Personal experience of lithotomy in India / by William Curran.

Reprinted from the Dublin Quarterly Journal of Medical Science for May 1871

PRINTED FOR THE AUTHOR,
BY JOHN FALCONER, 53 UPPER SACKVILLE-STREET, DUBLIN

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PERSONAL EXPERIENCE

OF

LITHOTOMY IN INDIA.

BY

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THE subject of calculous disorder in India is a comprehensive one from whatever point we may regard it, but I have neither the time nor the materials that would enable me to deal with it in its entirety, and it is one which will easily admit of delay. Numerous ably written papers on the subject are to be found in the medical journals published in that country, but these are not now accessible to me, and even if they were, they could scarcely be turned to account in this place. I prefer discussing the question on its own merits, and from my personal point of view; and though it may, when thus divested of its native surroundings, appear somewhat stilted and individualized, it will gain in interest what it loses in importance, and have the further advantage of being supported by facts which rely on other than personal evidence for their guarantee. I will, for these reasons, confine myself to describing here, as concisely as I can, what I saw or did myself in the matter, while in India; but to enable me to do so with more effect, I will not hesitate to avail myself of the experience and observation of those gentlemen from whom I received cases, and to whose courtesy and kindness I owe it, that I am in a position to speak on the point at all.

Viewed in this light, the rehearsal at such a distance of time and place, may appear to lack originality, and some even may regard it as open to the imputation of being biassed by prejudice, or exaggerated by favour. It may be so, though I am not conscious of being influenced by either, and no fear of consequences will ever prevent me from doing justice to the merits of a friend. I do not pretend to or aim at being original. I merely undertake to state here, in plain unvarnished English, the results of my own experience and observation, that I purpose doing to the best of my ability, and I am content to leave the rest to the indulgent criticism of my readers.

When I first went to India, medical officers of the Queen's as distinguished from those of the native army or local establishments, were eligible for appointments under the Indian Government, which frequently placed them in some of the smaller outlying stations, in charge of dispensaries, gaols, and other civil duties, but these openings exist no longer, as the line of demarcation between the two departments has been drawn hard and fast, and, limited as my experience is, it is not likely to be equalled by any of my successors. The statistics I am permitted to produce, will show that the success claimed for or by Indian surgeons is not exaggerated, and I am in a position to give some account of an operation which must be new to many of my readers, and which is only known by name to curious searchers of surgical bibliography. For these reasons, if for no other, the subject will justify some discussion, and its interest and importance will scarcely be questioned. I will only add, that, as I had no separate charge of my own that would enable me to secure a regular flow of cases, and as I was indebted entirely to the kindness of others for those I have received, I kept no very minute or searching record of my proceedings. My custom was to write a short account of the case and its surroundings on a scrap of paper as soon as it was completed, and to enclose the stone in that scrap. The white ants have eaten many of these, time and the vicissitudes to which I am subject through my office, have destroyed others, and I am now dependent for information on a few scattered notes of uncertain date and questionable authenticity which have survived the effects of change, and are only decipherable with difficulty by myself. My memory is, however, a good one. I have done my best to exercise it by frequent walks in the wholesome atmosphere of facts, and if I cannot promise entire accuracy in my statements, I can at least say that I have endeavoured to escape error and avoid miscalculation.

That stone in the bladder prevails to a larger extent in the peninsula of Hindoostan, and especially so throughout its central and upper provinces, than perhaps anywhere else of equal extent in the world, is a fact which admits of little doubt. I have seen or served in most of the principal stations between Calcutta and Peshawur, including the Saugor district and Bundlecund, and have found the same diathesis, and heard the same story told in all. I believe, however, that the prevalence increases as we approach the hills, but why this should be so, if it is so at all, is more than I can undertake to say, and, indeed, the causation and etiology of calculous disorder in India has never, to my knowledge, been satisfactorily accounted for or explained. Some maintain that its great prevalence is owing to the quantity of lime salts that obtains in the drinking water, and stone is particularly common in the hilly districts near Abbottabad, Almorah, and other parts of the Himalayas, in which limestone enters largely into the geological formation. But this material does not operate as a cause of calculus elsewhere, and stone prevails in equal abundance in parts of the plains, in which lime enters but feebly into the composition of the water. Again, the diathesis is almost, if not altogether unknown in other parts of the world in which lime forms a principal ingredient in the water, as would appear from the writings of Dr. Livingstone, who, after alluding to the rarity, or rather almost entire immunity of the Bakwains and other tribes of Central Africa from syphilitic disease, says, at page 128 of his very interesting "Missionary Travels and Researches":—"Equally unknown is the stone in the bladder and gravel. I never met with a case, though the waters are often so strongly impregnated with the sulphate of lime that kettles quickly become encrusted with the salt, and some of my patients who were troubled with indigestion, believed that their stomachs had got into the same condition." He adds, "this freedom from calculus would appear to be remarkable in the Negro race, even in the United States, for seldom, indeed, have the most favoured lithotomists there ever operated on a Negro." This is another puzzling point of pathology which calls for elucidation, and it does seem strange that the dark man of Africa and America should be almost entirely free from a disease to which his darker complexioned Aryan brother of Asia is so liable. A mere difference of race can scarcely be said to account for the fact, for that fails to secure any such or similar exemption in other instances, and whatever effect lime may have in

producing or aggravating the tendency to stone that exists in India, it is clearly inoperative in that direction elsewhere.[a]

Others hold that it depends in great measure, at least, on the quality of the food used by the natives, and the immunity in this respect enjoyed by flesh-eating Eurasians and Europeans would seem to lend some support to this hypothesis. But stone is very prevalent in certain parts of Persia, and also, but to a lesser extent, in the interior of Cabul and along the banks of the Oxus—as I learned from traders—where the inhabitants are all Mahomedans, who eat flesh and live in some other respects like Europeans. I have heard it more than once ascribed in conversation with friends in India, to the predominance of the vegetable or coarsely powdered materials of their food, and to the absence of that regulated admixture and combination of those nitrogenous elements that are considered essential to health, and which are so little cultivated by the poorer class of natives. This view has the support of analogy in its favour, inasmuch as a similar prevalence obtains in parts of the Highlands of Scotland, in Norfolk in England, and near Malaga in Spain, in the first and last of which places, the poor, as is well known, live largely on barley meal and the products of the vine, while the want of apples, pears, cider, and other articles of that description has been said to conduce towards its causation and development in the latter. Certain it is that the miserable mills used by the poorer class of natives are but ill adapted for grinding, and the kind of corn or rather pulse they use has a hard, horny, coriaceous rind. But it is not easy to see how particles of this could enter the bladder, and yet an impression to that effect prevails largely elsewhere. When on a visit to Malaga, in June, '58, I called on the late Dr. Sutliffe, who then practised there, and who possessed a considerable local experience and repute. He showed me several specimens of calculi he had extracted on the spot, and he assured me that the disease was comparatively common in the neighbourhood. He unhesitatingly ascribed its prevalence to the wine which is manufactured in the vicinity, and which the peasantry are so fond of, and to the use of a species of bread which is made of maize and the husks of the vine, and which is of a coarse, indigestible and gritty nature. Whether any similar effect can be ascribed to the barley meal of the Highlanders, I cannot say, but stone

[a] Dr. Cameron informs me that lime is found in considerable quantity in the drinking water in this country, and he added that he believed stone is less frequent in Dublin than it used to be before the introduction of the soft Vartry water.

prevails largely, I am told, in the mountains near Aberdeen, and a friend informs me while writing this, that he heard the use of treacle and dumpling by the inhabitants assigned as a cause for its frequency near Norwich. How far such a diet is calculated to affect digestion or perpetuate the tendency towards calculous formation that clearly exists in the above-named localities, I cannot undertake to say, but the facts admit of no question, and I am not aware of any better explanation of them.[a]

Another hypothesis exists which deserves a passing mention, and as the custom on which it is based prevails universally throughout

[a] Since writing the above I have come across a communication by Dr. Crisp, on "Urinary Calculi in the Lower Animals," which appeared in the "Transactions of the Pathological Society of London," Vol. xxi., p. 427-8, and which contains matter so pertinent to the question under review, and so generally confirmatory of my own impressions, as to justify me in reproducing it here. After stating that "the constant use of Norfolk and Suffolk dumplings has been assigned as one cause of the greater prevalence of this affection," and saying that he "thinks it is not an unlikely one," he adds, "Dr. Greenhow (Annals, 1866) wrote to forty different surgeons in the North-West provinces of India, for the purpose of ascertaining 'the nature of the operation, amount of division of the prostate, use of tubes, the comparative success of lithotomy and lithotrity, and the effect of chloroform?' From twenty surgeons he received answers, and these gentlemen, most of them attached to dispensaries, had operated on 1,851 patients, including 91 females. Dr. Courtney had 201 cases in twelve years, Dr. Keernander 28 cases in one year, Mr. Gorgaon 143 cases in six years, Mr. Newton 48 cases in four years, and the cases of the remainder occurred within a short period. Of these 1,851 examples, 1,160 occurred among Mussulmans, and 551 were Hindoos. Taking the population into account the numbers are about equal. The youngest patient was one and a quarter years. The largest stone weighed 11oz., the smallest 3 grains, and the largest number of stones was 12. The mortality after operation, 1—6·93. Scurvy prevailed to a great extent both among Hindoos and Mussulmans. An interesting statement is made respecting the analysis of a collection of calculi from this district of India. Only two kinds were found, bone calculus, and earthy phosphates and ammonia (p. 14). *No lithic acid nor triple phosphate calculi were found.*"

In another communication, in 1868, by Dr. Garden, an analysis is given of 831 cases of urinary calculus—including females—which occurred at the Saharnupose Dispensary (Calcutta Presidency) during a period of 18 years. The mortality after operation was 1—7·63—two or three per cent. less than the mortality in the United Kingdom. Of these 577 were Hindoos and 254 Mussulmans, forming, as in the example already quoted, but a slight difference when the number of the two castes is taken into account. The chief causes assigned by Dr. Garden are exposure, bad grain, bad digestion, and rheumatic complaints. An analysis of 260 calculi examined forms a remarkable contrast with that already quoted:—"15 were fusible, 1 triple phosphate, 3 phosphate of lime, 81 uric acid, 55 urate of lime, 23 urate of ammonia, 72 oxalate of lime. Of these 58 were pure calculus, uric acid 26, fusible 10, oxalate of lime 10, urate of lime 5, urate of ammonia 1, triple phosphate 1." I will only say, with reference to the above, that it appears to me the relative position of the Mussulmans and Hindoos ought to be changed in the first part of this quotation, and I can scarcely help thinking it stood differently in the original.

the East, it is not so flimsy or improbable as it may at first sight appear. The natives of India, as every one who has visited that country must know, squat down on their haunches[a] during the act of micturition instead of standing up as we do in Europe, and there can be no doubt that such an attitude is not as favourable to the free and entire evacuation of the contents of the bladder as the one we assume is. On the contrary, it seems to favour the retention of urinary debris and salts in that viscus, and when we consider that "urinary concretions may be formed either in the kidney or in the bladder, and are almost always the result of the deposition and retention of a urinary sediment in some portion of the uropoietic tract,"[b] we will be able to appreciate its bearing on the question,

[a] Those who have read the interesting "Journey to Mecca and Medina," written by Captain Burton of the Indian army, and now English Consul in the Brazils, will remember an incident in connexion with this attitude, which is as amusing as it was nearly being tragical. It will scarcely admit of being discussed in detail here; and without intending to question in any way the authority of that great traveller, or doubt the accuracy of his statements, I yet cannot refrain from saying that there is, in my humble opinion, an amount of redundancy and recapitulation, an insistance on trivial occurences, and an exaggeration of others, in his writings, as well as in those of other travellers in the East, which are calculated to inspire distrust, and deter casual readers from perusing them. This is one cause for their unpopularity in this country, and the wild and dreamy phraseology they put into the mouths of the natives is, doubtless, another. It is to be regretted that Moore and Lamartein should have lent the aid of their brilliant fancies to the perpetuation of this error; but they were by no means the first in the field, and writers of such varied powers as Kakluyt and Marco Polo, Dr. Wolff, and the Old Shekarry, have co-operated in the same direction. But the railway engine and the electric battery are everywhere dispersing the mists of exaggeration and romance, and I heartily agree with Mr. Palgrave when he says that the attempts made by European travellers to personate or pass for natives by assuming the garb of Dervishes, Fakeers, Merchants, &c., are miserable failures. Mr. Kaye—than whom there can be no better authority on such a point—says substantially the same thing in his life of Eldred Pottinger, and any one familiar with the East, and who will take the trouble of comparing Sir Alexander Burnes and Mr. Vambery in their costumes, with natives similarly dressed, will see at once the difference. I can say for myself that I never saw a European who could talk and act in all respects like a native, but the fear of consequences, the innate courtesy of the Oriental, his fatalism or *sang froid*, and perhaps also his doubt as to the sanity of those members of our race who undertake journies and embark in enterprises for which he can find no better explanation, constitute their claims to protection, and some are, I believe, sped on their way through feelings of charity, pity, or contempt.

[b] Day's Physiological Chemistry, page 377, Mr. Erichsen speaks to the same effect in his Clinical Lecture on Lithotomy in Recurrent and Multiple Calculus, in the *Lancet*, for March 18th, 1871. He says, "just as the water of a petrifying well will give rise to calcareous deposit on a twig left in it, so will the urine under certain conditions, local or constitutional, give rise to a phosphatic deposit round any body on which crystals can form, and for this purpose a clot of blood or a shred of cellular tissue will suffice."—See also Neubauer and Vogel's Guide, Sydenham Society, p. 431.

and influence in propagating the disease. It may also, perhaps, serve to explain the great exemption from this complication which women everywhere enjoy. Dr. Day adds, "around the nucleus thus formed, additional matter is gradually deposited, till at length the concretion may attain an enormous size." Just so, and if to the action of this custom we add the agency of the other influences mentioned above, we will be able to suggest an explanation, or, at least, lessen the difficulty that now exists regarding the wide-spread prevalence of the condition here contemplated. Neither cause will suffice of itself to produce the disease, but assuming the existence of a diathesis, one can easily see how the three may concur and conduce to the same result, and at any rate the coast is clearer in regard of a remedy. But whatever the cause, there is no doubt as to the fact, and the following table, which is taken from a statement that was prepared for circulation among the officers of his circle by the late Deputy Inspector General of Hospitals, John Wilkie, M.D.,[a] and which was kindly placed at my command for the purpose of this inquiry by a friend, will show this and show also the advantages of India as a field for the cultivation and practice of the higher branches of surgery. It will further, I think, tend to show that the prevalence increases as one approaches the hills; but be this as it may, the document is a highly suggestive one, and though shorn of much of its interest by the absence of details, its perusal is calculated to enhance the repute of our Indian brethren, and confirm the impression that prevails respecting the vital capacity, endurance, and great powers of recovery possessed by the natives. As such it is subjoined here, and I will throw in under the head of remarks such brief, explanatory notes as space may allow, or as I may find absolutely necessary for its elucidation:—

[a] Dr. Wilkie sums up the above as follows in a letter to a friend which was kindly placed at my command, and which is dated Meerut, 26th July, 1863:—"From the half-yearly returns of dispensaries it appears that at Delhi there have been 91 capital and important operations, of which 22 were for lithotomy. At Shahjehanpore, 48 with 12 lithotomy. At Budaon, 78 with 39 lithotomy. At Bareilly, 89 with 35 lithotomy. Bijnore, 25 with 6 lithotomy. There have been 180 cases of lithotomy during the past six months." In other words, if we assume that the population of the Meerut Circle equals that of Scotland, and put down both roughly at three millions, we will be able to form a pretty good estimate as to the percentage and prevalence of stone in the former. I doubt, however, if Scotland could produce half the number in double the time. Another friend discussing the subject with me said:—"In a population of, say, a million, forty or fifty cases of stone may occur in a twelvemonth, and one of these might, *perhaps*, be a female." It will be seen from what is said elsewhere that the import of the italicised word *perhaps* would be more clearly defined by a note of interrogation.

A Comparative Statement of Operations performed in the MEERUT CIRCLE, *and prepared from the Half-yearly Returns of Dispensaries in that District, for the Six Months ending 30th June,* 1863.

Districts	Stations	Operations				Remarks
		Lithotomy	Deaths	Capital & Important	Minor	
Delhi,	Delhi,	22	2	69	320	The district contains, according to Thornton, an area of 789 square miles, and its population amounted in 1853 to 435,744. Of this number 171,694 are returned as Hindoo agriculturists, 144,371 as Hindoo non-agriculturists, and 18,917 are Mahomedans. Upwards of one-third of the entire population is concentrated in the City of Delhi, and is pretty equally divided into Hindoos and Mahomedans. The soil is sandy and barren, and remarkable for its saline efflorescence, and the wells for the brackishness of their water. A large portion of the supply is obtained from a canal which begins 70 miles away.
	Goorgaon,	—	—	14	67	
Allygurh,	Allygurh,	3	—	3	390	The district embraces an area of 2,149 square miles, and contains a population of 1,134,565. The soil is alluvial, and the principal productions are wheat, barley, millet, and pulse. It is freely irrigated from the Ganges canal, and though there is a prolonged elevation of surface in the centre there are no high hills anywhere.
	Hattrass,	—	—	—	—	
	Khyr,	—	—	—	—	
	Secundra-Rao	—	—	—	—	
Meerut,	Boolunshuhur,	8	—	7	136	The Meerut district is about 57 miles in length from east to west, and 48 in breadth; its area, 2,332 square miles; and its population upwards of 1,135,072, the majority of whom are Hindoo in creed and non-agricultural in occupation. The soil is sandy, with a subsoil of kunkar or calcareous conglomerate, and "the vicinity of the mountains, the comparatively high latitude, and considerable elevation, render the district one of the healthiest parts of the plain of India."
	Meerut,	11	—	15	525	
	Haupper,	—	—	—	167	
	Moozuffurnuggur	2	—	16	185	
	Roorkee,	4	—	8	48	
Deyrah	Saharunpore,	16	3	2	273	The Dehra Doon is a fertile valley at the south-western base of the lowest ridge of the Himalayas, the "soil is in general a deep rich mould, though in some places composed of shingle or gravel swept down by the torrents from the mountains," and it produces rice, grain, and maize in large quantities. The ridge on which its famous sanitarium Mussorie is situated consists of beds of compact limestone, alternating with others of soft slate, which resembles the mountain limestone of England. In some places trap rock makes its appearance, and the district is everywhere traversed by or irrigated from the Ganges and Jumna.
	Deyrah,	4	—	12	309	
	Khalsee,	—	—	—	—	
	Mussooree,	—	—	8	103	
Shahjehanpore	Shahjehanpore,	12	2	36	338	A large Mahomedan city and district in which, however, the Hindoos predominate. These live for the most part by agriculture, and their children are very subject to stone.
	Goolurrea,	—	—	—	123	
	Kutra,	—	—	—	116	
Budaon,	Budaon,	39	3	39	750	An almost purely agricultural district, in which the rice-eating Hindoos constitute nearly six-sevenths of the population. The prevalence of stone in this and the following places which are near the hills, would seem to lend support to the impression formed above, and which implies that the tendency thereto increases as we approach to the Himalayas.
	Bilsie,	—	—	5	255	
	Bisowlee,	—	—	16	211	
	Datagury,	—	—	12	219	
	Gonour,	—	—	4	207	
	Saheswaw,	—	—	12	207	

Districts	Stations	Operations: Lithotomy	Operations: Deaths.	Operations: Capital & Important	Operations: Minor	Remarks
Bareilly,	Bareilly,	35	4	54	736	An important military station, and the capital of a large agricultural district, which numbers a population of 1,378,268, whose alluvial soil is very fertile, and which is watered by rivers that rise in and bring down large quantities of gravel, sand, and other similar material from the neighbouring hills.
	Amlah,	—	—	—	215	
	Bessulpore,	—	—	—	305	
	Baharee,	—	—	—	295	
	Philibeet,	—	—	—	305	
	Rampore,	—	—	—	60	
Moradabad,	Moradabad,	18	1	19	1,411	A densely populated and very fertile district, in which, though the quality of the water is good, and that fruit and vegetables grow in abundance, yet stone is very prevalent, but I have heard no adequate reason assigned for this.
	Kaseepore,	—	—	—	—	
Bijnore,	Bijnore,	6	2	19	394	Near the hills, and therefore, as I think, the subject and seat of a large predominance of calculous disorder.
	Nugeenah,	—	—	—	49	
	Nujeebabad,	—	—	—	91	
Nynee Tal,	Nynee Tal,	1	1	1	54	—
	Huldwalee,	—	—	—	—	
	Kaladungee,	—	—	—	—	
Almorah,	Almorah,	8	—	15	251	In the hills, and limestone enters largely into the local geological formation.
	Petoragurh,	—	—	—	—	
Gurwhal,	Bhe Kya,	—	—	—	—	Do., but there is no European officer at either of these stations, and the returns are consequently worthless.
	Chamolie,	—	—	—	—	
	Josee Malh	—	—	—	—	
	Kurumparag,	—	—	—	—	
	Melchourie,	—	—	—	—	
	O'Keemath,	—	—	—	—	
	Sreenuggur,	4	—	5	49	
	Grand Total,	193	18	391	9,225	

This shows a percentage of 9·3 of deaths to recoveries, or about one death to every eleven and a half persons subjected to operation, a result which, though not altogether as favourable as might be expected, is yet considerably in advance of that obtained in England and Europe generally, where, according to the authorities quoted by Erichsen, it varies between one in six and one in eight, the latter being, according to him, the latest and perhaps most favourable average hitherto obtained. And that this result holds good on a larger scale, and when tested, by larger numbers will appear further from the table subjoined which was drawn up by the same gentleman from similar or equally authentic sources, and which extends over a period of time and includes a variety of cases that are amply sufficient for purposes of comparison. They both, however, labour under the grave drawback of being wanting in particulars, and of saying nothing about the age, caste, condition, or sex of the sufferers, but stone is so rare among women in India, that we may safely exclude them from the calculation; and as to caste, that did not appear to me to affect the result, or aggravate a tendency to the disease in any of the cases with which I had to deal. The rich Brahmin who was clothed in purple and fine linen, and who fared

sumptuously every day, on rice, milk, butter, and other equally digestible articles, was as subject, in proportion to the numbers of his highly-favoured order, as the poor pariah sweeper or chumar, who went about in rags that barely sufficed to cover his nakedness, and fed on such offal as his miserable daily pittance could procure, or as the cold and casual charity of his neighbours would allow. The same may be said, with perhaps some modification, of the flesh-eating Mahomedan, whose drink, like that of his Hindoo brother, was the same "pure element" from the brook, and whose religion is equally exacting in respect of bodily purification and cleanliness. The children of both seemed to me to suffer in equal proportion, and I never met a woman of either sect who laboured under the complaint. Not that women are altogether exempt, for such is not the case, but the number of them that suffers bears no proportion to that of the men, and such is the innate bashfulness or mistaken modesty of the Hindoo female, that many, I am sure, would rather suffer in silence than submit to an examination. A friend of mine of many years standing in India, and a very successful lithotomist too, assured me that he had only met two cases in women during his time, and I never knew a surgeon there who had seen more.

On the other hand, very old men are often found affected with stone, which may have caused them no inconvenience till displaced by accident, or otherwise interfered with; and very advanced age is not necessarily a bar to operative interference, provided that the bladder has not lost its contractility or the kidneys been its first seat; and in any case the simpler the expedients and appliances employed the more speedily is the operation performed, and the more satisfactory and enduring are the after-treatment and results. So selfish is the nigger *pur sang*, so impatient of restraint, and so anxious to make the most of his time and opportunities, that he is willing to incur the gravest risks, nay, even to expose his life to the hazard of a throw, rather than wait patiently for improvement, or accept with equanimity an alternative which offers him a better chance of recovery. Hence lithotomy is, and ever must remain, the operation for India; and so reckless are some of the natives of consequences that they do not give even that a fair chance. It is no uncommon thing for patients there to "bolt" before their cure is half complete; and such is the impatience of mothers, or so great their love for their children, that they often try to steal them away as soon as the stone is extracted. Expectant measures will

never find favour with a people who prefer remedies that appeal at once to their senses; and lithotrity, with its more complicated details and numerous sittings, will never commend itself to their untutored understandings, longing for personal freedom, and unreasoning dislike of whatever imposes a restraint or entails an obligation.

The following general statement includes the number of cases and their results, that were subjected to operation in the Meerut circle of Supervision during the years '61-'62, and first half of 1863:—

Period	Lithotomy	Deaths	Capital and Important	Minor	Remarks
1st half of 1861, -	180	19	369	3,842	By capital and important are meant, I presume, amputations, excisions, the ligature of arteries, removal of tumours, &c.; such operations, in a word, as involve danger to life, and call for extra watchfulness and skill on the part of the surgeon, or entail greater expenditure by the medical department on behalf of the public.
2nd half of do., -	118	9	256	4,834	
1st half of 1862, -	160	12	432	5,532	
2nd half of do., -	145	15	284	8,357	
1st half of 1863, -	193	18	391	9,225	
Total, 2½ years,	796	73	1,732	31,790	

The results differ so little in this instance from those given above as to save me the trouble of adding anything by way of explanation; they are, in fact, substantially the same in both cases, and being doubtless based on or derived from similar premises, may be set down as, in round numbers, deaths 9·1 per cent., or about one death to every eleven persons; in other words, nine men died, according to the above-quoted return, out of every hundred who were treated by lithotomy; or, better still, for every sufferer who succumbed to shock, exhaustion, peritonitis, hæmorrhage, or other cause incidental to this operation, among a hundred cases, 90·9 recovered. This is a percentage which, as far as I can determine, has never been exceeded on an equally large scale elsewhere. If we could only know the numbers operated on by European surgeons, and base our estimate on them alone, I am

quite certain the result would appear more favourable. Many, perhaps the greater part, of these were treated by Bengalee sub-assistant surgeons from Calcutta, whose overweening bumptiousness and self-conceit are well known; and some were, doubtless, left to the tender mercies of the common native doctor of the North-West, who aspires to promotion on the strength of his being able to write his name, utter a word or two of unintelligible English, and mix the ingredients of an ordinary prescription. This is an item and an element which should not be lost sight of in the calculation; and even with this, the result is such as European surgery in India need not be ashamed of.[a]

And with regard to this distinction, I have often regretted the absence of reliable statistical information on the subject of lithotomy in India, and have endeavoured from time to time, as opportunity offered, to collect such myself. But it is not easy to procure any, as the disease is, comparatively speaking, so common as to attract but little notice; the genius loci is not favourable to exertion, and familiarity in this, as in other matters, begets contempt. I am, however, satisfied, from the conversation I held with my brethren, that the case stands pretty much as I have stated it; and I have now before me a note from an old friend, dated August 3rd, 1863, in which he says:—"I have operated on about eighty cases of

[a] The following is Sir Henry Thompson's summary of the results obtained by him from an investigation into the causes of death after lithotomy, which is, as far as I can determine, the completest and most comprehensive in our language. I will leave it to speak for itself:—"A table in another part of this work shows that, from the first to the fifth year the deaths are about one in fourteen; they then decrease, so that between six and ten years inclusive they are only one in twenty-three or twenty-four cases Between eleven and sixteen the mortality gradually rises to one in nine and a-half cases, and from the sixteenth to the twentieth year to one in seven cases."—*Practical Lithotomy and Lithotrity*, pages 93-4. Again, he adds elsewhere:—"As we pass from twelve to sixteen years the death-rate rises; for during the period when puberty is declaring itself, as sexual activity becomes developed, we find the increased susceptibilities thus aroused, raising the mortality to one in nine and a-half, and from thence to the twentieth year, to one in seven cases. It improves but slightly up to the thirtieth year, being until then about one in eight cases. As manhood advances and the strength increases, the death-rate diminishes to one in ten and a-half between the thirtieth and thirty-eighth year. But during the succeeding ten years, organic morbid changes beginning to set in, and the influence of continued depraved habits to tell on the constitution, the rate rises to one in six. These causes become more active, and, at the same time, the powers of life diminish as age progresses from fifty to seventy years, the rate rising to one in four and three-quarters between forty-eight and fifty-eight, and gradually to one in three and three-quarters between fifty-eight and seventy; and finally to one in little more than three between seventy and eighty."—*Ibid.*, pages 142-3.

stone since I came here, and of these I have only lost three, and one of these was *in articulo* on admission." He added that the operation was almost always successful in his hands in children, and I am glad to be able to reproduce here, in a more authentic form, the valuable experience of my friend, Dr. Grant, of Futtehgurh, to whose courtesy I owe the greater part of my own cases, and whose uniform kindness and unswerving friendship I take this opportunity of acknowledging. He has placed the fruits of his labours unconditionally at my command; and I feel that I would be detracting from their value, and, at the same time, doing an injustice to my own sense of his capacity and skill, were I to preface them with a word of justification, or even of praise. They speak loudly enough for themselves; and I am well content they should do so without any aid or introduction from me.

List of Operations for Calculus Vesicæ performed by Dr. G. Grant at the Futtehgurh Branch Dispensary of Futtehgurh, N.W.P., India.

Serial Number	Age of Patients	Caste	Date of Operation	Date of Discharge	Duration in Hospital	Weight of Calculus	Remarks
	Yrs.		1862	1862	Days	oz. dr. gr.	
1	32	Chamar	Mar. 15	April 18	34	– 6 6	Shoemaker
2	12	Kesan	„ 21	„ 30	40	– 4 40	Farmer
3	15	Gararea	April 1	„ 30	29	– 1 40	Shepherd
4	15	Birhamun	„ 15	May 15	32	– 2 26	Priest
5	5	Birhamun	May 2	June 5	34	– 5 20	„
6	36	Mosulman	June 9	July 16	38	– 3 40	Mahomedan
7	4	Kache	„ 28	„ 22	25	– 1 25	Peasant
8	14	Lalee	Sep. 10	Oct. 8	29	– 3 –	„
9	15	Kormee	Oct. 19	Nov. 27	32	1 4 –	„
10	82	Birhamun	„ 19	„ 23	36	– 1 40	Priest
11	4	Gararea	„ 25	„ 20	46	– 1 45	„
12	32	Kesan	Nov. 15	Dec. 27	43	– 1 40	„
13	30	Lohar	„ 20	„ 12	23	– – 30	Blacksmith
14	12	Kesan	„ 21	„ 18	29	– 2 55	„
15	12	Banea	„ 25	„ 27	34	– 2 34	Grain seller
16	32	Dhobee	„ 30	„ 30	30	1 6 30	Washerman
				1863			
17	8	Chamar	Dec. 15	Jan. 4	31	– 3 –	
			1863				
18	2	Chamar	Jan. 2	Feb. 5	35	– 1 –	
19	11	Kahar	„ 16	„ 14	31	– 1 46	Porter
20	20	Chamar	„ 26	„ 28	35	– 7 20	„
21	50	Gararea	„ 28	„ 16	20	– 6 35	„
22	5	Gararea	„ 28	„ 27	30	– 2 40	„
23	22	Banea	Feb. 10	Mar. 13	34	– 7 –	„
24	2	Babna	„ 10	„ 10	30	– 1 48	Unknown to me
25	30	Kesan	„ 11	„ 16	36	– 4 10	„
26	32	Birhamun	Mar. 11	April 10	31	– 4 50	„
27	40	Thakoor	„ 21	„ 18	29	2 2 10	High caste, priestly order

Serial Number	Age of Patients	Caste	Date of Operation	Date of Discharge	Duration in Hospital	Weight of Calculus	Remarks.
28	45	Kurmee	Mar. 29	April 29	31	1 – 20	High caste, priestly order
29	2	Kurmee	May 5	June 8	35	– 1 36	,,
30	7	Ahier	,, 7	,, 1	25	– 1 15	Cow herd
31	12	Gararea	,, 23	,, 28	37	– 5 40	,,
32	5	Ahier	June 3	,, 30	27	– – 45	,,
33	41	Ahier	,, 22	July 30	38	– 4 30	For the rest, the sub-
34	50	Ahier	July 20	Aug. 30	41	– 4 4	divisions of caste are
35	13	Chamar	Aug. 1	,, 30	28	– 3 30	so numerous and un-
36	12	Chamar	,, 10	Sept. 2	23	– 1 –	important, and withal
37	6	Kache	,, 29	,, 20	23	– 1 –	are so entirely based
38	50	Ahier	Sept. 7	Oct. 1	25	– 7 6	on local usage or mere
39	17	Mosulman	Oct. 12	Nov. 8	28	– 2 6	ceremonial observan-
40	8	Kahar	,, 20	,, 18	30	– 2 20	ces, which have no
41	6	Birhamun	,, 29	,, 25	28	– 1 10	counterpart in Europe
42	7	Lohar	Nov. 8	Dec. 1	23	– 5 5	as not to admit of com-
43	9	Gararea	,, 12	,, 6	25	– 6 –	parison from analogy,
44	7	Kahar	,, 14	,, 14	30	– 3 11	or call for further ex-
45	50	Kait	,, 20	,, 15	25	– 7 –	planation at my hands.
46	12	Gararea	,, 21	,, 16	27	– 2 46	The Indian commu-
47	5	Ahier	Aug. 16 '64	Sept. 15 '64	31	– 3 15	nity is divided, as Mr.
48	7	Bhurgee	Sept. 21	Oct. 10	21	– 1 20	Buckle has well ob-
49	7	Chamar	Oct. 12	Nov. 10	29	– – 51	served, into two great
50	30	Kesan	,, 17	,, 16	29	– 2 6	divisions, the very rich
51	7	Ahier	,, 19	,, 11	19	– 6 46	and the very poor—
52	30	Mahajun	,, 19	,, 11	19	– 2 –	there is scarcely an
53	33	Kait	,, 22	,, 10	20	1 5 20	intermediate grade—
54	55	Lohar	Dec. 15	Jan. 15 '65	32	– 6 50	and as the latter pre-
55	30	Mahajun	,, 20	,, 4	15	– 2 3	dominate there as else-
56	3	Mosulman	,, 30	,, 25	26	– – 51	where, so also does
57	25	Mosulman	Jan. 4 '65	Feb. 4	30	1 7 –	stone appear to be, in
58	50	Kesan	Feb. 16	Mar. 14	28	– – 18	greater part, its pecu-
59	9	Bhurgee	,, 19	,, 8	17	– 2 55	liar portion, and for
60	7	Mosulman	April 17	May 10	24	– – 55	the very reasons, as I
61	7	Birhamun	May 3	June 3	31	– 5 10	believe, that scrofula,
62	13	Thakoor	,, 18	,, 10	23	– 3 6	phthisis, and other dis-
63	10	Kachee	,, 30	,, 25	26	1 6 49	eases of debility are
64	17	Chamar	July 5	Aug. 6	36	– 6 5	more common among
65	4	Mahajun	,, 5	,, 1	26	– – 46	the poor everywhere
66	10	Chamar	,, 6	,, 4	30	– 6 –	than they are among
67	35	Kurmee	Aug. 5	Sept. 5	30	1 3 51	the rich.
68	9	Ahier	,, 15	,, 15	32	– 2 –	
69	11	Chamar	,, 16	,, 15	31	– 3 10	
70	32	Kesan	,, 28	,, 20	24	– 1 45	
71	20	Kachee	Sept. 13	Oct. 10	28	1 1 –	
72	30	Kesan	Oct. 8	,, 30	22	– 5 4	
73	3	Chamar	,, 24	Nov. 20	27	– 1 5	
74	6	Kait	Nov. 5	Dec. 5	30	– 2 51	
75	14	Mosulman	,, 11	,, 5	25	– 5 –	
76	12	Dhanuk	Jan. 28 '66	Feb. 20 '66	24	– 3 40	Of Abyssinian or Ethio-
77	10	Kachee	Feb. 2	,, 28	25	– 1 40	pian origin.
78	6	Kurmee	,, 14	Mar. 14	29	– 6 –	
79	60	Mosulman	Nov. 8	Nov. 30	23	– 2 10	
80	Eight months	Mahajun	Jan. 6 '67	Jan. 30 '67	24	– 1 40	
81	1	Kesan	,, 28	Feb. 20	23	1 – 20	
82	11	Kait	May 7 '69	June 1 '69	24	– 1 52	
83	5	Kesan	,, 12	,, 1	19	– 3 26	
84	32	Brahmin	Oct. 6	Oct. 20	15	2 – –	This man was a prisoner in Futtehgurh jail.

Besides the above lithotomy cases, all of which were successful, the undersigned performed 28 more in 1860 and 1861, while Civil Surgeon of Bijnour. Two of these cases proved fatal, and one of these—the 14th case on which I operated—was a boy about seven or eight years of age, from whose bladder a more than usually large round mulberry calculus was extracted. There was considerable difficulty experienced in extracting it, and in consequence of its shape and size the forceps could not be got to maintain a firm grasp of it. Peritonitis ensued, and death took place on the fifth day. The other fatal case occurred in the person of an old man of broken down constitution, on whom the operation was easily performed, but the wound in the perineum showed no disposition to heal, and he died of exhaustion about ten days after the removal of the stone. Preparatory treatment was not resorted to in any case, and about two-thirds of those subjected to operation at Bijnour were boys under ten years of age. In most cases the stone was extracted the very day on which the patients came to the dispensary. Lateral lithotomy, with an ordinary grooved staff, was invariably practised, and there was seldom any trouble from hæmorrhage. Plugging had to be employed in two instances—both boys—only, and the material used was a flexible tube, a bit of catheter, which was retained in the wound for 24 hours. Cleanliness and a sponge were the only dressings employed, and the result shows that there was no occasion for more complicated manipulation or apparatus.

GEORGE GRANT, M.B.,
Superintending Surgeon Central Prison, Futtehgurh.

Futtehgurh, Nov. 7, 1870.

This confirms what I said above that caste does not materially affect the result or influence the diathesis, as Brahmins and Mosulmen are here as numerous as their neighbours, being seven in each case, and so far in about the proportion they bear to the general community. It also supports the view I have taken of the statistics formerly submitted, and more than sustains the high repute of our Indian brethren, of whose performance the statement of my friend might be taken as a fair echo and illustration. Dr. Grant is not a dashing or brilliant operator; on the contrary, he is slow, cautious, and methodical. But his caution has nothing of timidity in it, his slowness indicates care and a conscientious regard for the responsibilities of his office, and the steady hand, the collected manner, and

the concentrated look bespeak an amount of self-possession that can only be acquired by long practice, and that clearly shows his mastery of the situation. I am proud that it has fallen to my lot to testify thus publicly to the capacity of a friend whose own retiring habits and native modesty would shrink from such a disclosure, whose skill as a physician has been proved in many a rough encounter with tropical disease, and who has achieved a success in a difficult department of his art, in what a great authority would call the "master handywork of surgery," which has not, to my knowledge, been ever exceeded before.

As to the manner of operating, stone is almost invariably extracted in India by the common process of lateral lithotomy, and has not that been sufficiently described elsewhere? I think so certainly, and though I have looked into some books on the subject while preparing this paper, I have no intention of quoting from them. Indeed it was with difficulty I waded through some of them, so finickly minute and circumstantial are they, and so full of details which any man with a diploma ought to be able to supply for himself, and which no man who looks to the success of his treatment could hope to imitate with safety in the hour of trial. Had some of the writers here referred to, witnessed as I have, the facility and readiness with which this process is performed by natives of India who never opened a book on anatomy, and know as much about the Veru Montanum as they do about the man in the moon, they would be less exacting in their requirements, and more disposed to trust to the common-places of surgery and the dictates of common sense. As it is they clearly overdo their parts and invest a simple proceeding with an air of importance and a degree of danger which it does not deserve or entail, and I can scarcely help thinking that the object of such writings is to deter less experienced or responsible men from undertaking an operation which is, in my humble opinion, quite within the compass of all. The same remarks will apply to the apparatus employed, and I believe with an old and eminent lithotomist that "with a knife, we have it in our power to make our incisions adequate to the extraction of a stone of any size, and such as will readily admit the forceps, and allow of an easy extraction without laceration. The incision with the knife is at once easy and sure in the hands of one acquainted with the anatomy of the parts; in the hands of one unacquainted with such anatomy, no instrument founded on any principles of mechanism is safe." This ignorance, or inexperience, or whatever

else we may elect to call it—and I have no wish to use stronger language than the occasion will require—is at the bottom of all the strange machinery and complicated apparatus we see figured in books in connexion with this subject, and I believe that a good deal of the mortality that prevails after lithotomy is due to the variegated manœuvring, protracted manipulation, and other rough usage to which unfortunate patients are subjected during its performance. Be this, however, as it may, my experience is entirely in favour of simplicity, and I will now describe a procedure which is practised by simple, uneducated, mountaineer surgeons in the hills, and which, if the information placed at my command respecting it, be reliable —and I have no right or reason to think otherwise—can boast of a success that admits of no approach elsewhere. This is nothing else than the old plan that was practised upwards of two thousand years ago by Ammonius of Alexandria, in the time of Herophilus and Erasistratus, and by Meges, at Rome, in the reign of Augustus, and which is so well described by Allan, Bell, Burns, and Cooper, as to dispense me from the necessity of describing it again. The author of an interesting work, entitled, "A Summer Tour in the Himalayas and Sporting Adventures in the Valley of Cashmere," alluding to the professional performances of the native hakeems or surgeons of the hills, says, at page 212:—"The only surgical operation they perform well is extracting the stone in which they are very successful." So successful, indeed, that, as I was credibly informed by a gentleman who has resided many years among them, and who knows them better, perhaps, than any living European, they lose no more than four per cent. of their cases. Their mode of proceeding may be roughly described as follows:—They begin by thrusting the two first fingers of the left hand as far up the rectum as they can, and placing them behind the stone. As soon as they have found this they drag or push it down till it can be felt in the perineum, and then, but not before, cut upon it with the stump of an old razor, or with the blunt and primitive-looking weapon which is figured on page 329.

They will not operate on particularly obese subjects, or on persons whose redundancy in this respect they cannot easily reduce; but the meagre fare of the hillmen does not often produce embonpoint or require a resort to Banting, and they dispense altogether with the old-fashioned clyster and other preparatory treatment. Should it so happen, however, that a fat patient, who is otherwise fit, presents himself for relief, he is forthwith placed on "short

commons," something like the bread and water diet of our prisons, and thereby soon brought into a condition that will admit of interference. The uncouth instrument represented on the opposite page has been the means of relieving a great many, twenty-seven in all, I believe, and its rude owner was very loath to part with it. It constituted his principal means of support; rough as it was it could not be easily replaced, and it was only by the exercise of a little gentle pressure that he could be brought to terms. At last, yielding to the earnestness of my friend, or "moved by the rhetoric of a silver fee," he consented to part with it, and I now retain it by me as a curiosity. Should the stone refuse to start forward under the *vis a tergo* brought to bear on it from behind, the iron hook or lever, shown in the woodcut, is brought into play, and by means of this, aided by the fingers in the rectum, the offending calculus is dragged *nolens volens* to the front.

But the size or friability of the stone, the depth of the perineum, the restlessness of the patient—for they know nothing of anæsthetics—the escape of fæces from the rectum, or other troublesome occurrence, may prevent or delay the usual happy consummation. In either case the Puharee doctor is equal to the occasion. He is not, as one without resource; on the contrary, he shows himself master of the situation, by thrusting his hand into the recesses of his wallet, and extracting therefrom an implement which is specially kept in reserve for such a contingency. This is nothing else than a pair of pincers, not unlike those used by cobblers for stretching leather, and with this he never fails. The one here figured was used successfully twenty-three times, and was so prized by its owner that I could only obtain permission to sketch it. That was, however, accurately done, and figure No. 3 is a faithful delineation of it.

Such is the apparatus and such the plan of operating practised in the hills, and the outcome of both is a saving of ninety-six per cent., a saving which no other apparatus or operation has ever been able to secure.[a] It is, in fact, unparalleled in the history of lithotomy

[a] I never saw or heard of the high operation or of that through the rectum, in India. I assisted the late Dr. Brinton once during my incumbency as house surgeon at the Royal Free Hospital, Gray's Inn Road, London, in extracting a piece of mortar from the bladder through the rectum of a corpse, but the proceeding struck us both as being little less than barbarous. For instances in which calculi passed or were extracted through the umbilicus and through a fistulous opening in the abdominal walls, see "London Medical Repository," Vol. i., pages 43 and 291.

Fig. 1.

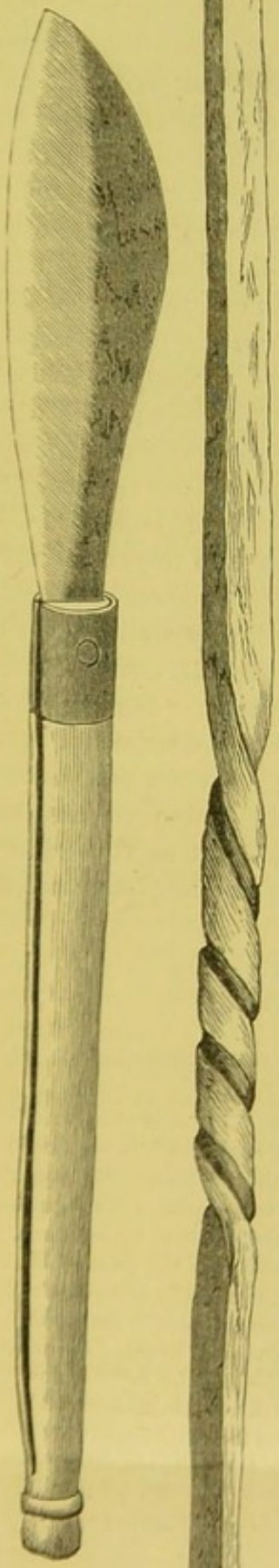

Fig. 2.

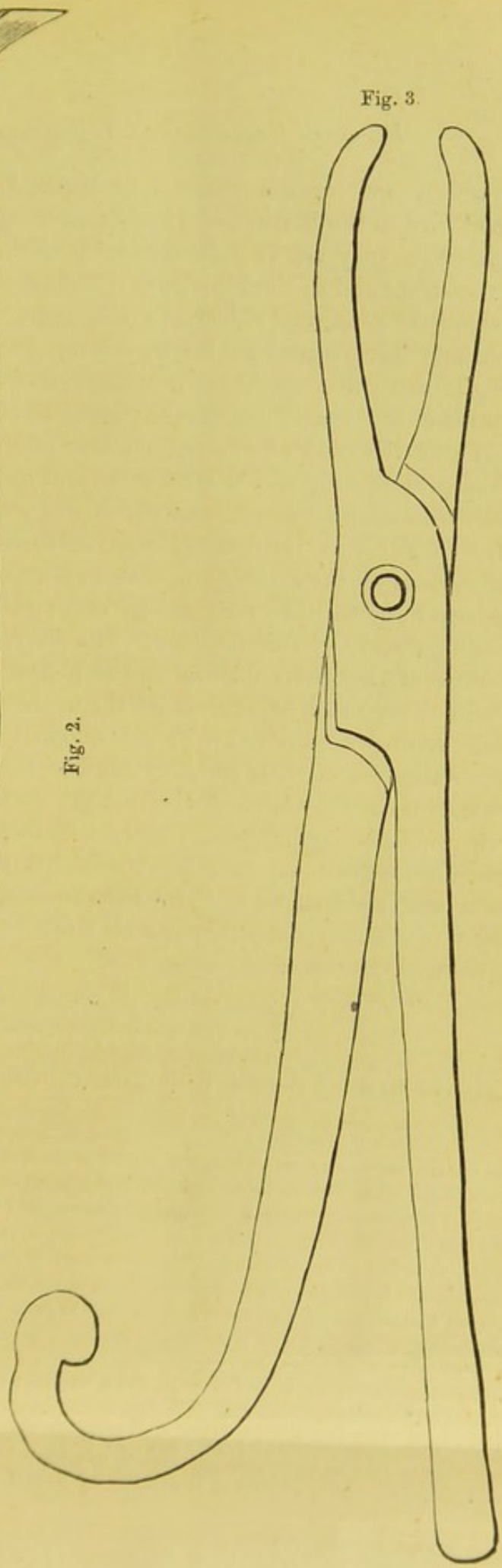

Fig. 3.

anywhere, and such a result is calculated to put our boasted superiority to the blush, and prove that nature, however rude and unaided she may be, is a better guide to the complications of her own causing and to the relief of the sufferings she inflicts, than art, with all the resources which a too fastidious and exacting competition may have placed at her command. It also gives additional weight to the old saying, that "there is nothing new under the sun," for the proceeding here referred to is nothing more or less than a modification of the old method of "cutting on the gripe," which was first described by Celsus, and more recently by Allan,[a] Bell, Burns, and Cooper, and which was successfully practised by such surgeons as Hildanus, Heister, Raoux, and others. But to the curious on the subject the authors here quoted are as accessible, perhaps more so, than they are to me, and this part of my paper would be scarcely complete without a reference to the position and practice of the native doctors of the plains. Of these, however, I need not say much as several of them are already well known by their writings or otherwise in Europe, and they are, as a rule, the very antipodes of their rude brethren of the hills. Some of these are doctors of the Calcutta University; some drive large and lucrative practices in the great cities of India; some are professors in provincial schools or personal attendants on native princes; and many are expert and successful lithotomists. But as this paper is likely to assume proportions which I did not contemplate, and as I agree with Horace when he says—

> "Segnius irritant animos demissa per aures,
> Quam quæ sunt oculis subjecta fidelibus."

I will content myself with giving here a representation of an

[a] As Allan's "Treatise on the Operation of Lithotomy" is out of print, and likely to remain so, and as his description of "this antique operation" is the best I am acquainted with, I make no apology for reproducing it in full here. He says, "the manner of operating was this—the rectum was emptied by a glyster a few hours before the operation, the surgeon introduced the fore and middle fingers of his left hand, well oiled, into the anus, while he at the same time pressed with the palm of his right hand on the lower part of the abdomen above the pubis, to assist in bringing down the stone; he then grappled it, brought it forward to press on the neck of the bladder, and made it protrude and form a tumour on the left side of the perineum. He now took the scalpel and made a lunated incision through the skin and cellular substance, directly on the stone, near the anus, down to the neck of the bladder, with horns pointing downwards to the hip. He then made a second incision transversely through the neck of the bladder, and the stone being strongly pressed upon by the fingers, started out into his bosom, or was picked out by a hook provided for the purpose." A Treatise on the Operations of Lithotomy by Robert Allan, surgeon, pages 10–11.

operation by a native surgeon—for which I am indebted to the courtesy of Dr. Playfair, of Agra—and leaving the rest to the indulgent criticism or conjecture of my readers. (See Frontispiece.)

From this it will be easy to see who is the master and who is the man. The "rough-looking customers" in the foreground are students, who will in time become dispensers and dressers in Her Majesty's Military Hospitals in the North West, and the expression of all is free from flurry and excitement, and more composed than one would expect under the circumstances, or perhaps than one could find in a similarly constituted assembly at home. And having said so much of the proceedings of others it is now time I should turn to and say something of my own.

My operations extended over a series of years, and were performed in various parts of India, but chiefly in Shahjehanpore, Furruckabad, Cawnpore, Futtehpore, the Punjab and Himalayas. They may, therefore, be fairly said to be representative specimens of their class, and to economize space, I will endeavour to crush into the following table all the facts regarding them that I can now recall, or that appear to me necessary for their clinical history and elucidation. Any that may escape my memory while recording the same, or that may not find room in the table, I will add subsequently, and so bring this already too lengthy communication to a close. And firstly, as regards the operation itself, that, as I said before, was always lateral, and the instruments used in its performance consisted of a scalpel, a staff grooved on the side, or, as I preferred it, down the centre, and the forceps that is always found in the common operating cases furnished by the Government. There was no blunt knife or cutting gorget; no lithotome caché or canule à chemise, nothing, in fact, but the plain apparatus mentioned above, and it accords with my experience that these are quite sufficient for the purposes of lateral lithotomy in nineteen cases out of twenty. In the twentieth case there may be some complication that calls for other instrumental aid or accessory, as happened in an instance mentioned below, wherein I had to use a long bullet forceps, but the most successful lithotomists will be those who use the simplest instruments, and it will be obviously unnecessary for me, after what has been already said, to prescribe any rules or enter into any details as to the manner of sounding the bladder, holding the staff, or cutting through the perineum. Any man with a diploma ought to be able to effect these objects for himself, and I will never forget the pithy and forcible, but not the less significant and appropriate

advice I received from the gentleman—himself an able lithotomist—who gave me my first case and assisted me in my first operation. While the patient was taking chloroform and I was adjusting my weapons, I asked him if he had any dodge or wrinkle he could put me up to before I began. "No," he said, "get your staff into the bladder and your knife into the groove of the staff, and you must be a greater fool than I take you for if you can't do the rest." And though this direction may not suffice in all cases, it will in most, in proper hands, and it has at least the merit of expressing, in few words, the estimate formed of this operation by practical men in India, and of showing how irrelevant and unnecessary they consider a great deal of what has been written about it at home. The case here referred to was a man in the prime of life, who recovered without a bad symptom, while that upon which my friend had just operated died from the effects of shock; and this brings me to the reflection that while lithotomy is a comparatively easy proceeding in the adult male, it is quite the reverse in the child, in whose pelvis the viscera are somewhat differently situated, and in whom, to use the words of Mr. Butcher, "the tissues comprising the urethra are so feeble in their cohesion that they will readily yield to violence, and the angle to the bladder is so acute that great facility is afforded to the instrument in going astray." This is strictly true, and equally applicable is his advice about introducing a couple of ounces of water into the bladder before operating, for "it facilitates the detection of the stone, and the stone should invariably be struck previous to cutting the patient—not only because the stone, if a very small one, might have escaped from the bladder, but because this evidence proclaims the presence of the stone, and also the guide to it is direct and certain, the instrument has not gone astray," though I did not always follow it. And apropos of this point and also of the question of lithotomy in children generally, I may here reproduce the substance of a conversation I had with a friend in India, about the time that Mr. now Sir Wm. Fergusson's lectures on the subject were appearing in the *Lancet*, which will better serve to show my estimate of it than any other course or statement I could employ. Having discussed some strange mistakes and malpractices we had witnessed or heard of ourselves, and among others those of tying the urethra in mistake for the perineal artery, cutting through both coats of the bladder into the rectum, and in a third instance including that structure itself, and actually scraping away at the sacrum in lieu of the stone. I asked him, "did you read Fergusson's

lecture about it in last week's *Lancet?*" "Yes," he said, "I did." "Didn't you consider it," I inquired, "very much to the point?" "Yes, yes," he replied, "very much so indeed," and holding up his hands, he added with emphasis, "'tis the very best I ever read on the subject." It is, I subjoined; it deserves to be printed in letters of gold, and "read, learnt, and inwardly digested by every one who undertakes to operate on children and who wishes to do so successfully." And this is, perhaps, as much as I need say on the matter at present.

But it sometimes happened to me, and I know it has often happened to others to have children brought us with all the symptoms of a calculus, in whom, however, none existed, and whose sufferings were induced or aggravated by uncleanly habits, or intestinal irritation. Sounding frequently failed to disprove the fact or throw light on the cause, and it is not to be wondered at that in such instances the usual thing was done. I have heard of several cases in which the operation of opening the bladder was performed, with, of course, negative results as regards the stone, and with no injurious consequences as regards the patient; indeed the proceeding seemed sometimes to have done good by diverting the sufferer's mind from the bladder, or concentrating it on other organs, and inducing his parents to look elsewhere for a remedy. Be that as it may, I never heard of a death from such manipulation, but the mistake must necessarily be an unpleasant one for a sensitive mind, and I was happily saved from resorting to it myself, by remembering an anecdote of the late Mr. Liston, whose authority on this and other similar details could admit of no question. It is told of that distinguished surgeon, that, while lecturing one day on the symptoms of stone in the child, he had exhausted the usual stock somewhat sooner than he anticipated, and was obliged to fall back on his own experience for illustration. He accordingly addressed his class as follows:—"But, gentlemen, when you happen to be in doubt about your case, I advise you to place him on a chair and desire him to jump down; if he has no stone he'll readily do so, but if he has, he'll see you d—ned first." And this is a test which can be so readily resorted to by all, that it deserves more attention than it would appear to have received. I acted on it in a case of the kind here contemplated, and finding that my little patient readily complied with my request, I refused to operate, and I was afterwards glad I did so, for his worst symptoms yielded to time and treatment, and he ultimately regained perfect control of his water. As

intimated before, I do not pretend to entire accuracy in the particulars given below; it is always difficult to obtain reliable information from the natives, and this difficulty was enhanced in my case. One daily meets very old men in India, but their ages can, in many instances, only be inferred from their appearances, and, when interrogated on the point, they either refer back to some great event, such as the siege of Bhurtpore, the battles of Lord Lake, or the reign of Runjeet Sing, which may have happened in the time of their grandfathers, or they put you off with a shake of the head and a Khuda Jane—God knows.[a] The same may be said, to some extent, of the account they give of the rise and duration of their symptoms, for with them time is of no value, they act on the Epicurean maxim of caring for nothing but their bellies, food and farthings engross all their thoughts, and I never yet heard the poorer class of natives discussing anything else than the price of grain, or the fluctuation of wages.[b]

[a] I find the same trait or peculiarity ascribed to the Indians of South America, by the great traveller, Humboldt. He says, "travellers who merely judge from the physiognomy of the Indians are tempted to believe that it is rare to see old men amongst them. In fact, without consulting parish registers, which in warm climates are devoured by the ants every twenty or thirty years, it is very difficult to form any idea of the age of Indians. They themselves are completely ignorant of it." "Life and Travels of Alexander Von Humboldt." New York: Rudd & Carleton.

[b] How often have the words of Horace occurred to me when listening to or looking at a group of natives:—

"Nil admirari, prope resestuna Numici,
Solaque quæ possit facere et servare beatum."

As regards the size and composition of calculi I made the following note, which is, perhaps, worth preserving. "In the Futtegurh Dispensary, there were on the 13th of October, 1866, eighty-six calculi, all the subjects of which had recovered. They appeared to consist chiefly of uric acid and phosphate of lime. I noticed more than one of a dark brown colour. A large, egg-shaped, seemingly phosphatic stone weighed 7 drachms and 40 grains. Another of a similar description weighed 1 ounce and 15 grains, while a third brownish specimen, the neck of which appeared to have been adjusted to the prostatic portion of the urethra, weighed 7 drachms and 19 grains. There was one stone—the subject of which, who was over sixty, had died—kept apart, which appeared rough and jointed like a piece of consolidated lime from an old house, and which weighed 3 ounces 4 drachms and 5 grains. My own specimens have lost considerably in weight since they were extracted. It stated in an old number of the *Lancet*, that Mr. Paget removed a calculus at St. Bartholomew's that weighed upwards of 9 ounces. Mr. De Morgan mentions a case in the Pathological Transactions of London, Vol. xxi., p. 271, in which two calculi, which weighed together 22½ ounces, were removed from the body of a man who had exhibited symptoms of stone for years, but who was supposed to be shamming for the purpose of obtaining poor-law relief. In the same volume there is a woodcut of a stone which weighs 25 ounces, and which was taken from the body of one Sir Thomas Adams, who accompanied General Monk to Buda to congratulate and bring the King (Charles) home.

Name and Age	Caste	General Health	Previous duration of urinary symptoms	Other complications	Operation	Date	Calculus					Time under treatment	Result	Remarks
							Size	Weight			Probable chemical composition			
								oz	drs.	sc.	grs.			
1 Dullu, 40	Kurmie, Villager	Fair	8 months	None	Lateral	June 4, 1862	Pigeon's egg	—	6	1	5	Calcic oxalate	16 days	Good	Lived on grain or dhal—a species of grain or pulse whereon cows, horses, sheep, and the like are occasionally fed—Indian corn and green vegetables, in other words, his sustenance differed but litttle from that of the beasts among whom he dwelt; I did not ascertain whether there was any hereditary tendency in his case. He recovered well and rapidly, while the man who was operated on by another and more experienced surgeon at the same time, and with similar instruments, died a few hours afterwards of the effects of shock; urine passed through urethra on the 6th day after operation.
2 Lullee, 12	Behana	Below par	4 years	Debility	Lateral	June 11, 1862	Four-sided pippin	—	6	—	—	Lithic (uric) acid	17 days	Satisfactory	Recovery was retarded by an attack of sub-acute peritonitis, and he was discharged for change, with the perineal wound still unclosed. He passed water, however, through the urethra, and I subsequently ascertained that the wound cicatrized well, and that he regained the full use of his bladder.
3 Kunghun, 35	Caehee	Good	1 year	None	Lateral	July 15, 1862	Triangle-shaped and irregular	2	1	1	16	Calcic oxalate	28 days	Good	It is quite impossible to ascertain in many, if not in most cases, whether there has or has not been any hereditary predisposition to stone, but I infer there was such in this instance from his surroundings and other sources, and he recovered well. The urethral passage was restored on the 1st of August, and when last seen he was quite free from symptoms of urinary irritation. This was the only one of my cases that contained three calculi, and these exhibit regular facets, the result, doubtless, of intra-vesical friction.
4 Kusala, 12	Kerane or Cultivator	Fair	1 year	None	Lateral	Sept. 2, 1862	Large pigeon's egg	—	6	—	—	Lithic acid and lithate of ammonium	26 days	Good	An old man who was operated on the same morning by another officer, and whose deep perineum offered considerable obstruction to the extraction of the stone, died of shock soon afterwards, while my case, though the operation was equally protracted through the friability of the calculus, recovered well. The urethral passage was restored on the 8th day after extraction.
5 Kishna, 55	Brahmin Priest	Aged and indifferent, with flabby muscular development and no fat	2 years	Premature old age	Lateral	March 18, 1863	Like a cone tree fruit, and as large as a hen's egg	1	7	—	—	Calcic oxalate	13 days	Death	A bad case, *ab initio*, as his health was completely undermined by long suffering, and he came from the hills of Nepaul. The climate of the plains was therefore unsuited to him, and diarrhœa having set in he died of exhaustion on the 13th day of his admission. The perineal wound had nearly closed. The coats of the bladder felt rough and corrugated; the muscles of the belly were shrunken and atrophied, and he looked altogether a much older man in death than he appeared to be during life.

Name and Age	Caste	General Health	Previous duration of urinary symptoms	Other complications	Operation	Date	Calculus				Time under treatment	Result	Remarks
							Size	Weight					
								oz.	drs.	sc.	grs.				
6 Missree, 15	Brahmin	Good	3 years or upwards	None	Lateral	May 3, 1863	Filbert	—	—	12	—	Calcic oxalate	31 days	Good	Two small stones, the smaller of the two weighing only a few grains, were extracted in the usual way, and with no other difficulty than what occurred in catching the small one, which had to be fixed with the finger, and then removed with a dressing forceps. Recovered without a bad symptom, and the wound was quite healed ere he left.
7 Beedee, 35	Hillman	Indifferent	several years	Appears to have lost all control over his bladder	Lateral	Nov., 1863	Turkey's egg	2	6	—	—	Calcic oxalate	27 days	Good	
8 Radha, 14	—	Good	18 months	None	Lateral	Dec. 3, 1863	Bantam egg	—	5	1	15	Lithic acid and calcic oxalate	11 days	Good	Was taken away by his friends, and lost sight of a few days after the operation, but it was subsequently discovered that he recovered well, and was able to resume his ordinary duties.
9 Ishmael, 35	Mahomedan	Good	Uncertain, but believed to be upwards of 4 years	None	Lateral	Aug. 8, 1864	—	—	2	1	—	Calcic and magnesic phosphates	2 days	Good	The stone, which appeared to consist of mixed phosphates, and was very soft and friable, crumpled to pieces in the grasp of the forceps. The debris was washed out by syringing, and the whole were found to weigh two drachms one scruple and fifteen grains. The patient recovered well, and the urethral passage was quite restored on the 22nd of August.
10 Sheo Narain, 10	Cultivator	Good	About 2 years	None	Lateral	Oct. 1, 1864	Small hen egg	1	1	—	5	Lithic acid	17 days	Good	An ordinary case that calls for no special record.
11 Bahadur, 5	Bunya (trader)	Good	18 months	None	Lateral	Aug. 5, 1865	Rough and nodulated	—	1	—	4	Calcic oxalate	15 days	Good	Do., and the urine was flowing freely through the urethra within seven days.
12 Gunga, about 45	Boatman	Fair, but somewhat impaired by long suffering	About 7 years, as far as could be ascertained	Cannot retain his water long, and his clothes and person stink horribly	Lateral	Sept. 4, 1865	Turkey's egg	3	2	—	—	Calcic oxalate	36 days	Satisfactory	Some difficulty was experienced in grasping the stone, which appeared to fill the whole bladder, and which, moreover, being placed transversely across the perineal opening had to be turned upon its own axis, and so withdrawn. He was much depressed by the shock of the operation and the chloroform, but soon rallied, and his recovery though slow was sure. The urine kept dribbling through the wound longer in this instance than in any other of my recoveries, but it created no irritation.
13 Fagoo, 14	Cow-herd	Good	One year and a half	None	Lateral	Jan. 28, 1866	Large pigeon's egg	—	4	—	15	Earthy phosphates	15 days	Good	Recovered without a single bad symptom, and was passing water per urethram on the 5th day.
14 Meena, 31	Chumar	Indifferent	3 years	—	Lateral	May 7, 1866	Large walnut	½	—	1	—	—	See remarks	Good	This man bolted at 2 a.m. on the morning of the 2nd day after operation from hospital, and returned to his home in a village on the Oude side of the Ganges. The urine came through the urethra from the very beginning, and when seen by me some 8 or 10 days later the wound in the perineum had nearly closed, and this too in face of his having gone about his work in the usual way. He represented himself as quite free from his old ailment, and he appeared to make very light of the risk he ran by running away in the manner just described.

15	Hulloo or Kulloo, 63	Mahomedan	Indifferent	15 years	A feeble old man, who has evidently suffered long and severely, and who looks a bad subject for such an operation	Lateral	May 11, 1866	Plover's egg	—	3½	—	—	Calcic oxalate	43 days	Recovery	He recovered well notwithstanding his great age and long suffering, and when taking leave of me, before setting out for his home, he wanted to kiss my feet, and when prevented from doing so he salaamed me with a suppleness and activity which clearly showed that he had taken a new lease of life. I subsequently learned that he took unto himself a new wife, but whether or how long he survived that encounter I cannot undertake to say.
16	Heera, 5	Cultivator	Good	2 years	Is liable to frequent attacks of diarrhœa	Lateral	May 14, 1866	Two stones one the size of a plum stone and the other like a cherry	—	1	—	15	Calcic oxalate	33 days	See Remarks	On first attempting to remove these calculi I failed to find them, though I followed the usual course, and fancied I entered the bladder. Unwilling to endanger the child's life by what then appeared a fruitless search, I sent him back to bed, and exactly a week afterwards reopened the wound, and after a good deal of patient search and careful fingering succeeded in entering the bladder, and removing therefrom the two stones here described.
17	Krisn, 11	Melon producer	Good	3 years	None	Lateral	May 27, 1866	A flattened pebble	—	—	2	16	Calcic oxalate	13 days	Good	Passed water within a day or so of the operation through the urethra, and the sore was quite cicatrized on the 10th day after extraction.
18	Muthra Pershad, 32	Coolie	Good	6 years	Looks considerably older than he really is	Lateral	June 5, 1866	Oblong, and pear-shaped	1	2	—	5	—	25 days	Good	I had some difficulty in removing this stone in consequence of having commenced my incision too high up in the perineum, and not extending it back enough into the bladder. I had accordingly to enlarge the wound with the right hand, while I held its lips open with the blades of the forceps, grasping the stone in the left, and I effected both without any hæmorrhage or laceration.
19	Chitha, 5	Grain seller	Good	15 months	Rather small and feeble for his years	Lateral	June 8, 1866	Filbert and walnut	—	1	2	—	Lithic acid and dodic lithate	22 days	Good	I experienced great and unusual difficulty in the removal of these stones, for the bladder was so high up in the pelvis, so remotely situated therein, and withal so small, that it was both difficult to find it in the first place, and when found it was not easy to enter it or seize the stone. The curve of the staff was besides so closely grasped by tough unyielding membrane that it was very difficult to keep the finger from slipping away from it. Knowing, however, that any such slip or deviation might involve the death of my patient I stuck to it like wax, and after much wriggling and some unavoidable laceration succeeded in reaching the little cavity, and removing its troublesome contents. A fistulous opening which remained in the urethra was subsequently rectified by perineal section.
20	Tha Koor, 25	Tha Koor (high caste Hindoo)	Good	3½ years	None	Lateral	June 22, 1866	Plum-shaped and very friable	—	1	—	10	Triple phosphates	41 days	Good	There is no other history than that he recovered well, and was soon afterwards able to resume, without suffering, his ordinary duties.

Name and Age	Caste	General Health	Previous duration of urinary symptoms	Other complications	Operation	Date	Calculus			Time under treatment	Result	Remarks
							Size	Weight	Probable chemical composition			
21 Bala Ram, over 40	Katee or cultivator	Indifferent	Probably 11 years	Has lost flesh and strength of late, and his wife says he once attempted self-destruction	Lateral	June 28, 1866	Small hen's egg	oz. drs. sc. grs. 2 2 — 5		35 days	Recovery	The bladder did not regain its tone in this instance as soon as in the other cases, there was, however, no other untoward symptom, and the case was complete before he left. He was a person of very feeble intellect and limited understanding, and the bodily conformation appeared to partake of the defects of both.
22 Gopal, 55	Grasscutter	Failing	As long as he can remember, but never suffered much	Has incipient cataract in left eye	Lateral	July 7, 1866	Turkey's egg	2 2 — —	Calcic and magnesic phosphates	43 days	Recovery	The recovery was slow as might be expected from his old age and long suffering, and the bladder did not regain entire control of its contents for several months subsequently.
23 Ram Lall, 13	Mahajun banker	Good	2 years	None	Lateral	Aug. 17, 1866	Nutmeg	— 1 — 5	Lithic acid	21 days	Recovery	Except that the chloroform made a greater impression, and produced more sickness in his case than in that of any native I have yet seen, there was nothing to record or complain of.
24 Gosain, 35	Kait cultivator	Fair, but he looks thin and worn	5 years or upwards	Cant retain his urine, the penis is unusually long and flabby, and his clothes stink badly	Lateral	Sept. 15, 1866	Large pigeon's egg, smooth and round	— 4 — 15	Calcic oxalate	3 weeks	Recovery	Recovered slowly but satisfactorily.
25 Mahadeo, 3	—	Good	11 months	None	Lateral	Oct. 18, 1866	Flattened cherry	— 1 — 16	Lithic acid, traces of oxolates	—	Recovery	For this case, which I saw in private in the house of a Hindoo tradesman, or rather usurer, of the Bunya caste, I received a fee of rupees fifty, which was paid down on the nail before I left my bungalow. I only saw the child once afterwards, and he was not subjected to restraint at any time.
26 Koormee, 7	Kesan, farmer	Good	About 2 years or upwards	Was very irritable from suffering, and did not take kindly to his food	Lateral	Nov. 15, 1866	Filbert	— 1 — 8	Calcic oxalate	27 days	Recovery	Was carried away by his parents on the 2nd night after operation, who brought him back, however, soon afterwards, on being threatened with punishment by me. The change did not in any way injure him. Two calculi came away, one of which was a mere pebble.
27 Munga, 27	Chumar, shoemaker	Good	3½ years	Has frequent attacks of strangury, and occasional paroxysms of acute pain	Lateral	Dec. 22, 1866	Pigeon's egg, rough and corrugated	— 4 1 —	Calcic oxalate	39 days	Recovery	Though he got quite stout on the diet allowed him before and after operation, he yet occasionally passed blood in the urine, and there were other appearances which led me to suspect the presence of renal calculus. He left, however, greatly relieved.

28	Lalla Pershad, 12	Bunya, grain seller, &c.	Good	2 years	Dyspepsia	Lateral	May, 1867	Small bantam egg, round and rough	—	2	2	—	—	—	Recovery	This was one of my casual cases, that is cases picked up by myself, and though the patient suffered from an attack of hæmorrhage, which was left, unknown to me, to right itself, and subsequently from fever, he yet recovered well and obtained full control over his bladder.
29	Doorga, 27	Fruit seller and Coolie	Good	5 years	None	Lateral	June or July, 1867	Hen's egg	2	1	—	—	Calcic and magnesic phosphates	3 weeks	Recovery	I had to notch the neck of the bladder on either side, and enlarge the orifice of the perineal wound laterally before I could extract this stone. There was some bleeding in consequence, which, however, was easily arrested by cold douching, and he recovered completely.
30	Ameer Jan, 17	Mahomedan and Coolie	Good	Uncertain	None	Lateral	Sept., 1867.	Plover's egg, round and smooth	—	3½	—	—	Calcic oxalate	—	Recovery	I cut this man in the hills, on my way to Cashmere, in September, 1867, and he was quite well on my return towards the end of October. I had no other assistance than what I obtained from my own servants. I left him two hours after the operation, after sharing with him the contents of my brandy flask, and simply desiring him to douche the wound daily, and turn over on his belly when he wanted to make water. He probably did not attend to either of these directions, and yet got quite well all the same.
31	Gholab Shah, 70	Mahomedan	Indifferent	8 years	See Remarks	Lateral	June 27, 1869	Broke up into seven different fragments	1	4	1	10	Calcic oxalate	17 days	Death	A man, aged about 70, in the very last stage of decrepitude and debility, who has suffered for at least 8 years from symptoms of stone, was brought to me by his son, to Camp Koongagullee, near Murree, on the 6th of June, 1869, and after being detained for the purpose of enabling me to procure more suitable instruments than I possessed, and also in view to my effecting some improvement in his general health, was operated on on the 27th of same month, in presence of Drs. Atkinson and Morgan, of H. M.'s 19th and 6th Regiments respectively. The stone broke down under the grasp of the forceps, and had to be removed piecemeal, and the patient was so enfeebled by suffering, and so debilitated by shock, &c., that I had some difficulty in bringing him round. He recovered, however, under the influence of beef-tea and champagne, and urine escaped through the natural passage two days afterwards. Fever supervened about the 4th of July, and continued to increase in spite of quinine, arsenic, and support of all kinds. The stomach became soon afterwards irritable and intolerant of food, and he passed away quietly about 12½ a.m. on the morning of July 14th. I ascertained, by digital touch, that very little union had taken place in the wound; and I feared from the beginning that he would not have stamina enough to enable it to do so.

This table presents few points of divergence from those already given; in all the results are pretty much the same, and it will be seen from mine and Dr. Grant's that the operation was eminently successful in children. But this is so much the case elsewhere also, that I am inclined to look to the operator for any unusual departure from it, and I cannot too strongly impress on the minds of my younger brethren the necessity of forgetting for the time or ignoring altogether what they may have learnt of the position of the bladder in the adult, when they come to deal with the subject of calculous disorder in children. The relative positions are almost reversed, the one being low down towards or rather upon the rectum, and the other above tilted forwards under the pubis; but they'll learn these things better from Sir Wm. Fergusson's excellent lectures than they can from me, and with regard to their incisions they cannot do better than act on the advice of Mr. Butcher. That able operator writing on this point in the *Dublin Quarterly Journal*, for February, 1870, says:—"I cannot lay too much stress on the necessity of freely opening the entire of the membranous portion of the urethra, by the one and continuous stroke of the knife. This should be the surgeon's aim, for if the knife be introduced again and again with the intention of clearing the staff, the difficulties of completing the operation are greatly increased, the urethra is wounded and notched in several parts. Shreds of it may hang into the groove of the staff, and it may be so impaired that the remaining connecting tissues may fail to resist the efforts essential to the completion of the operation and give way, and so the surgeon may be foiled in reaching the bladder." This, however, ought not to happen as long as the staff is adhered to; *that should on no account be lost sight of*, like the poor compassless benighted mariner described by the poet, who looked to one solitary star alone for the guidance of his struggling ship, the operator should say, "if I lose thee I'm lost," and he who sticks to the staff, will in all probability reach the stone and save his patient. No matter how awkward and bungling may be his manipulation, no matter how vague and imperfect his knowledge of anatomy, no matter how feeble and faulty his incisions, provided, of course, they are not carried too far, if he sticks to the staff and *that that is in the bladder and on the stone*, he ought, if he be not a fool, or something worse, to feel and remove the latter. Sir Henry Thompson says, that "the most frequent cause of death after lithotomy in children is peritonitis and constitutional exhaustion," and that is doubtless so in England; but the deaths I witnessed or

heard of among children in India, appeared to me rather to be due to shock, hæmorrhage, or injury of the rectum, and I did not find that a few years one way or the other materially affected the result. Advanced age, on the contrary, does so terribly, by preventing union of the perineal wound, inducing irritative fever, diminishing the desire for food, and the capacity for sleep, and ultimately paving the way for sub-acute peritonitis or incurable exhaustion.[a] My two fatal cases were both old and feeble, and the last was an old man who had to be carried by his son, and who could not, in any case, long survive his sufferings. Yet he recovered well from the effects of the chloroform and the shock of the operation, but the wound in the bladder refused to heal; he lost his appetite, and could not sleep; apthæ appeared on the tongue; and he passed away at last, without pain.

For the analyses of the calculi given in the Table, I am indebted to the courtesy of Dr. Cameron, the accomplished Chemist and Analyst to the City of Dublin, who most kindly undertook the labour of determining for me the composition of the stones which I had brought home.

And thus I bring to a close my personal experience of lithotomy in India.

[a] "Barnes, the celebrated editor of the *Times*, having suffered for years from stone, was at length persuaded to submit to an operation, which, although it was most skilfully performed by Liston, gave such a shock to his nervous system that he sunk under it, and died on the 7th of May, 1841, in his fifty-sixth year."—Andrew's History of British Journalism, Vol. ii., p. 84.

"Suffering for years" is a bad preparation for such an operation, and shock to the nervous system is much more likely to occur and prove fatal after the powers of life are on the wane than before. For other instances in which delay proved dangerous in this as in other disorders, see the preface, &c., to Mr. Allarton's "Median Lithotomy," and Traver's "Constitutional Irritation."