succeeded in instantaneously relieving the intense pain from which the

patients had been suffering. In three cases immobilization and "cooling lotions" had brought no relief. The fourth case was very mild in character, and can, therefore, serve as no criterion. The wrist-joint and tendon-sheaths were affected. I have no doubt but that the patient would have recovered under any form of treatment.

One case, however, will clearly demonstrate the great value of hyperemia.

R. L., aged 29, a clerk in a bank, contracted gonorrhoea 12 days before the beginning of the present trouble, that is to say, 12 days ago he noticed a discharge from the urethra and pain on micturition. He immediately sought the advice of a physician, who treated him with irrigations of permanganate of potassium solutions and a prescription containing salol and bicarbonate of soda. On the tenth day the patient awoke with intense pain in his right wrist. The joint was diffusely swollen and hot. The skin red. His mother sent for the family physician, who prescribed aspirin and a proprietary liniment. This treatment gave no relief and until I was called to see the case the next forenoon, the man had been pacing the room, although the physician had endeavored to immobilize the joint on a metal splint.

The examination showed that undoubtedly the tendon-sheaths were involved. Inquiry resulted in the discovery of the attack of gonorrhoea. The

genito-urinary specialist furnished the data of his treatment.

I immediately applied constriction above the elbow. The patient screamed with pain. It required several attempts to get the right degree of congestion. After that the relief was practically instantaneous, to the great astonishment of the family physician and the patient. But greater still was their astonishment when, at the end of six hours' treatment, I began to flex, extend and rotate the joint, for in the morning the least touch increased the patient's agony. In six days the local process had fully subsided.

The rule in acute infections of the joints is to wear the bandage ten hours through the day. If edema develop, the extremity had best be placed on a splint and elevated for two hours. The edema in such cases is a desirable feature, it should be removed however at least once a day to make room for a fresh edema. I order the bandage applied before retiring, and I have invariably found this treatment to be sufficient to induce, or rather to enable, sleep. Opiates, sedatives or narcotics become unnecessary.

Practically the same method is applicable in all other forms of infections of the joints, including the knee. Where previously large incisions (arthrotomy) were required not only for the evacuation of the pus, but for the purpose of irrigating the joint cavity with appropriate anti-septic solutions, now the aspirating needle, or at the worst a stab-puncture with a narrow knife

suffices. The congestion will not only overcome the primary pathologic process, but will also aid in the "forcing out" of the pus, though this can be still better accomplished by suction with a suitable cupping appliance.

In *felons*, *osteomyelitis* and *tendo-vaginitis*, too, congestion hyperemia has wrought wonders. The large incisions for the evacuation of the pus which have always proved dangerous to the life of the tendons, are now abolished. Drainage and tampons are positively contraindicated, a simple dressing sufficing.

ON AMPUTATIONS.

Someone has said that any tyro can learn how to amputate a leg, but it takes a good surgeon to preserve one. There is a good deal of serious truth in that, and no doubt every practitioner who has had an experience extending over a period of a few years has come in contact, directly or indirectly, with cases where he had an opportunity to see the truth of that assertion verified. Personally I abhor mutilating surgery. This perhaps more than anything else has been the real cause for resorting to the smallest possible incisions, no matter in what region, especially so in women. I have been scoffed at by my associates, and one of my internes even resigned because it gave him no opportunity to "see the work done in the abdomen." Yet I feel that the very surgeons who prefer to make large incisions for their own comfort and convenience would

not want their own kin treated in like manner. And do we not hail with approval any innovation that promises to leave no scar, at least not a visible one, on the neck and abdomen?

Why then, the criticism?

And, after all, what does a scar in the *linea alba* amount to in comparison with the loss of a limb? Yet there are still some surgeons extant who order an amputation with the same sang froid that they employ for a herniotomy.

We cannot get along without amputations. Undoubtedly it is better to have a live patient with one limb missing than a dead one with all four intact as regards continuity. In fact, I am willing to admit that under certain circumstances an amputation becomes a conservative measure, but the cold fact remains that amputations are mutilating operations in the broadest sense of the word, and that they must be restricted to the utmost.

Let me illustrate one side of the question with a case from my own experience. For obvious reasons I prefer not to mention names.

A Polish laborer, aged 23, was struck by an iron rail (which fell from a considerable height) over his left leg, about two inches over the malleoli. He sustained a compound, comminuted fracture of the tibia and fibula and was sent to a local hospital, subsidized by the company. The patient was treated conservatively for four or five days, when he was told by the chief surgeon that his leg would have to be amputated. These

facts, which were told to me by members of the family who sought my advice, were corroborated in full by the superintendent of the hospital. Unfortunately the attending surgeon could not be reached to arrange for a consultation (which, by the way, the superintendent assured me would only result in a confirmation on my part as regards the necessity of amputation), and the relatives removed the patient to the West Side Hospital, where, they had learned, I was attending my private patients at that time.

On examination I found both the tibia and fibula fractured transversely, the fragments being rough, with many spiculæ, numerous loose pieces being wedged in between the ends. The periosteum was stripped off for some distance above and below the injury. Tendons were torn, nerves lacerated, the muscles rather pulpy.

I have misplaced the notes made at the time, but my memory is still fresh as regards the general impression of the case. It was a sad spectacle, and I did not blame the surgeons for advising amputation, at least not severely. One of my friends, a former army surgeon in Siberia, and a man of excellent clinical training, condemned my "nefarious optimism" when I told him that I hoped to save the limb. There were others who did not hesitate to foretell all sorts of disasters. But I reasoned that no one can tell what *Miss Vis Medicatrix Naturæ* would do for a husky young fellow if she be assured of a welcome reception, and for this reason de-

cided to postpone amputation as an ultimum refugium. The treatment consisted in the removal of all spiculae, of bringing down and suturing as best we could the torn periosteum; finally a severed flexor tendon was brought together by tendinoplasty, and the wound permanently irrigated with normal saline solution, after putting the extremity in a fenestrated splint.

Improvement began on the third day. I had gained a good mental impression of the extent of the injury (the radiographs of course showed only the condition of the bones), and it was easy for me to note how the deep wound began to gradually fill up with healthy looking granulations. To my great sorrow two weeks elapsed without showing any callus. That a leg with a pseudo-arthrosis would avail the patient little I realized, but consoled myself that if everything else failed, an orthopedic appliance would have to be worn through life. The patient assured me that such an appliance would be a thousand times preferable to an artificial leg. After the second week I placed the patient in an ambulatory splint and—to the horror of internes and nurses—compelled the patient to walk about on crutches. This active exercise stimulated growth, and after two more weeks I noticed the disappearance of false motion. In short the patient made an excellent *anatomic* and *functional* recovery, and is able to walk as well as before, except that I advised him to wear an inlaid sole, though it was rather difficult to determine whether there was any shortness.

The surgeons of the hospital where he was first treated examined him before settling his claim against the company and are said to have shown clinical evidence of decided embarrassment.

Railroad surgeons will find the above case interesting, because they see many like it.

Another case represents the reverse side of the medal.

Mr. S., aged 50, a resident of Salt Lake City, came to me for advice about a fistula communicating with the femur. The fistula had its point of entrance about three inches above the knee, on the inner side. The tract was tortuous, and the probe struck rough bone. A diagnosis of tubercular osteo-myelitis was made. Search for disease of the knee-joint proved futile, except that forced extension caused some pain. The patient was well nourished, a potator, and walked with comparative ease, though he had to support himself with a heavy cane. The prognosis would have been given by me as very good were it not that he had already undergone an operation in his home town several months previous.

I decided on an operation after treating the fistula with iodine solution for a week. The pus did not diminish, and the continuous pain, except when the limb was in absolute rest, led me to expect much from a more thorough operation than had been done in Utah. I sent him to the hospital (People's), and following the tortuous canal which was laid bare throughout, reached the femur. During the preliminary incision the

venous hemorrhage was profuse, and I ventured the prediction that we would find a more extensive involvement of the femur than we had anticipated. Indeed the operation proved the correctness of my assumption. The necrosed bone was treated with chisel and curette to an extent of several inches in either direction, and the cavity filled with iodoform solution, partially closed and drained. Everything went well for a week, when the pus began to reappear, worse than before. As I was at that time about to leave for Europe for a stay of several months, I transferred the case to one of my assistants, who carried out all instructions and, in fact, tried all sorts of antiseptics without success.

On my return to Chicago the patient was worse than before. I made several radiographs and the hazy contours extending practically to the middle of the upper third of the femur indicated to what enormous extent the femur was involved. It was evident to me then that nothing save the most extensive osteotomy would save the patient, since every known conservative measure had been exhausted. The patient consented to this extensive operation. A large incision from knee to the middle of the upper third was made, but one glance sufficed to show that nothing but amputation would do. A hurried incision below the knee showed the tibia at its upper third to be nothing else than a gelatinous mass, which could be scooped away with any blunt instrument. As I did not have the consent of the patient, the

incision was closed and the patient given an opportunity to react. A week later I made a hurried amputation of the thigh at a level of the inguinal fold. To my great surprise examination revealed the rest of the medullary canal involved and the entire femur had to be removed. This proved a rather difficult task, but was accomplished with the greatest possible speed. All precautions to guard against shock had been made, but the patient nearly died on the table. For three days the patient was in a precarious condition, but good nursing and heroic stimulation saved him. He is now a well man, attending to his business. An artificial leg will avail him little, and he is satisfied with a crutch. Three years have elapsed, and I recently heard from him with a check, a proof that the patient is doing well.

Here is a case where my "nefarious optimism" was not apropos. I should have amputated at a much earlier date. In extenuation it may be said that the patient had urged us to leave nothing undone to save his leg, and positively refused at first to consider amputation. Only the conviction that nothing would avail, and after being coerced by his friends to listen to me, consent was given. His recovery, needless to repeat, was problematical, amputations through the hip joint being considered extremely grave operations, especially in individuals whose vitality is impaired.

What are the indications for amputations?

Zuckerkindl briefly gives the following:

(1) Anomalies, such as supernumerary fingers, contractures, atrophic limbs.

(2) Injuries, when the destruction is so extensive that restitution, functionally, appears impossible.

(3) Infections, phlegmonous inflammation of the tissues, suppuration of the joints, osteomyelitis with separation of the epiphysis and suppuration of the joints, when this is spreading.

(4) Neoplasms (malignant) of the bones and soft parts. Occasionally benign tumors, such as enchondromas of the fingers call for amputation or enucleation.

(5) Gangrene (with demarcation) of the extremities.

(6) Incurable circular ulcers of the leg and elephantiasis.

(7) Incurable pseudoarthroses.

Zuckerkindl also recognizes two indications for re-amputations, viz.: neuralgia in the stump due to neuromata and conical stumps. As regards re-amputations that subject can be dismissed with one word: they will never become necessary when the primary operation was well done, a statement, by the way, which nullifies the saying quoted in the beginning of this chapter. The man who undertakes to perform an amputation must be a skillful surgeon, thoroughly familiar with all methods of technic, a rapid operator and a good anatomist. He who does not know where to look for blood vessels and

nerves in the amputation wound has no business to undertake such a serious operation.

The indications for primary amputation as given by Zuckerkandl require some discussion:

(Ad. 1) Little need be said about supernumerary fingers, etc. I have done the operation repeatedly, even under local infiltration anesthesia, without difficulty. Unless there is some decided contraindication the operation is of no special significance. Judgment is needed to form the flaps in such a manner that little can be seen of the scar.

There are no decided indications for the removal of "withered extremities." I know of many who have useless legs, no larger perhaps than a forearm. Others have merely a foot attached to the pelvis. There is no reason to subject these men to the risks of an amputation unless it be, at their own desire, to remove an evident deformity or to enable them to employ an artificial limb. Naturally the surgeon must be absolutely sure that the patient will be able to use such a prothesis. Where an amputation would yield no usable stump, an artificial limb can hardly be employed. Before advising such an operation the surgeon will do well to consult with an artificial limb maker of good reputation, or study up the literature on the subject.

Practically the same holds good with contractures. There are plastic operations, orthopedic measures, massage, etc., all of which, singly or in combination, may yield some good results. They should be given a thorough trial.

(Ad. 2) This indication allows a wide latitude. The case of compound fracture of the tibia and fibula above narrated plainly shows that it is human to err. Of course where the injury is so extensive that an amputation has practically been accomplished by the injury itself, as frequently happens in railroad or railway car injuries—no one will question the advisability of making a "clean" amputation above the original injury as soon as the patient has reacted from the shock, but where such an extreme injury has not taken place it is difficult to fix the exact extent which calls for amputation. No hard and fast rules can be laid down, but the practitioner will do well to go slow and under certain circumstances it may be advisable to procure counsel as a safeguard against subsequent suits or slanderous attacks. In such cases sound judgment will help more than all the text-book information available. That the appearance of pronounced sepsis, gangrene and necrosis, if not quickly overcome, indicate amputation, goes without saying.

While I have had no actual experience in this work with hyperemia, I would suggest that in addition to the usual antiseptic treatment, the production of passive hyperemia by means of elastic constriction above the seat of injury, in fact as high up as possible, should be given a thorough trial.

(Ad. 3) The case of tuberculous osteomyelitis reported in this chapter comes under this class. We have to consider the extent of the tissues involved rather than the nature of the

infection. Thousands and thousands of cases of tuberculous osteo-myelitis have gotten well after a thorough removal of the diseased tissues, and many a phlegmonous inflammation has been subdued by appropriate antiseptic treatment. Perhaps in no other class of cases has Bier's hyperemia (venous) shown such brilliant results as in acute and subacute surgical infections. The physician who is familiar with the technic of artificial hyperemia will certainly save many cases which otherwise would have to be subjected to radical operative measures. In these cases the physician must have absolute control of the patients, so as to enable him to interfere any moment. Only after decided failure with hyperemia and antiseptic treatment, and incision and drainage, should amputation be thought of, and then only as an ultimum refugium.

(Ad. 4) There can be no doubt about the indication of amputation in malignant disease. In spite of the X-rays life will be saved, or at least prolonged, only by removal of a limb, especially if metastases have not yet formed. The greatest danger lies in a mistaken diagnosis. To declare a case to be an osteosarcoma of the thigh and to learn later on that the patient has been successfully operated on for a bone cyst will not prove agreeable news to any practitioner, especially when the patient will continue to talk about the diagnostic error to all who want to listen! Where a limb is at stake the physician owes it to the patient and to himself to make doubly sure

that malignant disease really exists. An incision and the removal of a piece for microscopic examination is a small affair. This, after all, is the only positive method to establish the diagnosis in doubtful cases.

(Ad. 5) The dictum to amputate for gangrene when a line of demarcation has established itself, in my opinion, is not the best teaching.

I have lost several patients by waiting too long for the line of demarcation. Whether or not they would have been saved if I had operated on them sooner I cannot tell, but, in view of the extremely grave prognosis of most forms of gangrene, I feel that I have not done my duty by allowing the patients to become toxic. For purposes of treatment the physician must first determine the cause and nature of gangrene. (Be it understood that we have reference only to gangrene of the extremities). This subject is of such importance that a few diagnostic hints may not be amiss.

It is easy to differentiate between the so-called "dry" and "moist" gangrene. The former is characterized by the absence of moisture in the gangrenous part, which is black in color and "mummified." In moist gangrene the color is blue, bluish-green to green. The former, as is well known, progresses slowly, the latter very fast. Therapeutically, therefore, we need not hurry in dry gangrene as regards amputation. In such cases it may be advisable to wait for the line of demarcation, though in the meantime the

causative disease should be appropriately treated, as well as the local condition attended to (baths, posture, *careful* massage, etc.). In moist gangrene a few days may suffice to produce a profound systemic infection, and operation comes too late. We must understand that the line of demarcation is practically nothing else but a reactive inflammatory process, a natural process, aiming at the separation of the dead from the healthy tissues. In moist gangrene (infection, venous obstruction) this line may never appear, the gangrene proceeding rapidly. Exact investigation of the circulatory function is of utmost importance. It would be useless to amputate through or below the knee, for example, if no circulation can be felt in the femoral artery, high amputation at a place where pulsation can be ascertained may save life, though the prognosis should be guarded.

In arteriosclerotic gangrene (diabetes, contracted kidney, arterial thrombosis, syphilis) which is always "dry," much may be gained from constitutional treatment, but the gangrenous part is lost. Too much time must not be given to non-operative measures, and amputation should be performed as soon as the underlying condition is somewhat under control (10-20 days!)

(Ad. 6) Incurable circular ulcers! Of course when the physician sees the case at a very advanced stage, when palliative or less radical measures may appear little promising, there may be an excuse for amputation, but in fifteen years of a fairly large practice I have never seen such a case. Even in extensive ulcers I have suc-

ceeded in averting such a fate by bold incisions around the ulcers, by rest, elevation and anti-septic dressings (compression).

(Ad. 7) Amputation for pseudo-arthritis (differentiate from delayed union!) should be unknown in modern surgery. That faulty local conditions (such as badly apposed fragments, interposed soft or fibrous tissues) may prevent union of fractured bones is evident, but an open operation will reveal the actual condition and insure its being overcome with comparative ease. Where the local cause is due to malignant disease, amputation is indicated for the carcinoma, but not for the pseudoarthritis per se.

General conditions (syphilis, spinal disease, exhaustion) call for appropriate constitutional treatment.

Delayed callus formation requires local treatment. In one desperate case I succeeded after local measures had failed by placing the patient in an ambulatory splint and encouraging her to walk. The case may be instructive to younger practitioners, and for this reason is here briefly reported:

Miss W., aged 32 (?), was operated on in her native city (Riga), when she was seven years old, for what was evidently a tubercular arthritis of the knee. Soon after the operation her extremity became "stiff" and remained so in faulty position. On examination I found a bony ankylosis of the knee, the radiograph showing one continuous bone, the femur curved. I concluded that a resection of the knee joint was the opera-

tion performed on her when she was a child. It was, of course, impossible to do more than straighten the limb by osteotomy. This was done under the most rigid antiseptic measures. In spite of all precautions suppuration appeared and continued for weeks, completely exhausting the undersized, poorly nourished, rhachitic patient. The bone fragments refused to heal, there was no trace of callus. I resorted within three weeks to the following measures: irrigation with diverse antiseptic solutions, later strong solutions of zinc sulphate, insertion of gauze wicks saturated in ointments containing Peruvian balsam and silver nitrate, rubbing the fragments together (vigorously, under anesthesia), and finally driving into the fragments ivory pegs. All these local measures failed. I scarcely need mention that dietetic and constitutional measures were not neglected.

Driven to despair, I placed the limb in an ambulatory fracture splint and permitted the patient first to sit up, then to make a few steps, while supported. I was amazed at the rapidity of her general improvement. Frequent examination revealed the fact that the suppuration had ceased and that the mobility of the pseudoarthrosis became less and less. Within 14 days the splint was removed. Passive movements showing no mobility, the patient was allowed to make a few careful steps. From then on uneventful recovery.

CHAPTER X.

DISEASES OF THE NERVOUS SYSTEM.

GENERAL REMARKS. Surgery of the brain, as compared with that of other organs, represents the most serious and saddest chapter. Indeed, he who has not received the benefit of specialistic training had best not attempt to enter the cranial cavity. That is sacred territory to which only the high priests of our craft have access and even they enter with fear and trepidation.

The very preliminary step of opening the skull with the trephine or chisel is fraught with the danger of uncontrollable hemorrhage from the diploë. Often an apparently insignificant operation involving the dura is followed by edema or encephalitis with lethal result! Death on the operating table is no uncommon occurrence.

My own experiences have been so disheartening, my mortality statistics so terribly large and the therapeutic effect in those that remained alive so insignificant that I am tempted to counsel: *Noli me tangere!*

The skull itself will not be specially considered here. Depressed and compound fractures are no rarity. Some sort of operative work (removal of fragments and spiculae, elevation of depressed parts, etc.) is bound to produce excellent results. I have seen two cases of necrosis of the skull due to trauma (gunshot wounds). In one

instance the scalp was as thin as tissue paper for a considerable portion over the necrosed area with a round hole in the center. Removal of some bone spiculae produced a cure. In such cases operative therapy is positively indicated, and should be undertaken by any competent operator.

TUMORS OF THE BRAIN. The presence of brain tumor can be suspected only when the patient presents so-called "pressure" symptoms. The difficulties of diagnosis can be appreciated only by those who have had a varied experience. In every suspected case the general practitioner should insist on a consultation with an able neurologist. An expert ophthalmologist must be called in if the neurologist happens to be imperfect in the use of the ophthalmoscope. Not infrequently even then an approximate or "probable" diagnosis is the best that can be made. In spite of the great strides made in cerebral localization I have seen the greatest blunders by competent neurologists. But where an exact diagnosis is so difficult and so uncertain, naturally our treatment cannot be based on scientific facts.

It is beyond the scope of this small monograph to enter into a discussion of diagnostic technic except as much as has a bearing on the subject-matter under consideration. Assuming, then, for the sake of argument, that the presence of a tumor is positive, what is the physician to advise? Internal medication or operation?

Let us consider for a moment the remedies at our command. We have mercury, potassium iodide, and a host of remedies to combat symptoms. The first two are our sheet anchors in syphilitic lesions. Where the symptoms are removed by these two anti-luetics it can be safely assumed that the diagnosis of "tumor" was wrong and that we had to deal with gumma. In medicine it is a good rule to suspect everybody of syphilis until proven free from it. Whether or not our latest diagnostic discoveries such as the Wassermann reaction would prove of value in brain gumma I do not know, and incidentally I may add that the Wassermann reaction is not altogether infallible, at least not according to some observers. But until a positive reaction for even tertiary syphilis has been discovered it will be a wise diagnostic and therapeutic step to give each patient with suspected brain-tumor the "benefit of the doubt" and institute a mixed course of treatment for at least three weeks. Neither drug has a harmful influence on such brain tumors as glioma, sarcoma or tubercle.

With the two remedies mentioned our medicinal armamentarium is exhausted. Failing to obtain relief with them in the course of about a month, an operative procedure must be considered. It is self-evident that only the radical extirpation of the tumor will produce a positive cure. Lumbar puncture is only a palliative measure to relieve compression of the brain.

But in order to be in a position to recommend

the excision of the tumor we must be certain of at least two things, viz., first, that the tumor is not diffuse, and, second, that it is situated in a part of the brain accessible to the surgeon's knife. To expect from any one a diagnosis of the nature of the tumor is, at this stage of our knowledge, too much.

Now the fact is that neither of the two questions can always be answered positively by even the best neurologists. An exploratory operation, as is often done for abdominal diseases, is a serious affair. On the other hand, any condition of the brain producing symptoms that make the diagnosis of tumor probable is so serious that death is the only possible outcome.

Under these stern conditions the general practitioner and occasional operator will do well to secure the co-operation of specialists of acknowledged ability and let them make the decision what course to follow. The seriousness of the situation must be frankly placed before the patient—if he is mentally capable of judgment—and his family. They must be given a voice in the matter.

A word about lumbar puncture. It is not free from danger, especially in vascular tumors. Death has followed after this simple procedure and was in all probability due to cerebral hemorrhage.

EPILEPSY, PSYCHOSES, ETC. Surgery is indicated in so-called reflex-epilepsy, when the primary cause is a scar, growth or injury involving

peripheral nerves. These operations are comparatively simple and safe, and should be undertaken without, however, holding out any definite promise of cure. Out of four cases observed by the author only one was cured. The removal of ovaries in young women for epilepsy, in my opinion, is surgery gone mad. Psychoses due to growths or deformities of the skull, producing pressure on the brain, naturally call for a corrective operation. Bony growths of the skull emanating from the inner table are diagnosed with difficulty. A good Roentgen photograph will prove exceedingly valuable.

MENINGITIS. Tuberculous meningitis, which must be assumed when there are other tuberculous affections present, calls for lumbar aspiration, provided the general condition of the patient is not so bad as to make any surgical procedure risky. The operation itself must be done under the strictest asepsis and the cerebro-spinal fluid allowed to escape slowly. In the acute meningitis, not tuberculous in character, Flexner's serum seems to be life-saving. However, lumbar puncture may have to be performed to relieve pressure as an emergency measure.

TIC DOULOUREUX. The mild form of facial neuralgia, easily cured by a dose of castor oil, salicylates, hot applications or so-called counter-irritants (since proven to be agents producing hyperemia), do not come within the province of the surgeon.

In those grave forms in which the pain is so intense that large doses of morphine are required to produce temporary relief, and that gradually the doses have to be increased to free the sufferer from the indescribable agony, surgical operation becomes justifiable.

Among the methods used are avulsion of the affected nerve and resection. The extirpation of the Gasserian ganglion was a recognized procedure as was sympathectomy, at least until recently.

The operation devised to remove the Gasserian ganglion is an extremely hazardous one, the mortality being high. The fact that patients consent to such risky methods shows how intense their suffering must be; in fact, they are the very ones to urge the surgeon to go ahead, confident that if no cure result, death would surely terminate their unbearable existence. None of the operations can be guaranteed to give permanent relief, recurrence often taking place. Of late, however, the injection of alcohol into the nerve substance seems to make any other form of surgery unnecessary. For such injections specially constructed hypodermic syringes and needles—or rather small trocars—have been devised.

I know of no mortality from this treatment. If performed under aseptic precautions there should be no local infection from the small puncture wound.

There are no disadvantages from this minor operation, except the necessity of securing a special instrument.

Owing to the depth of the situation of most nerves attacked by the graver forms of neuralgia, thorough familiarity with the anatomy is a *conditio sine qua non*. Most general practitioners have little use for detailed anatomic studies, but here is a procedure which does not permit of blind groping or guessing. As a hint to my readers I suggest that before I undertake to inject alcohol into the Gasserian ganglion I practiced with the long needle for several hours on a skull.

By so doing one gets acquainted with the manner in which the needle has to be inserted, a maneuver which has several steps, all of which must be done with great care.

In one case where operation for the removal of the Gasserian ganglion was agreed on relief lasting eight months was obtained from one injection. The pain ceased a few minutes later, the night following the injection being the first that the patient has slept without a hypodermic of three-quarters of a grain of morphine.

At any rate, neurectomy or other bloody operations should not be undertaken until the injection of alcohol has been given a trial.

CHAPTER XI.

DISEASES OF WOMEN.

GENERAL REMARKS. The advances in gynecologic surgery which have been made during the last ten or twenty years are truly wonderful. That the "furor operativus," however, has done much mischief is admitted by every observing surgeon. Where formerly the general practitioner "tinkered" with his pessary, tampon and suppository, the "operator" now cures, sutures or excises. It is difficult to estimate who of the two is the greater sinner.

It is generally conceded that women are the most willing stepping-stones for an ambitious would-be surgeon. It is so easy to diagnose "endometritis" and to advise an "operation." Usually this "operation" is done at the patient's house. Neighbors are naturally attracted and the doctor gets a little free advertising. Whether the diagnosis was correct, whether the curettage was really necessary, those are but secondary questions. And, what is worse—the woman does not get better and as a rule applies for relief elsewhere. If she obtains relief at other hands the willing victim will turn enemy and denounce the "surgeon" wherever her voice can reach. It is the old, old story of honesty paying in the end.

In considering the problem of surgical indications in diseases of women, I shall follow no

set plan, but consider such affections generally subject to operative procedure in which non-operative measures have a decided value.

ENDOMETRITIS. The abuse of curettage has become so pronounced that it is time to call a halt. The diagnosis is made on a mere pretense at examination and a curettage recommended as the easiest way to cure the patient. If all the women who have been curetted could be heard from, the operators might hear stories which would prove anything but pleasant news.

The mere fact that women have been curetted for gonorrhoeal endometritis is sufficient to show to what extremes operators will go.

Curettage is an important operation and should never be undertaken when there are not decided indications. In my opinion curettage is justified only

- (a) For the removal of secondines post abortum,
- (b) In membranous dysmenorrhoea,
- (c) In endometritis chronica of the hemorrhagic type.

Care should be taken to exclude the possibility of the presence of fibro-myoma. Curettage for hemorrhages due to fibroid tumors has been recommended even by no less a gynecologic surgeon than the late Dr. Pryor. I believe such a teaching dangerous. More than one woman has lost her life on account of this operation. If the tumor be close to the curette and become injured by it

suppuration with fatal results may and, in fact, has occurred. Careful bi-manual palpation, and in suspected cases, by one finger in the uterine canal after its dilatation, will prevent such a disaster.

All other forms of inflammation should be treated by gentle dilatation of the os (to insure drainage and stimulate circulation) and by the application of suitable antiseptics. Where there is "engorgement" due to venous stasis, puncture of the cervix with a narrow scalpel or handled needle will prove more serviceable than intra-uterine medication.

LACERATIONS OF THE CERVIX and erosion of the external os are frequently mistaken for each other. The former should be repaired by the Schroeder operation—the latter requires the cautery or silver nitrate applications.

FIBROID TUMORS OF THE UTERUS. The treatment will depend on the location of the tumor. Submucous and sub-serous tumors, especially when pedunculated, can be removed only by operation. Even with broad attachments myomectomy is preferable to hysterectomy. The interstitial tumors, especially those producing uterine hemorrhages, can be removed only by complete extirpation of the uterus, a formidable operation with a considerable mortality. The galvanic current has been warmly recommended by several authorities and has been equally strongly de-

nounced by others. I have had excellent results in at least three cases with the galvanic current. I have been able to check the hemorrhages and to reduce somewhat the size of the uterine enlargement, i. e., the tumors. My patients have been pale and listless, from the frequent losses of blood, and have been sufficiently benefited to be able to attend to their duties. Of course, a real cure is out of the question. But I am willing to be condemned by the pro-surgical claimants because I prefer to have my patients alive and in fairly good condition with the tumors in, than dead with the tumors out. Of late I have tried the mammary extract, but I have not seen any decided benefit from it. The Roentgen rays have been tried with some effect, but too few cases have as yet been reported to enable us to form an opinion of their value.

“CYSTIC” OVARIES. Their removal is, in my opinion, little less than a crime. What folly it is that has caused operators to remove so important an organ as the ovary for “cystic degeneration” is hard to understand. Oophorectomy is justified only in malignant disease or tuberculosis. Many of our enthusiastic laparotomists would do well to become acquainted with the art of massage and they would be surprised at the result achieved with it in many forms of chronic oophoritis. Practically the same holds good as regards pyosalpinx. It is a mistake to extirpate the tubes for acute infection. Operation for chronic pyosalpinx should be an ultimum refugium after con-

servative treatment has failed. (Douches, glycerine tampon, gentle massage, etc.).

UTERINE DISPLACEMENTS. It is my opinion that the many ingenious operations devised for the correction of backward displacements of the uterus are not the only road to success. In many cases retroposition of the uterus can be overcome when the primary cause (endometritis, corporeal metritis) has been removed. Simple mechanic treatment such as the knee-chest posture, and properly placed tampons, may eventually produce at least symptomatic relief. Of course, firm adhesions necessitate operation. I have obtained good results in cases of long standing by subjecting the pelvis to vibrations. For this purpose a rod ending in a small hard rubber ball is attached to the vibrator and inserted into the vagina as deep as possible. Counter pressure over the abdomen, as in bi-manual examination, enhances the effect. Band-like adhesions can be stretched with comparative ease by this method. Improvement should be noted after the tenth seance. If no relief is obtained then I abandon the treatment.

CHAPTER XII.

CONSERVATIVE SURGERY OF THE EAR,
NOSE AND THROAT.

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In no branch of surgery has conservatism in the broader sense been so little in evidence as in that involving the ear, nose and throat. In the few pages at my disposal it is impossible to dwell at any great length on the indiscriminate use of the cautery, the tonsillotome and the chisel. I shall limit myself to a brief consideration of such procedures that most frequently become tasks for the general practitioner.

EXTERNAL DEFORMITIES OF THE NOSE have been appropriated by the so-called "beauty specialists." There is no reason why the general practitioner with ordinary skill should not undertake the correction of such deformities. The most frequently observed deformity is that known as the aquiline or hump nose. I would caution against the central incision used by many surgeons, for it is preferable, for obvious reasons, to make a small incision on one side of the nose over

the area of the deformity. The skin and the periosteum is raised and retracted and the deforming bone is removed with a small dental burr (a chisel is more frequently resorted to.) Approximation of the skin and periosteum and retention by adhesive plaster, completes the operation, which, when done under aseptic precautions, should give uniformly good results.

The deformity known as *saddle nose*, which is either congenital or due to trauma, syphilis, etc., is best corrected by the subcutaneous injection of paraffin. Care must be taken not to do too much in one sitting. It is better to instill a small quantity, and to repeat the seances, nor is it advisable to dissect the skin from the underlying tissue. A collodion dressing after the injection is all that is required, no further after-treatment being necessary.

TUMORS OF THE NOSE must be treated on surgical principles, the same as neoplasms elsewhere in the body. Of special interest here are the *fibro-myxomata* or *polypi*, as a rule found in the upper part of the nasal cavities in adults. A common error of the past and, for that matter, also of the present, is to remove the polypi without eradication of their source. It is nothing rare to hear patients tell that they had their polypi removed, but that they grew back again. The consensus of modern opinion is that all polypi spring from a pathologic accessory sinus or from a diseased part, probably secondarily affected by the secretions of an affected cavity, flowing over

them, e. g., the middle turbinate body, the uncin-ate process of the ethmoid bone or the ethmoid cells. Bearing these points in mind, we are confronted not only with the simple removal of the polypi visible on inspection, but with the definite establishment of the causative factors. The tech-nic of dealing with the turbinate bodies, etc., will be discussed below. Treatment of the accessory nasal sinuses come properly within the province of the specialist.

CATARRHAL CONDITIONS of the nose, variably classified by different authors, the treatment of which is essentially surgical, in my opinion, are not treated in the text-books in accordance with facts, at least not according to my personal ex-perience. To my mind, it is here that the great-est amount of benefit can be derived from con-servative surgery. Let us stop and consider the important function of the turbinated bodies, espe-cially that of the inferior, and we will condemn unhesitatingly the promiscuous mutilation of these valuable bodies. Physiologists teach us that these bodies regulate the temperature, moisture and filtration of the inspired air before it reaches the lungs. Mutilation interferes with their nor-mal functioning, which affects the general system to an extent that the resistance to disease of the individual is greatly lowered.

Promiscuous cauterization by chemicals or cau-tery of the turbinated bodies, therefore, should be abandoned. In such cases special attention should be paid to the nasal septum. It should

be examined for deviations, exostosis, ecchondrosis, etc., for it is my conviction that in rhinitis the symptoms are entirely dependent on the size of the turbinated bodies and are but manifestations on the part of nature trying to overcome the deformity of the nasal cavities or post-nasal space, hampered in free and equable respiration. If this be true it is evident that the turbinates should be let alone until the septum is brought to as nearly an ideal state as possible. It goes without saying that the post-nasal space should be cleared of adenoid tissue when present and of any lymphoid tissue that may predispose to congestion of the naso-pharynx or nasal cavities. It will be surprising to note after that how the so-called hypertrophied turbinate assumes a size compatible with normal nasal respiration. If, however, the turbinates should fail to do this and if it then becomes desirable to reduce their size, resort should be had to surgery and not to cauterization in any form. As much as is necessary should be removed with either scissors or Myle's biting forceps, thus destroying only the part removed and avoiding injury of the neighboring glands, whose function, as we have seen, is of such utmost importance to the welfare of the individual. Such injury leads in years to a rhinitis sicca, a condition which will keep busy the patient's fingers ridding the nose of crusts. There is no doubt that the patient will be better satisfied with cauterization for the time being, because this procedure produces free cavities much

sooner than by the cutting operation, but the same patient will come back a few years later for either renewed cauterization or for treatment for the dry state of the nose. As an illustration I may relate my own case. A number of years ago, when a medical student, both of my inferior turbinates were cauterized by an able man, for whose skill and learning I have great regard. I was greatly relieved in a comparatively short space of time. About three years later, however, my previous symptoms returned, plus a dry state which kept me busy clearing my nose of the crusts, which the mucous membrane is unable to throw off owing to the destruction of the secretory glands by the electro-cautery. I postponed further treatment until I myself could acquire some knowledge in this line, and finally decided to have my deviated septum straightened, an operation that should have been done in the first place. While the results were beneficial, it took a good deal more time for their manifestation.

My advice, therefore, in regard to the use of the cautery in such cases is: Don't.

The innovations both in instruments and technic of operations on the *septum*, that have recently been brought to our notice, are of utmost value, if properly performed. All deviations of the septum, whether cartilaginous, bony or both, should be operated on by the so-called submucous method. I realize that it is difficult to overcome some deviations and that great skill and patience are absolutely necessary, but the re-

sults, when this condition is remedied, are most gratifying and lasting.

TECHNIC. The septum must be thoroughly prepared and anesthetized by application of cocaine and adrenalin, and a curved incision is made on the convex side of the septum just anterior to the deviation; the mucous membrane is then elevated to a point beyond the deviation. We next make an incision into the cartilage, great care being taken not to perforate the mucous membrane of the opposite side. This is followed by elevation of the mucous membrane of that side through the incision in the cartilage. This being accomplished, the cartilaginous portion of the septum is removed with a Bellenger swivel knife, the bony part by a bone-biting forceps. After trimming off the rough points the incision in the mucous membrane is approximated by one or two sutures and both sides of the septum packed tight. The packing should be removed after 48 hours. In my opinion this is the ideal operation for the equalization of the air pressure within the two nasal cavities. Under this method I have seen cases where the turbinates were very large on one side and small on the other, assume a normal relation with no additional treatment except cleansing sprays, though at first it was believed that some operation may yet be necessary.

EXOSTOSES (spurs) AND ECCHONDROSES are treated by me in somewhat similar manner, i. e., first dissecting up the mucous membrane,

then removing the protruding part with knife, saw or chisel and then approximating the edges of the wound, in this manner best avoiding the destruction of any part of the functioning apparatus of the nose. The importance of the mucous membrane dictates that burning with chemicals or other destructive measures should be avoided. Even the *vis medicatrix naturae* may balk at continued abuse.

EPISTAXIS OR NOSE BLEED is a very common condition, at times so slight that mere suggestion will stop it, and again so serious that it will tax one's resources. Even death may follow a hemorrhage from the nose. If the hemorrhage be due to the removal of a scab, or a ruptured varix or small artery the bleeding can be easily controlled by the judicious use of the cautery. Packing may occasionally become necessary.

The following case may illustrate the seriousness of this accident:

A young man, 25, slender and anemic, whom I had treated for a while for a syphilitic pharyngitis, and who also had a slight tubercular lesion in the apex of one lung, called on me early one morning and told me that he had had a hemorrhage from the nose which left him quite weak. I examined the nose carefully, both anteriorly and posteriorly, but found no bleeding point. I sent him home with a placebo in the hope that he would not have another experience. He, however, came in the next day and claimed to have had another hemorrhage. The patient was quite

alarmed and looked decidedly worse. Another examination failed to reveal the source of the hemorrhage. With a view of starting the flow of blood I rubbed a cotton-wrapped probe in the nasal cavities, which produced so profuse a hemorrhage that to find the bleeding source was out of the question. I packed both sides of the nose and sent him home. Was called in the night to see him and found that he had a post-nasal hemorrhage, the blood trickling down the pharyngeal wall. It became necessary to remove the anterior packing and insert a post-nasal plug in both nares, but the hemorrhage still persisted, necessitating repacking of the anterior nares.

In view of the above experience I make it a rule to insert a post-nasal plug whenever I am unable to locate the bleeding point.

ADENOIDS OR HYPERTROPHY OF LUSHKA'S TONSIL. There undoubtedly is not a physician living who is not familiar, from personal experience or the literature, with the immense benefits derived in children from the removal of adenoids. The compulsory removal of adenoids to insure attendance in school is well founded. Puny, listless, dull and stupid children are transformed as if by magic into healthy, bright and alert pupils by a comparatively simple operation! Unless there are complications, such as the presence of diseased, hypertrophic tonsils, nitrous oxid anesthesia or some such general anesthetic as "somnoform" is highly satisfactory, otherwise general ether anesthesia (by the drop method) is prefer-

able, for the removal of the adenoids can be accomplished in 30 seconds. The technic of the operation is too well known to require description in a work of this kind, and I only need to caution the reader about one thing, viz., that, while it is desirable to thoroughly clean out the post-nasal space, irrespective whether this be done with the adenoid curette or special biting forceps, care should be taken not to injure the orifices of the eustachian tubes or the uvula.

HYPERTROPHY OF FAUCIAL TONSILS. Conservative surgery of this condition means radical surgery of the most rabid type. Away with the tonsillotome, an instrument which should be relegated to obsolete antiquity! What sense is there in "slicing off" a piece of tonsil and leaving a diseased base? And that is exactly what the tonsillotome does to the great discredit of throat surgery, for the patients sooner or later come back with the statement "that the tonsils have grown back again."

The tonsils need not be removed simply because they are large. Size, in fact, has little to do with the indication for removal. The only thing to go by is the circumstance that the structures are pathologic. A diseased tonsil should be removed, be it ever so small. As far as we know to-day the tonsils have no particular function and are not missed when removed.

Just a word in regard to technic. The tonsils should first be dissected off from their attachments by either a tonsil knife or scissors and fi-

nally separated by a cold snare. General anesthesia is necessary in children; in adults local anesthesia suffices.

UVULA (ELONGATED). This condition may produce annoying symptoms, much as would a foreign body in the throat. If the elongation involves only the mucous membrane a simple excision with scissors of the lowest part suffices. This "amputation" should be performed in a manner to leave the cut surface posteriorly, to avoid irritation by food and drink. When the muscular part participates in the elongation a V-shaped excision with an approximating suture is best. The uvula, in either operation, is held fast with a long catch forceps.

OTITIS MEDIA, suppurative and non-suppurative, invariably requires surgical intervention, not only for the relief of pain, but for the purpose of shortening the course of the disease and of preventing intra-cranial complications. The proper method of treatment is that of *incision* of the membrana tympani. Please note that the word *incision* is not to be confounded with "puncture," such as is technically known as paracentesis, an operation which is as obsolete as the "slicing off" of the tonsil. An incision is indicated when the drum is bulging or when the pain is intense, irrespective whether suppuration be suspected or not.

TECHNIC. Irrigation of the canal with a solution of bi-chloride of mercury 1-5000. Local or

general anesthesia must be resorted to according to the individual or the severity of the case. A very small curved bistoury (cataract knife) is used, and a large curved incision made, preferably over the bulging part. As a rule, this lies in the posterior quadrant, but if the bulging presents itself in Shrapnell's membrane the incision should be made there, and carried to the posterior superior wall of the canal. After cleansing the canal a strip of gauze is inserted, which is renewed twice or thrice daily for the first two days and then once daily until recovery. The dread that the membrane will not heal is groundless, the wound often closing sooner than we desire.

MASTOIDITIS. This serious complication of an otitis is purely a surgical disease. For a general practitioner, even suspecting the presence of a mastoiditis, to withhold from the sufferer the benefit of specialistic knowledge is, to say the least, little less than criminal. When seen early, that is in the first 36 hours, cold applications, leeches, etc., may be tried. Bier's passive hyperemia produced by means of a rubber bandage applied to the neck has been advocated by its inventor and by the famous aural surgeon, Eschweiler, as a curative treatment of mastoiditis. Having had no personal experience with this method I would advise to give it a trial, but to observe whether or not the symptoms become aggravated:

It goes without saying that the drum should be incised if it bulges.

After 48 hours, if no improvement is noticeable, the radical operation is indicated.

AFFECTIONS OF THE EXTERNAL ear, such as malformations, neoplasms (benign and malignant) differ little from similar affections elsewhere in the body, and must be treated on surgical principles.

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