pathology than was previously obtainable, by showing the way in which urates come to accumulate in the body, and that this accumulation is for the most part due to acids. We have also seen that acids may be introduced from without in food and drinks, may be formed internally in dyspepsia, or may be retained by deficient skin action; and that the result of the rise of acidity from any such cause is a retention of uric acid.

Sir A. Garrod has shown it to be probable (*Gout and Rheumatic Gout*, p. 292) that the cartilages and ligaments of joints are, not only to some extent extra-vascular, but are also less alkaline than the blood and tissue fluids; so that we can at once see why uric acid, which is brought to these parts in blood less than usually alkaline, should be liable to be thrown out of solution and retained in these parts, beginning generally in the smaller peripheral joints where the circulation is least active; and the same reasoning thus applies to retention of uric acid in the joints as was previously used in regard to its retention in the liver and spleen (*Journal of Physiology*, pp. 213, 214), and we now see how a dose of iron, causing retention, or a rise of acidity however produced, may precipitate an attack of gout. Also, why a uric acid headache, or an attack of melancholia or mania, may promptly clear up on the supervention of a gout attack; for the rise in acidity, which drives uric acid out of the blood and cures either of the first two diseases, drives it into the joint and produces the podagra.

Exercise rather tends to prevent gout, because it increases skin activity, which again reduces acidity, and promotes elimination of uric acid; and the same skin activity, no doubt, explains why those who suffer from the uric acid headache have less of it in summer than in winter. With rheumatism we stand on less firm ground, because uric acid has not been proved to be in excess in the blood in this disease; but I hope I shall be excused for believing, at least till careful investigation has proved the contrary, that with the help of the knowledge we now possess about the excretion of uric acid, it may yet be found to be in excess in the blood in this disease.

The marked effect of salicylates in acute rheumatism seems to me a very strong point in favour of uric acid causation, and in favour of the disease being due to retention of uric acid by acids, the vicious circle being at once cut through by the salicylate, which permits its free excretion. There are, besides, important connections in the matter of family history, and in effects of drugs, meat, beer, weather, and exercise between gout and rheumatism, which are not to be easily disposed of, except on the theory of a similar causation.

Why uric acid should produce in one patient gout, in another rheumatism, in a third headache, and in a fourth epilepsy, may depend to some extent on the time during which it is in excess in the blood, and the amount of such excess; but, beyond the uric acid, there are no doubt peculiarities in the structure and function of nerves or vessels in each individual which determine the point on which the poison shall act most forcibly, and so to some extent the result it produces; but, in all these diseases alike, such regulation of diet, exercise, clothing, and climate as shall prevent high acidity from bringing about continued retention and accumulation of uric acid will serve to keep off attacks, even though the other factors remain in operation.

"WHAT IS A STONE IN THE BLADDER?" A REJOINDER.

BY SURGEON-MAJOR P. J. FREYER, M.A., M.D.,
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IN a paper by Sir Henry Thompson published in the *JOURNAL* of February 18th, entitled "What is a Stone in the Bladder?" the discussion of a question is introduced, which, till the subtle influence of Sir Henry's pen was brought to bear on it, could scarcely be regarded as admitting but one simple reply. Hitherto the universally accepted definition of stone in the bladder was any calculus formation, no matter of what size, which failed to pass out of the bladder spontaneously, and for the removal of which an operation was necessary. Sir Henry now lays down certain proposals which would have the effect of materially altering the nomenclature.

As Sir Henry has done me the honour of selecting my paper on "A Recent Series of One Hundred Cases of Operation for Stone in the Bladder without a Death" to "point a moral and adorn a tale," and has paraded before the eyes of the profession, in not very

complimentary terms, twelve instances of small stone therein contained, I hope it will not be considered presumptuous in me if I venture to criticise the position which he now assumes.

In order to illustrate this change of position I will take the liberty of referring to former utterances of Sir Henry on the same subject. So recently as 1884, in his lectures at the College of Surgeons, I find that the chief portion of one whole lecture was devoted to the consideration of the selfsame question, "What is a stone in the bladder?" And that his views were unaltered in 1885 is apparent from a letter which accompanied a copy of these *Lectures* with which Sir Henry, with his usual courtesy, was kind enough to present me.

Sir Henry's views on this question, then, are set forth in pages 128 to 134 of the *Lectures*. He calls attention to the liability to abuse of the term "operation for stone" by surgeons setting down as independent operations the repeated removal of small concretions by the lithotrite and aspirator, and points to Sir Benjamin Brodie as one who has strongly erred in this direction, no fewer than 8 of his 115 operations by lithotritry having occurred in one individual. Sir Henry himself thinks it justifiable to regard these repeated operations, under certain conditions which he lays down, as individual operations for stone, the force of which statement may be gathered from the fact that his 812 operations by all methods occurred in 716 individuals; there being, then, no fewer than 96 "recurrent" operations.

We now come to a passage in the *Lectures* of singular significance, when taken in connection with Sir Henry's recent paper, to which I would call particular attention. "I think," he writes, "it will be generally agreed that when a bladder is found for the first time to contain a calculus, whether urate, oxalate, or phosphate, which is too large to be expelled by the natural efforts, the crushing and removal of it (together with others, if such be present), so as to empty the bladder, necessarily constitutes an 'operation for the stone,' whether it or they be large or small." And then he adds, as his reason for this opinion, "If a small stone only is present, the patient is fortunate in having it detected, because it would inevitably have become large had it not been discovered, and the operation is then attended with a corresponding increase of risk." I presume that the principles here so clearly enunciated are those by which Sir Henry has been guided in his practice, and that if he has no calculi below 20 grains in weight in his collection this is due to the fact that he has not met with such, or has failed to detect them with the methods of diagnosis used by him. At any rate I submit that there can be no stronger justification for my recording my cases of small calculi than that conveyed in Sir Henry's own words.

From the somewhat vague and indefinite manner in which Sir Henry writes in his recent paper, whilst dealing with my cases, about the possibility of his increasing the number of his operations by recording all his cases of recurrent concretion in diseased bladders, the impression may be conveyed that I have utilised this method of augmenting my statistics. The amount of foundation for this impression may be gathered from the fact that the 100 operations referred to were performed in 100 different individuals, and that there were amongst them only two cases of recurrent stone. One man had undergone lithotomy in his childhood, and the other had had litholapaxy performed by another surgeon one year before. I may further mention that the 239 litholapaxies performed by me up to the present time have been done in 237 different individuals, the two cases of recurrent operation being fully described in my work on litholapaxy (*The Modern Treatment of Stone by Litholapaxy*, J. and A. Churchill, London, p. 57)—figures which I venture to think do not compare unfavourably with Sir Henry Thompson's, as regards the augmentation of any numbers from recurrent stone.

In my paper in this *JOURNAL* I have recorded in detail three out of the twelve cases to which Sir Henry takes exception, two of them having occurred in children; and as my right to return these cases as operations for stone in the bladder has been called in question, I hope I may be permitted to give details of two others from amongst them which may be regarded as typical examples of these small calculi.

CASE IX.—Samaroo, a hill-man, aged 48, was admitted to the Mussoorie Hospital on November 8th, 1886, with retention of urine. The patient was in great agony, the outline of the bladder being visible as high as the navel. He was relieved by catheterism by my assistant, Mr. J. McHale, who felt a small calculus at the neck of the bladder. The usual symptoms of stone had existed one year. I performed litholapaxy the same day. The patient being

chloroformed, the meatus was cut, a medium-sized lithotrite introduced, the stone caught and crushed, and the *débris* evacuated through a No. 14 cannula. The calculus was of uric acid, and the *débris* weighed 12 grains. There was dribbling and partial retention of urine for a few days, owing to the atony of the bladder from over-distension, but this gradually passed off, and the man was quite well by the 15th.

CASE LII.—Tooray Singh, a Hindu, aged 24 years, admitted to the Moradabad Civil Hospital May 9th, 1886, with all the usual symptoms of stone, which had existed four months. There was pain in passing water; severe pain after micturition, which the patient likened to thorns sticking in him; pain in the bladder on coughing; frequency of micturition, and passing of blood sometimes. I passed sounds of several kinds, but could detect no stone. I then employed the aspirator and cannula for diagnostic purposes, a No. 12 tube being used. I pumped in and exhausted water several times, but no click was heard. I then turned the eye of the cannula round towards the prostate, and repeated the process again, when a click was heard, and suddenly a round, jagged, uric calculus, weighing two grains only, appeared in the receiver. The symptoms of stone vanished completely after the operation. The patient presented himself on several occasions at the hospital, quite well.

Such, then, are typical examples of the cases of calculi which Sir Henry Thompson now proposes to exclude from the category of stone in the bladder, on the ground that they are under twenty grains in weight, or have been removed entire through the urethra. Small calculi of this nature are frequently attended by symptoms of the most painful and dangerous character, not the least being their liability to pass into the prostatic urethra and cause retention of urine. If not removed whilst small, they invariably grow into large stones. It is one of the greatest triumphs of Bigelow's operation, and its recent development in my hands, that small calculi, which before baffled detection till they grew into large ones, can now be diagnosed and removed with facility and safety. In 1884 I called the attention of the profession to a new method of diagnosis of stone by means of the aspirator and cannula, which was merely a development of Bigelow's method, by which the smallest calculi can be detected and frequently removed entire. This method is fully described in my work on *Litholapaxy*, chap. v, and Case LII, above described, affords an example of its mode of working. Its practical value has been borne testimony to in the handsomest terms by such distinguished surgeons as Mr. Reginald Harrison, of Liverpool, Surgeon-Major Keegan, of Indore, and others. I observe, however, that Sir Henry Thompson passes it over in silence; and the practical effect of the proposals which he now makes would be to ignore it altogether.

When Sir Henry, in support of his new position, states that "it was for the purpose of distinguishing the various small formations from 'stone' that the terms 'gravel' and 'concretion' have long been employed," thus making out that these terms were used to indicate the relative sizes of calculi, I must join issue with him. The term 'gravel' has always been applied to particles of calculous formation which escape through the urinary passages spontaneously, and has nothing to do with the actual size of these particles. As a rule, they are of course small, though sometimes they attain to considerable size; but large or small, if, owing to the formation of the bladder or urethra, they fail to pass out spontaneously, they form the nuclei of stones, growing in size and giving rise to all the symptoms of stone. If Bigelow's procedure has rendered the removal of such calculi, for which a grave operation was formerly essential, easy and less dangerous, is it, therefore, to be deprived of the dignity of an operation for stone, or the credit attaching thereto?

I observe that Sir Henry does not call in question the right of these small calculi (or "gravel" or "concretions" or whatever they may be called) to be regarded as "stone in the bladder," when the cutting operation is employed for their removal. Within a few days after Sir Henry's paper came to hand two cases occurred in my practice which presented a timely satire on this new departure in nomenclature. On March 9th I removed by litholapaxy from the bladder of a male child, aged 9, a small calculus weighing six grains, the symptoms having existed two years. On the 16th I removed by lithotomy from the bladder of a child, aged 2½, a calculus weighing four grains, the symptoms having existed eight months. The former case has left the hospital cured, and the latter is doing well. Am I now, in accordance with Sir Henry Thompson's proposals, to omit the former case from my list of operations for stone in the bladder

and add the latter? And if so, how are we to compare the results of the two operations? Looking over the statistics of my stone operations, I find that amongst 236 lithotomies performed by me, the calculi in 29 instances were below 20 grains, varying from 4 grains upwards, and that amongst my 239 litholapaxies there were 38 instances of calculi under 20 grains. Am I now, at Sir Henry's suggestion, to score out these latter 38 instances of small calculi from my list of operations for "stone in the bladder," and retain on the list the former 29? The proposition is both unscientific and untenable.

Again, on what scientific grounds are we to draw the artificial and arbitrary line at 20 grains, below which a stone in the bladder is not to be called a "stone?" Why make 20 grains the limit rather than 10, 30, 40 grains, or even one drachm? My experience is that it is as easy to crush and remove a calculus of one drachm in weight as one of 10 grains; indeed, it is as a rule more easy to do so. Again, if we are to exclude these small calculi from the category of stone in the bladder because Bigelow's procedure has rendered their removal easy and safe, would it not be more scientific to push this practice still further, and assign to calculi of, say, three ounces and upwards, some new, distinctive name, which would convey to us some idea of the difficulty of dealing with such cases? There are three such calculi, weighing over 3 ounces, in my list of litholapaxy operations; but I observe that Sir Henry Thompson does not deal with calculi of their size by litholapaxy, the largest on record (Thompson's *Diseases of Urinary Organs*, seventh edition, p. 74) removed by him being 2½ ounces. I notice that, whether taken individually or collectively, these small calculi removed by me do not satisfy Sir Henry, and he cynically remarks that the total weight of eight of them is "only that of quite a small stone." This is a somewhat novel method of judging the importance of small stones in the bladder. As well might I point out that it would take five and a half dozens of the 20-grain calculi, to which Sir Henry attaches so much importance, to make up one of my large calculi of over 3 ounces. Far be it from me to adopt any such fallacious mode of reasoning.

In conclusion I have, with diffidence, to refer to an impression which the perusal of Sir Henry Thompson's paper leaves behind. There is an old saying that statistics may be made to prove anything, and I regret much that Sir Henry's method of handling the statistics of my cases may convey the impression that any success that I may have attained in this branch of surgery is in great part due to my dealing for the most part with cases of small calculi. This impression was conveyed to myself, and it has been forcibly brought home to me by letters received from many fellow workers in India. And I observe that a writer in the JOURNAL, influenced I presume by Sir Henry's great name, sarcastically writes of these small calculi, remarking that they "can often be washed out or spontaneously expelled." That they can be washed out by Bigelow's apparatus I have frequently demonstrated; but how a calculus which fails to pass out at the bladder can be "spontaneously" expelled is beyond my humble comprehension.

To show that the impression I have referred to is altogether erroneous, I am obliged, in self-defence, to quote statistics and institute comparisons which would otherwise be unnecessary. Amongst the 239 cases of litholapaxy—the details of 205 of which have already been given in the various medical journals—the weight of calculi varied from 2 grains to 3½ ounces. I find that there are no less than 81 calculi the *débris* of which weigh one-half ounce and upwards: there are 36 calculi of one ounce and more; 12 of two ounces and more; and 3 weighing more than three ounces each. A glance at these figures will, I think, show that if I have pushed Bigelow's operation in the direction of cases of small calculi, I have not shrunk from grappling with large ones, a fact which will become more apparent when I state that of 82 adults suffering from stone, which I have operated on since January 1st, 1886, they have all, with the exception of one case in which suprapubic cystotomy was essential, been treated by litholapaxy; I hope ere long to have the pleasure of exhibiting my collection of calculi, now numbering nearly 500, removed by all methods, to the British Medical Association.

I think that it will be generally agreed that after we reach a certain size of stone, say one drachm, the difficulty of dealing with, and the danger attaching to the removal of, a stone will increase directly with its size; and that, taking the small with the large, the average weight of calculi removed by any particular surgeon will give the best indication of the difficulty of the cases

dealt with. Considering the marked manner in which Sir Henry Thompson calls attention to the cases of small calculi removed by me, and the importance he seems to give to his having no calculi below 20 grains in his list, it might be reasonably anticipated that he is in the habit of dealing with larger stones than I am; and that the average weight of his calculi would show a large excess over that of mine. But what are the facts of the case? I refer the reader to the very able monograph on Lithotripsy, in Heath's *Dictionary of Surgery*, written by Mr. Cadge, of Norwich, in which, in a kindly notice of my work, he points out that the average weight of stone in my first 108 cases of litholapaxy was 317 grains (nearly $\frac{3}{4}$ of an ounce), whereas the average weight in Sir Henry Thompson's 75 cases done by Bigelow's method was 130 grains (a little over $\frac{1}{4}$ of an ounce). That is to say the average weight of my calculi was nearly two and a half times larger than Sir Henry Thompson's. These facts dispose of the erroneous impression I have referred to.

A CASE OF SUPRAPUBIC LITHOTOMY.

By ERNEST HUMPHRY, M.R.C.S., L.R.C.P.,
Mackay, Queensland.

A. W., aged 65, for the last three years has suffered from frequent and painful micturition, much aggravated by exercise. He had to give up riding on account of the pain it caused, and because of the quantity of blood passed with the urine afterwards.

On December 16th, 1887, I sounded him, and at once came down on a stone that seemed to be of considerable size. He was anxious for its removal, saying he would sooner die than suffer as he had been doing lately.

On January 4th, 1888, Dr. McBurney administered chloroform and Dr. Clarkson assisted me with the operation. A Barnes's india-rubber bag was first put into the rectum and distended with air. A silver catheter was then passed into the bladder and tied in, and about 8 ounces of water injected through it and retained. There was now dulness on percussion to about three inches above the pubes. An incision was made about four inches long, in the middle line, extending to the pubes, and the integuments, fat, etc., divided down to the bladder, which was easily made out by pressing up the catheter. The bladder was now seized laterally with two pairs of artery forceps near the pubes, and an opening made between them. The contained water immediately rushed out and the stone was easily felt. The catheter was now removed, and the incision in the bladder enlarged upwards and downwards, great care being taken to avoid wounding the peritoneum. The stone was then easily removed. The edges of the bladder were sutured with catgut, the mucous membrane not being included; the skin and deep structures were brought together with silk sutures, a drainage-tube being inserted at the lower end of the wound, which was dressed with carbolic oiled lint. A soft catheter was tied in the bladder *per urethram*. The operation lasted about an hour; the patient bore it well and was left in good condition. 10 P.M. Very comfortable; pulse 72; temperature 99.2° F.; blood-stained urine escaping freely through the catheter; a quarter of a grain of morphine hypodermically administered.

January 5th. 7 A.M. Passed a good night; pulse 72; temperature 99.2°; urine clear; some redness and oedema at lower end of wound and on dorsum of penis. 11 A.M. Vomited; much pain in wound; pulse 84; temperature 101.2°; redness on penis increasing; the three lowest sutures removed and the wound opened slightly; a quarter of a grain of morphine used hypodermically. 11 P.M. General condition much improved; feels quite comfortable; pulse 78; temperature 99°.

January 6th. Good night; pulse 78; temperature 99°; wound healthy, redness less; urine offensive; catheter changed and bladder washed out with a solution (one drachm to a pint) of boracic acid.

January 7th. Suffered in the night from flatulence; an enema administered; while straining during action of the bowels some urine escaped through the wound.

January 14th. Has been going on well; upper part of wound healed; urine passing freely through its lower part, very little escaping through the catheter, which is frequently getting blocked with discharge.

January 18th. Much improved; the catheter has been taken out, and, although the urine escapes freely through the wound, he has passed some twice naturally *per urethram*. A thick pad of lint

was firmly strapped over the wound, and he was allowed to get up.

January 14th. Wound healed; has been walking out, and is quite well; expresses himself as feeling better than he has done for years; no trouble with micturition; can hold his water comfortably for six hours; urine clear and free from albumen.

The stone was oval in shape, weighed just over 5 ounces, and was eight inches and a half in its largest circumference. I have not had an opportunity of cutting it, but its outer crust is evidently phosphate of lime. The evident size of the stone gave me no option but to adopt the suprapubic operation. The only anxiety the case gave me afterwards was the redness that appeared about the wound and penis, probably the result of some very small extravasation of urine.

TWO CASES OF SUPRAPUBIC CYSTOTOMY FOR VESICAL TUMOUR.

By GILBERT BARLING, B.S., F.R.C.S.,
Assistant-Surgeon to the General Hospital, Birmingham.

CASE I. *Fimbriated Papilloma: Recovery*.—M., a stout man, aged 67, was admitted to hospital, September 22nd, 1887. He stated that for the last five years he had frequently noticed blood in his urine, and that it appeared without cause and disappeared in like manner. Eighteen days before admission an unusually severe hæmorrhage commenced, and continued without intermission until operation, twenty-one days after it started. The urine, always deeply tinted with blood, and specially so towards the end of micturition, was acid in reaction and free from pus; micturition was frequent, nearly every hour in fact, but without actual pain, although at times there was discomfort from the passage of clot. Careful and repeated examination of the urine failed to detect fragments of growth. Palpation failed to detect any enlargement of the kidneys. Rectal examination revealed general enlargement of the prostate, but bimanually no tumour or thickening could be felt in any part of the bladder. The diagnosis made was vesical papilloma, and the high operation was determined on. When the bladder was opened the finger detected a soft sessile tumour the size of a rather small strawberry, situated at the posterior part of the floor. The growth was easily removed with a scoop, leaving the coats of the bladder apparently healthy. The incision in the bladder was treated in the ordinary way, no attempt being made to suture it. The patient made a slow recovery, and remains well at the present time. Microscopic examination of the tumour showed it to be a papilloma.

CASE II. *Scirrhus Carcinoma: Death: Partial Post-mortem Examination*.—Mr. —, a thin, nervous man, aged 61, the subject of chronic bronchitis and asthma, was seen by me in consultation with Dr. Edginton. There was a history of intermittent hæmaturia for two years, the attacks varying both in frequency and severity, but, on the whole, becoming decidedly worse during the latter part of the time. Examination *per rectum* detected some enlargement of the prostate, but bimanually no tumour or thickening could be felt in any part of the bladder, nor could anything be made out by that method when the patient was anaesthetised for operation. The sound was introduced with some difficulty, but detected nothing abnormal in the bladder, nor did it excite hæmaturia. Palpation failed to detect any enlargement of the kidneys. The urine was examined several times for the presence of tumour fragments, but none were found, nor was there any pus present. During the attacks of hæmaturia micturition was frequent, and pain was produced by the passage of clot, but in the intervals there was neither pain nor increased frequency. The diagnosis made was vesical tumour, probably papilloma. The patient's sight failing him, he was seen by Mr. Priestley Smith, who found him suffering from "incipient atrophy of both optic nerves, probably due to the frequent and profuse losses of blood by the urethra." On March 7th, assisted by Dr. Edginton, I performed suprapubic cystotomy, and, on passing my finger into the bladder, detected a flat sessile growth about the diameter of a crown piece, situated on the left side of the posterior wall, and encroaching on the vertex; the centre of this patch was soft, and bore short papillæ; the margin was slightly raised and indurated. The papillary surface was scraped away with a scoop and the finger-nail, a drain was placed in the bladder, and the incision in the latter left unsutured. During the whole proceeding we had the utmost anxiety from the depressing effect of the chloroform on the patient's heart