of stout silk, through from side to side. The threads were tied end to end, were left in, and were pulled back and forward every day to keep up suppuration.

This is the seton, now disused, except possibly in veterinary practice.

The seton has once been useful in my practice: A man of forty years with chronic hip disease and recurrent abscesses. Treatment in his case was by inserting a broad seton under the fascia lata. This gave him much relief from pains, which recurred *whenever the abscesses were closed*. Light extension worn at night also enabled him to sleep comfortably. There can be no doubt the seton helped him, and he kept it in for months.

(To be continued.)

SOME COMMENTS UPON THE RESULTS OF OPERATIVE MEASURES FOR KNEE AFFECTIONS.

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LATE results of operations upon knee-joints for various pathological conditions have been collected by the writers from the records of the Massachusetts General Hospital through the courtesy of the hospital administrator and Dr. E. G. Brackett.

Several hundred letters have been distributed to former patients and their present conditions ascertained by asking them to answer carefully prepared lists of questions which have been mailed to them, and also by requesting them to return for observation. On account of the large variety of conditions treated, subdivision into small groups seems advisable, and attention is called to the fact that results are taken from the services of many men, general surgeons as well as orthopedic ones, and consequently represent average rather than individual successes.

The common synovial defects, including cartilage displacements, for which operative measures are employed in the hospital, as shown in the records, are as follows:

(1) Chronic synovitis treated by arthrotomy and lavage and followed by immediate closure of the incision wound.

(2) Villous arthrititis with excision of villi and fatty tissues.

(3) Dislocated semilunar cartilages treated by removal of the loose or displaced fragments.

(4) Tubercular synovitis for which excisions of the joints have been performed.

(5) Acute septic synovitis treated by arthrotomies, lavage and drainage, or thigh amputations.

(6) Chronic arthritis with adhesions treated by forcible manipulations, or arthrotomy with injection of oils, and arthrotomy with insertion of animal membranes.

Discussion will be limited in the present paper to —

(1) Chronic synovitis without villi or lipomata that has been treated by arthrotomy but not tissue removed.

(2) Villous arthritis with excision of villi.

(3) Lipomata of the joint cavities treated by excision of the lipomata.

(4) Dislocated cartilages.

There have been sixty responses from patients included in these four groups, and all were discharged from the hospital relieved of their symptoms completely, or to such a degree that it was thought safe to allow them to convalesce elsewhere with occasional returns for further inspection.

They went back to their homes, or resumed their occupations and habits of living as they had been doing previously to their admission to the hospital; and it is interesting to note that only four patients, two with dislocated cartilages and two with villous synovial conditions, consider their operation of no benefit. The remaining fifty-six persons have been slightly or greatly relieved, according to their own statements, and feel grateful to the hospital for the services rendered them.

However, further analysis of these cases shows that although what has been said is true, that also among eighteen operations for dislocated semilunar cartilages there are only eight patients, 44%, who have an absolutely perfect result with no painful symptoms or weakness whatever, and with strength as great as in the sound knee. Six out of eighteen cases, 33%, have slight disability that does not prevent the individuals from walking or engaging in usual occupations, but which shows itself in weakness, transitory pains and uncomfortable feelings after long use, or on ascending and descending stairs, as well as when getting on or off street cars, so that patients report they generally favor the leg that has been operated on. Four out of eighteen cases, 22%, have considerable disability that appreciably interferes with continued walking or standing, and two of them have had recurrence of symptoms from cartilages left in the joints.

Among patients with villous arthritis, there has been only one patient out of twelve, 8%, who feels perfectly strong and well. In six out of twelve, 50%, there are symptoms of weakness and slight disability as already described, and the remaining five, 41%, still have much trouble with their knees.

Seven patients have returned for observation who have had lipomatous masses removed from their knees. One of these has perfect use, but this patient also had a dislocated cartilage removed at the same time, to which many of the symptoms presumably were referable. Three still have slight pains and weakness, and three have great disability after the fatty masses have been excised, 43% each.

There are twelve patients with chronic synovial inflammations who have had no tissue removed, but who have had their joints washed out with normal salt solution, or adhesions broken, after which the operation wound has been immediately closed tightly. In this group there are two gonorr-

rheal cases, one hypertrophic arthritis patient, two cases that subsequently proved to be tubercular, one traumatic one and the remainder of obscure infectious types.

Two of these twelve simple arthrotomies have perfect use, 16%; six have slight weakness, 50%; and four, 33%, have pain and limitation of motion which disables them to a marked degree, the two tubercular cases being completely ankylosed.

Before entering upon discussion of indications governing operative interference a few typical examples will be selected for description.

CASE 1 is a married man of thirty years who is a guide in Maine woods. He wrenched his knee six months before operation while in the woods and felt something give way. The knee became swollen for several days, and also became locked three times during the six months which followed.

At operation the anterior part of the inner semilunar cartilage was found dislocated and was removed. The patient began walking with crutches in nine days after operation, was discharged from hospital in twenty-one days and was able to walk freely without pain after two or three months. He reports by letter that now, ten years after operation, he can use the knee just as well as the other one and can walk as far as he wishes without any feeling of weakness and that he continues to work as a guide. Attention is called especially to the robust health of this patient at time of injury, that the trauma was a severe one, and that the recovery has been complete after he resumed his healthy out-of-door occupation.

CASE 2 is a single man of seventeen years, well developed and healthy, who works as a machinist. He had noticed snapping of the knee for four or five years when he bent it, but experienced no swelling, pain or other symptoms.

At operation one half of the external semilunar cartilage was removed and the patient was discharged from the hospital after twenty days. Pain on walking persisted for two years, and he reports by letter that at the present time, five years after operation, he has a dull ache when sitting or standing and that the knee has become locked three times. However, he is able to work ten hours daily at his trade and can walk several miles. He has had rheumatism in his hands and both knees since operation. Attention is called to the fact that the present condition seems to be no better than before operative interference, although the patient himself considers the surgical treatment a benefit. It is impossible to state whether the original trouble would have gone on to greater disability than now experienced if no operation had been performed. Opponents of early surgical interference will point out that this operation did not relieve the condition, which, on the contrary, is perhaps worse now than formerly, while supporters of early interference will be inclined to the view, on the other hand, that such a long-standing lesion of four or five years would not have subsided and that sooner or later serious trouble was sure to come, therefore that it is better to consider the operation a benefit and that it has delayed destructive changes, although it has not effected a cure.

CASE 3 is a single man of thirty-five years, a machinist of good health and physical development, whose knee gradually became weak without apparent cause, and six months after a fall it became appreciably swollen and remained so, more or less, for eighteen months. It never locked, but interfered with his occupation, although it never incapacitated him.

Examination showed the knee slightly swollen, with effusion in the joint, with marked crepitus and flexion limited to 90°, but no local spots of tenderness. When the joint was opened considerable straw-colored fluid escaped, also masses of fibrin were picked out with forceps. The joint cavity was rinsed out with weak carbolic acid and thoroughly washed afterwards with normal salt solution, but no tissue was removed. The patient was discharged from the hospital two weeks after operation with no pain in the knee, but with considerable effusion still persisting. He was able to walk freely after several months for a while, but at the present time reports that he is unable to use the leg at all. He states that the knee is considerably swollen, that complete extension has become impossible and that there is a constant ache in it when standing so that he is unable to work; also that it has frequently given way suddenly.

CASE 4, married man of forty-seven years, who is a laborer. He came to the hospital with an inflamed knee and was treated by rest, massage and non-operative treatment for eighteen days and discharged somewhat relieved. Six months later he returned and had the joint opened and several villi trimmed away, having injured the knee in the interval by twisting it so that it continually swelled with use, although motions were comparatively free and painless.

Several fringes and one large fatty tab were removed, and patient was discharged two weeks later able to use the knee in standing. Walking became easy and painless in several months and patient returned for observation ten years after the operation, able to use his leg as much as ever and employed in tending a stone crusher. There now is slight crepitus in the joint, but motions are normal, no pain is complained of and joint shows practically a perfect result with only very slight sense of weakness noticed occasionally when ascending stairs.

CASE 5. The fifth case is one in which a large lipomatous mass was removed. The patient was a single woman of twenty-four years, who lived at home. Nine years before operation her knee gave way without cause and let her fall to the floor. Similar accidents occurred subsequently until the knee became weakened from repeated swelling. Continual peculiar sensations were felt in it, as well as a sore spot upon its inner lateral side.

Examination showed a fairly well-developed neurasthenic woman with relaxed joints, whose knee motions were a little greater than normal from laxity of the ligaments, and a soft mass palpable under the patella in the left one.

A large mass of fat was removed from the joint cavity at operation and the capsule was plicated and tightened. Eleven days later there was a manipulation under nitrous oxide anesthesia to break adhesions and the patient was discharged twenty-three days after opening the joint, walking on crutches with no pain, but with considerable unsteadiness in the leg. Walking was resumed gradually and pain never was a very noticeable feature.

The patient returned for observation several years after operation, with her general health somewhat improved, and was able to work regularly as a clerk. She states, however, that she still becomes fatigued too easily and is obliged to avoid using the knee very much, as it becomes weak when going up and down stairs. However, she can walk one mile, which is as much as she desires.

Examination now shows a relaxed joint with slight crepitus, but otherwise normal and fairly serviceable. The operation is considered a great benefit by the patient.

CASE 6. This case is that of a single man of thirty-six years who was an undertaker. His knee trouble began when he was eight years old, and the joint continued to bother him until his death. He was a well-developed man of average weight who did not use his joints excessively and who had received no apparent injury. When thirty-two years old the disability became very great from locking of the joint, and a loose semilunar cartilage was removed; after this there was a period of four months when the knee was strong and useful, then there was recurrence of symptoms. The joint became locked again and the other cartilage was taken out. Four years later he returned with the knee again locked and with a history of having had this accident happen three times during the four years.

The joint was once more opened and considerable straw-colored fluid containing small white granules escaped, but no fringes or cartilages interfered with normal motion. A mass of tough fibrolipomatous tissue was excised from the space between the condyles, which was large enough to account for the symptoms. The patient was discharged with crutches and with swelling and tenderness gone from the knee.

One year later he returned for observation with the joint full of creaks and with a thickened synovial membrane, but with no further desire for surgical treatment.

In April, 1911, five years after removal of the fibrolipomatous mass, his father reported that the patient died in another city from the effects of another operation upon the leg, but the details of this last experience were not related.

CASE 7. The last illustration is that of a single woman, thirty-one years old, a waitress by occupation, who was treated with non-operative measures, rest, splints, plaster cast, Bier's passive hyperemia and tight bandages to cure a hot swollen knee that had troubled her for three weeks. The etiology of the affection was obscure. The onset was gradual and urethral smears were negative for gonococci. Her general health and development were fair. She had had an attack of inflammation in the same knee four years previously, at which time she was confined to bed for six weeks. For the more recent attack she received treatment in the hospital for seventeen days, then was allowed to go home, but eight months elapsed before she could resume work as waitress. At the present time, four years after leaving the hospital, she reports by letter that there are slight pains and sense of weakness now when standing or walking. Her general health is fair and she has gained in weight but is troubled with digestive disturbances. She still is employed as a table girl.

These cases will serve to illustrate some of the points that have to be considered when determining the course of treatment, and next it seems advisable for the sake of clearness to review the conditions which determine the health and normal physiological function of knees and of all joints.

Healthy conditions of the knees depend upon a normal blood supply. This includes a normal proportion of food elements and oxygen as well as normal proportions of various metabolic constituents from the tissues, also the absence of toxic substances from diseased organs or bacterial foci. Health is dependent also upon normal trophic nervous impulses which are constantly transmitted to joint structures; and the integrity

of knee-joints depends to an important degree upon normal mechanical stimulations developed in ordinary motions and exercises under average conditions of body weight. External climatic conditions likewise undoubtedly influence normal functions of joints; and very important variations in vitality and resistances of joint tissues themselves, occasionally representing wide degrees, must be recognized when judging the underlying factors that are producing lesions in any given instance.

Departures from these normal physiological relations are the causes of all the pathological states that are observed, and in the knee the more important of the etiological factors which have just been suggested and which produce abnormalities are—

I. *Excessive mechanical irritation* from overuse; occupation strains; strains due to weak feet; deformities of other parts of the body that bring unusual distribution of pressures upon the knee; excessive body weight; abnormal anatomical relations in the joints arising through congenital defects as well as previous or existing joint inflammations; sudden traumata, and wrenchings.

II. The second important class of etiological factors include *blood irritants*, and these may be specific bacterial toxins or bacteria themselves; definite metabolic substances, as, for example, excessive quantities of urates in the blood; also poorly understood, deleterious combinations and deficiencies of metabolic substances, internal secretions and waste products found in the blood in depleted conditions; and at other times large quantities of food materials which possibly lead to excessive deposits of fat in the knees.

III. The third important class of causes are *defects in nervous influences*. These are generally difficult to estimate and are usually overlooked; yet their great importance is seen in severe derangements like syringomyelia and tabes dorsalis. In these conditions normal control of the joints through trophic nerves is destroyed with very pronounced disintegration of articular structures, and it is not improbable that less severe lesions of the controlling nerve cells may influence the knees in milder ways that are usually impossible to estimate.

It should be borne in mind that knees are always influenced by all of these physiological factors, and that joint conditions represent the total effect of these combined influences. Health should be conceived as a state of equilibrium maintained by the joint tissues in response to normal amounts and proportions of nervous, chemical, mechanical and other physical stimuli; and furthermore, that diseased states arise when abnormalities exist in one or several of these physiological factors controlling normal health and function; or when abnormalities develop in joint tissue cells from causes within themselves.

An algebraic equation may be used to convey these confusing ideas more clearly of the physiological elements concerned in the health of all joints.

(a) Various favorable and unfavorable external conditions	(b) Various favorable and unfavorable blood conditions	(c) Various favorable and unfavorable mechanical stimulations (traumata, body weight)
+ (d) Various favorable and unfavorable nervous stimulations	(e) Variable inherent resistances of joint tissues	= (x) Degrees of health or weakness.

It is obvious that (x) may have a great many values depending upon the varying amounts of a, b, c, d and e.

The Maine guide whose case has been cited, who had a perfect result from his operation for dislocated cartilage, showed a high positive value for (x) and the healthy balance in his knee was destroyed by the severe wrenching, which may be classified as an unfavorable mechanical condition changing (c) to a large negative value. All the other etiological factors remained unaltered and this diminished the value of (x) temporarily until the operation successfully restored mechanical stimulation and anatomical conditions in the joint to their previous normal state, and in consequence the value of (x) again regained what had been lost in the injury.

In the case of the undertaker whose knee grew progressively worse in spite of treatment, it seems probable that the inherent resistance and health of the joint tissues themselves were poor and faulty; so that, despite successful removal of displaced cartilages and hypertrophied synovial membrane there were recurrences of symptoms from the unusual weakness of the joint structures. In this instance the value of (x) was low because the value of (e) was very low, and the operation did not afford relief permanently because the weakness of the joints was more dependent upon other conditions than those which could be relieved by surgical procedures. The latter were needed to remove superfluous pathological tissue, yet alone surgical measures were insufficient to effect a cure or even stop the downward progress of the joint disease. Apparently this patient needed protective treatment for longer periods.

The neurasthenic young woman with the generally relaxed condition, from whose knee a large fatty mass of tissue was removed, represents a subnormal state of general vitality as well as one of diminished tone in her joints. The value of (x) in her case is lower than it should be because of the unstable, debilitated condition of her nervous system, which shows itself in the ease with which she becomes tired and in her generally relaxed, flabby state. In consequence, her metabolic functions and general vigor are never up to their normal degree of activity, and the combinations of these circumstances, originating presumably in a defective nervous system, are represented by slightly lowered values for (d) and (f) as well as for (e) and result in low value for (x).

In such an individual it is possible to predict that the same satisfactory results will not be obtained from operation as may reasonably be anticipated in cases like those of the sportman's guide or the operator of the stone crusher.

The waitress whose knee continues to trouble her slightly and who was treated conservatively

illustrates the course of events when not complicated by surgery. In her case the value (x) is low because the values (b) and (d) are presumably unusually low. Digestive disturbances, of which she complains, as well as the probable unhygienic personal habits which her occupation compels her to maintain, influence the condition of the blood and indirectly the healthy activity of the nervous system. Her metabolic functions are not working at their most healthy level, but instead have dropped just to, and occasionally below, the limit of joint resistances. The blood is of poor quality and as a result there are slight pains and feelings of discomfort when the knees are subjected to the additional mechanical irritation accompanying use of the joints.

It seems unjust to condemn surgical operations simply because patients continue to grow worse after them, but before entering upon the final discussion of their benefits and dangers, one more topic must be considered briefly, namely, methods of operative technic.

OPERATIVE TECHNIC.

The various minor points in operative technic have not been fully tabulated, nor can they be fairly compared in the small series of cases that have been studied, therefore it is necessary to mention briefly the different methods in use and to point out some of the principles they possess in common.

Various incisions have been used to remove the soft tissues and cartilages from knees, the most common being an internal lateral opening owing to the fact that dislocation of the internal semilunar cartilage is one of the most common lesions. External lateral incisions also are frequently needed when villous conditions exist upon the outer side of the joint. One patient in the series of sixty cases had a five-inch long curved incision made transversely across the joint, running above the patella and exposing the quadriceps pouch. The function of the knee and strength of the quadriceps muscle were very good afterwards, but this rather unusual opening was made especially to expose the pouch and femur.

Transverse incisions for removal of displaced semilunar cartilages have been used by Whitelocke¹ in England, the opening being made over the line of attachment of the cartilage to the tibia, but this operator now uses a longitudinal lateral incision, which is the method generally used.

Dr. Robert Jones,² of Liverpool, England, prefers a longitudinal three-inch slightly curved incision, with the knee hanging at a right angle. He describes the line as "extending from an inch within the lower angle of the patella to half an inch below the tibial margin, curving more acutely at this point towards the lateral ligament." He believes this gives the best exposure of the joint and also thinks longer incisions add to the risks and are generally unnecessary. A transverse curved incision running below the patella and cutting the patella tendon is often used in excisions of tubercular joints, but rarely for cartilages, synovial villi and lipomata. The joint has occa-

sionally been entered through the popliteal space to remove displaced cartilages in the posterior part of the joint.

Exploration of the joint cavity with the finger has adherents and opponents. Dr. Robert Jones never introduces anything into the joint but sterilized instruments, while Sir William Bennett³ and Whitelocke, in England, as well as many well-known surgeons in America, are in favor of digital examination before closing the joint cavity. Similarly, matters of tying small bleeding vessels in the joints; of washing out joints with solutions; the use of silk or catgut in closures; the advantages and disadvantages of drainage as opposed to tight closures; and the employment of tourniquets, each are supported or condemned according to the various operators' individual preferences. It seems true all of these details can be successfully carried out by some and have been the cause of disasters when used by others.

Sir William Bennett may be correct when he says, "I think there can be no doubt that the success of the operation depends more upon the management of the case before and after than upon any special method of operating."

Robert Jones, who has successfully operated upon more than five hundred cases without disaster, and whose opinion and methods consequently may be considered exceedingly trustworthy, used the following careful technic, which may be given in part as a convenient illustration. He prefers to have the knee cleaned with soap and water night and morning for a full week and kept covered with sterile dressings during this time. The knee is cleaned the night before operation with ethereal soap, methylated ether and corrosive alcohol, and dry sterile dressings are applied. A final scrubbing on the operating table is also made with corrosive alcohol (1:500) and afterwards the knee is rinsed off with sterile water. It is then covered with wet gauze and the incision is made through the gauze. The interior of the wound is inspected with aid of carefully applied retractors and tissues cut away as needed. Vessels are not tied, a tourniquet is used and no drains are inserted. Stitches are taken out in eight days. The knee is kept slightly bent in a splint for the same period, then passive motions and massage are started and normal exercise is allowed after three or four weeks.

Whitelocke drains knees that have been operated upon for twenty-four hours and lays stress upon a tight absorbent dressing. After fourteen days the bandage is discontinued in his patients at night and reapplied in the morning. Weight is borne after four weeks, but walking with crutches is allowed in two weeks.

Sir William Bennett, in speaking of dislocated cartilages, states that "to operate in the presence of fluid in the joint is, I am sure, reckless. The patient should if possible be laid up for two or three days before operation, daily massage being used and no thought of operation entertained until all fluid in the joint has disappeared."

It is possible to enumerate a tiresome variety and number of ideas, and differences of opinion

seem likely never to be settled, but most surgeons agree that the most scrupulous asepsis is absolutely imperative and that joint cavities are unlike the peritoneum, which is able to take care of a small amount of sepsis, whereas "the knee-joint leaves no margin for mistake." It is also generally agreed that there should be as little disturbance to the anatomical relations as possible, and trauma of the tissues should be avoided. The incision must be sufficiently large to permit inspection and rectification of pathological states without sacrificing the strength of the joint by cutting important supports. Dislocated cartilages and hypertrophied villi or lipomata should be removed as skillfully and simply as possible without pulling or traumatizing the healthy tissues more than necessary, and no more tissue should be trimmed away than is really needed. Loose cartilages should be removed and not stitched again into position, and tight closure of operation wound under these circumstances generally seems the best procedure.

CONCLUSIONS.

There are some patients who undoubtedly require surgical interference before they can recover normal function of their knees, and these are individuals whose joints have become so injured by traumata or filled up with fat or chronic inflammatory tissues or organized exudates that the joint structures are unable of themselves to overcome the defect. Surgery then becomes an indispensable part of treatment, yet it should be emphasized that it is only one factor, although indispensable, in the cure of the disease.

Upon the other hand, it is undoubtedly true that recovery is possible from quite severe and chronic lesions without operative interference, so that the matter of crucial importance as far as surgical interference is concerned is ascertaining whether the pathological state which exists does or does not exceed the limit from which restoration of function without opening the joint is possible.

This limit is a variable one. Some individuals recover from lesions that take a downward course with others, and judgments of different surgeons regarding advisability of operating must vary because conditions are dependent upon so many variable physiological factors.

If damage has been done that is undoubtedly too great to allow recovery through physiological reparative processes, then surgical interference rationally is indicated regardless whether complete or partial restoration of function is finally secured. Failure to obtain perfect functional results under these conditions should not be considered faults of surgery, but due to defective early treatment in allowing the disease to progress so far, or to an unfavorable course of events after operation, or to inherent weaknesses of the joints that cannot be successfully treated by any means.

All these variable conditions, that are so difficult to judge, make statements and rules impossible that may be safely applied in a routine manner in determining the indications and contra-

indications for operations. Good results of surgical treatment, therefore, depend largely upon the surgeon's careful consideration of each individual case.

Criticisms occasionally seem justified which are made of surgeons sometimes by their medical associates, that they become absorbed in the merits of different operative technics and forget the importance of other treatments. Particularly in joint diseases should surgeons consider the causes through which joint lesions have developed and carefully direct post-operative treatments and also advise patients how to avoid recurrences of their troubles.

Upon the other hand, the advantages of surgery should not be minimized on account of the large percentage of cases that show slight weaknesses and disabilities after operation, for such defects may also occur after non-operative treatments, as the case cited in this paper illustrates. Instead, there should be recognition that weak defective joints are often likely to be troublesome later, whether they have been treated surgically or not; moreover, the patients who undergo surgical operations generally represent severer grades of the disease, and perfect recoveries cannot be expected as frequently as are seen in some mild cases.

At present, an attempt is being made to ascertain late results in some of the non-operative out-patient cases at the Massachusetts General Hospital where approximately only 10% of synovial joint affections receive operative treatment, and comparisons of such non-operative results with those given in this paper may bring out the importance of surgery in ameliorating symptoms and retarding destruction of joints when complete cures are impossible.

Considerable emphasis should be laid upon the fact that 56 of 60 patients themselves are satisfied that they have derived benefit from their operations, because their own opinions of their feelings and improvements may be as reliable as the judgments of other observers upon these complicated matters.

The ultimate conclusions regarding operative measures for synovial joint affections seem to be that they are often needed and that they are useful when they retard serious joint destruction, even though actual improvements in existing conditions do not occur, as well as when they restore perfect use of the joints; and furthermore, results that should be expected most frequently after operations are partial restorations of joint functions rather than complete cures; also that the stage of the pathological process at which operative interference ought to be instituted practically is very difficult to judge and should be determined for each case individually with consideration to the normal physiological factors controlling the health of joints that have been mentioned briefly in this paper.

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WHAT IS A TUBERCULOSIS SANATORIUM? *

BY EDWARD O. OTIS, M.D., BOSTON.

THE above query may appear to be a strange and trifling one at this late day when tuberculosis sanatoria exist all over the world and their status would seem to be indubitably settled. Nevertheless, I am inclined to believe that opinions still vary as to the exact scope and purpose of the sanatorium and the conditions requisite to constitute a genuine institution of the kind. It may be, moreover, that increased experience has gradually modified opinions previously held, so that what is called a sanatorium to-day is a different institution from what was formerly considered a sanatorium.

However this may be, my object in asking this question is to elicit the opinion of the members of this Association, and to find out what difference of opinion, if any, exists. I believe that such an expression of opinion by an authoritative body like this will be of distinct value. There are various other questions supplemental to the main one and included in it which I desire also to present. This question was suggested to me by the report of a commission appointed by the state of Massachusetts to "investigate and report upon a system of caring for tubercular patients," and also by a change in the method of selecting patients for the Rutland Sanatorium recently made by the trustees of the four Massachusetts state sanatoria or hospitals.

Previously, the selection of patients admitted to Rutland was made by examination in Boston, which sent the largest number of patients, by the resident physicians of Rutland and by physicians in various other cities of the state chosen on account of their supposed skill in determining the fitness of applicants for the sanatorium, the basis of admission being the incipency of the disease and a reasonable prospect of cure or arrest. The change made by the trustees was the abandonment of this method of examination and selection, and in place thereof any reputable physician in the state was permitted to recommend any patient he considered suitable for sanatorium treatment, such recommendation being reviewed by the executive secretary of the trustees, a skilled diagnostician, although he, of course, neither saw nor examined the patient. If the physician recommending the patient considered the case a suitable one, his judgment perforce had to be taken, for there was no means by personal examination of verifying or otherwise his statement until the patient arrived at Rutland.

This brings up one of the questions upon which I should like to obtain an opinion, namely, What is the best method of obtaining suitable cases for the sanatorium, and especially for a state sanatorium?

In the report of the commission above referred to, it was recommended that all the women consumptives, both those now at Rutland and those in the three other state hospitals, should be segre-

*Read before the American Climatological Association, at Montreal, June 14, 1911.