

likely, he passed away at his home a year or two after I had seen him for the last time, with all the symptoms of uremia, like some of Assendelft's patients on whom he very wisely declined to operate. I think we are justified in formulating the following conclusions regarding the recurrence of stone which takes place after operation.

In young patients, recurrence of stone takes place with equal frequency after lateral lithotomy, supra-pubic lithotomy and litholapaxy when the last-mentioned operation is efficiently performed. In aged patients, the subjects of pouched and atonic bladders and enlarged prostates, recurrence of stone follows litholapaxy more frequently than it does supra-pubic or perineal lithotomy; but the dangers attending the performance of these two last mentioned operations in aged patients, overshadows the drawbacks of recurrence after litholapaxy. I think these two propositions cannot be disputed, and that they sum up in a few words the question of recurrence of stone in patients at all ages. I need hardly point out that, although post-prostatic phosphatic concretions can be readily removed by supra-pubic lithotomy that they are always liable to recur so long as the enlargement of the prostate remains, and unless the offending lobe of the prostate can be removed in the course of the supra-pubic lithotomy, little permanent relief is given to the patient, for the concretions in such cases are almost certain to recur. And even if the offending lobe can be removed in the course of a supra-pubic lithotomy, the patient cannot be absolutely assured that there will be no recurrence, because later on, a fresh nuclei may drop into the bladder from the kidney. And therefore it is perhaps the wiser practice to crush such concretions when they recur, if it is possible to do so, than to perform supra-pubic lithotomy. When such cases are complicated with cystitis and foul urine, then a perineal lithotomy would seem to be the best practice, although experience has taught us that in aged patients such a proceeding is always attended by considerable danger to life.

Dr. zum Busch in his letters to the *British Medical Journal* already quoted would seem to have ignored the fact that the discussion which took place at Ipswich hinged on the best method of extracting from the bladder very large calculi not amenable to Bigelow's method of lithotripsy. In the discussion which followed I incidentally stated that out of 147 supra-pubic lithotomies performed in India the mortality was as high as 42 17 per cent. I quoted these figures to show how high the mortality of supra-pubic lithotomy is when performed for very large calculi in adult patients, and I feel quite certain that very few of these operations were performed on boys. Owing to the very inefficient way in which stone operations are catalogued in the reports of the hospitals and dispensaries throughout India, I am unable to prove that the great majority of these operations were performed on adult males and for very large calculi and complicated cases. My friend, Major J. A. Cunningham, Civil Surgeon of Delhi, in his excellent contribution to the Special Stone Number, has explained my position so well that there is no necessity to discuss this subject of the mortality of supra-pubic lithotomy any further. But I think it would have been better, if in the first instance, Dr. zum Busch had made it plain that the vast majority of Assendelft's supra-pubic lithotomies had been performed in young patients, for it is a surgical truism that all operations performed for the relief of stone in boys are, as a rule, followed by a very small rate of mortality.

And now I should like to make a few remarks on ethics in connexion with surgical operations undertaken for stone in the bladder, and in doing so I disclaim any intention or desire to wound the susceptibilities of the general surgeon who, through no fault of his own, has been deprived of opportunities of learning how to use a lithotrite. These observations will not apply to cases of boys suffering from stone in the bladder, because experience has taught us that in these young patients the rate of mortality following supra-pubic lithotomy,

perineal lithotripsy and litholapaxy can be kept almost equal, although recovery follows much more quickly on the crushing than on the cutting methods. Granted that the rate of mortality of cutting operations in patients who have passed the middle period of life is, as a rule, greater than that which follows the crushing method—and I do not think that this proposition can be seriously challenged—what course should a general surgeon who has not learned how to use a lithotrite adopt, if called upon to treat a patient of fifty or sixty years of age suffering from stone in the bladder? The answer to this question will obviously depend both on the financial position of the patient, and on the place in which the general surgeon carries on his practice. For it is evident that if the general surgeon is living in the interior of a vast country like Russia and his patient is a poor man, the latter cannot afford the expense of a long railway journey to St. Petersburg or Moscow to consult a litholapaxist, even should the general surgeon advise such a course, and in these circumstances the patient, must be prepared to take his chance and submit to a cutting operation or remain unrelieved from his sufferings. But the question assumes a very different aspect if a well-to-do patient of a like age, the subject of an uncomplicated calculus of moderate size, consults a general surgeon in a large surgical centre where skilled lithotritists are to be found. In such a case what advice should the general surgeon give his patient? Obviously he should tell the patient plainly that the risks attending the crushing of his stone would be less than if it were extracted by a cutting operation, and advise him to consult a surgeon skilled in the use of the lithotrite. Now this is a course which is not always adopted by the general surgeon living in large surgical centres where experts who have acquired a practical familiarity with the lithotrite are to be found. One of the most distinguished surgeons in London, and an operator of great excellence in most fields of surgery told me that whenever he meets with a case of stone in the bladder in private practice, it is his invariable custom to hand over the case to the care of a surgeon who has had a very large experience in crushing calculi. And doubtless this is the straightforward method of dealing with one's patients. There are others, however, who do not follow this straight course, and who, because they happen to be pretty expert with the scalpel, do not hesitate to consign to the dangerous ordeal of the knife old and middle aged men the subjects of small, medium size and uncomplicated calculi, and who then justify their practice by dwelling on the drawbacks and dangers of recurrences after litholapaxy. To such general surgeons I think the words used by Sir William Fergusson more than thirty years ago are peculiarly applicable. "A surgeon who keeps to lithotomy alone in the present day is hardly to be tolerated; he is behind the age, and his contempt or ignorance of lithotripsy renders his opinion of little value."

ON THE CHEMISTRY AND TOXICOLOGY OF *NERIUM ODORUM*, WITH A DESCRIPT- TION OF A NEWLY-SEPARATED ACTIVE PRINCIPLE.

(THE COATES' MEMORIAL PRIZE ESSAY.)
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NERIUM ODORUM, the sweet-scented oleander, known by the name of *Karabi* in this part of India and by *Kaner* in Northern and

Western India, belongs to the Natural Order Apocynaceæ, the other important poisonous species belonging to this order being *Thevetia Neriifolia* (yellow oleander) and *Cerbera Odollam*. *Holarrhena Antidysenterica* (*Kurchi*), the bark of which is considered by Indian practitioners as a specific in chronic dysentery, also belongs to this Natural Order. It grows wild almost all over India, but is much cultivated in the gardens for the sake of its flowers, white and red, considered invaluable as an offering to the deity in the Tantric form of Hindu worship. The flowers are also offered to Shiva and other Hindu gods and goddesses.

Description.

It is an evergreen shrub yielding a milky juice; the plant is so common that a detailed description of its botanical characters is scarcely needed for its identification. The plant usually yields white or red flowers, about $1\frac{1}{2}$ inches in diameter and sweet-scented, but a yellow variety has also been described by Honorary Surgeon E. A. Morris, Tranquebar, who found it growing near Seringapatam in the Mysore Province. I have not seen any specimen of the yellow-flowered plant in this part of India. A short description of the leaves and roots with sketches in natural colours is given below:—

Leaves.

Linear lanceolate; thickly coriaceous; acuminate; midrib stout; nerves numerous, slender, horizontal; petiole very short.

Root.

Crooked, branched, ending in fine rootlets; externally pale yellowish grey; bark not very thick, soft, consisting of two layers, the outer one being pale yellowish-grey, the inner layer is of a greenish-yellow colour. The bark can be readily peeled off by the fingernail exposing the white central woody portion. The bark possesses a slight bitter taste succeeded by a peculiar pricking sensation in the tongue attended with numbness which usually lasts for about half an hour. The sensation is similar to the one produced on the tongue by the ethereal extract obtained by Stass' process from the fruits of the yellow oleander. The *Nerium* root is distinguished from the yellow oleander root by the latter possessing a very thick, succulent root-bark having no inner greenish yellow layer. The root-bark of the yellow oleander, when scraped, yields a thick milky-white sticky fluid, absent in the *Nerium* root. When warmed with strong hydrochloric acid, the root-bark of the yellow oleander turns blue (Warden's test), but no such color is produced in the *Nerium* root-bark when similarly treated.

Microscopical characters of the root.

A transverse section of the root discloses woodcells and vessels, abundantly traversed by medullary rays which consisted of single rows of thick-walled parenchymatous cells. Drops and patches of a yellow and orange-coloured thick exudation were found deposited here and there in the woody portion of the root. The outer pale yellowish-grey layer of the root-bark consisted of several layers of flattened cork cells containing drops of a colourless fluid; the inner greenish-yellow layer consisted of parenchymatous tissue of narrow cells with patches of a yellowish colour and containing small dark-coloured nodular masses. There were numerous openings of vessels in the inner layer of the bark. The cambium layer consisted of a few rows of greyish thin-walled cells. Starch cells were found scattered both in the wood and bark of the root.

In the specimens I examined, I could not detect any crystals of oxalate of lime described as being present by Mr. H. G. Greenish in the *Pharmaceutical Journal* of April 23, 1881, page 873. The characteristic microscopical appearance of a transverse section of the root consists in the presence of numerous medullary rays in the woody portion running from the centre to the circumference, in the presence of yellow and orange-coloured drops of thick fluid in the wood and yellowish patches in the inner layer of the bark, as well as in the arrangement of the cork cells in the outer layer of the bark. These characters are well seen in the subjoined drawing sketched by an artist-friend of mine from a specimen prepared and mounted by me.

Medicinal uses.

Very few preparations of the Hindu *Materia Medica* contain *Nerium* as one of their ingredients. There is, I find on enquiry, only one preparation called the *Mohabisewara Rasa* containing *Nerium* roots in small quantities and which is administered internally for the cure of leprosy. For external application, an oil prepared by boiling roots of *Nerium Olorum* and *Plumbago Rosea*, seeds of *Embelia Ribes* and cow's urine in *Sesamum* oil is recommended by Sanskrit writers as a cure for eczema and other skin diseases. The fresh juice of the young leaves is described as a useful application in ophthalmia attended with copious lachrymation. A paste made of *Nerium* roots with water is recommended by Chakradatta as a cure for chancrous ulceration on the penis.

We find it stated in the *Pharmacographia Indica* that the Mahomedan physicians describe it as a most powerful resolvent and attenuant, only to be used externally; internally it acts as a poison upon men and animals. A decoction of the root is recommended to reduce swellings, and an oil prepared from the root-bark is recommended in skin diseases of a scaly nature and in leprosy.

Surgeon-Major C. W. Calthorpe states that a poultice of the leaves fried in oil is applied to wounds to kill maggots.

The root of the white-flowered *Nerium* has an Indian reputation as being one of the best antidotes for snake poison and there prevails a strong popular belief in the virtue of this root as a repellent of snakes. It is alleged that its presence in a room is sufficient to drive away snakes.

Toxicological Notes.

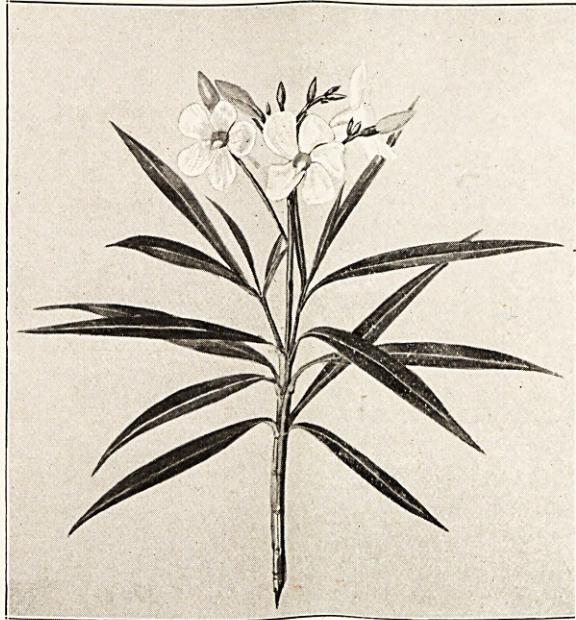
The plant has from very remote times been known in India to possess poisonous properties. It is one of the seven minor poisons of the Hindu *Materia Medica*, the other six being Opium, *Abrus Precatorius* seeds, *Datura*, *Gloriosa Superba* roots, milky juice of *Calotropis Gigantea* and *Euphorbia Neriifolia*. One of the Sanskrit names of the plant is *Aswamaraka* or Destroyer of horses and "it would seem from this that the poisonous roots were used for destroying horses."

All parts of the plant are poisonous. Dr. Honigberger was of opinion that the wild hill plant was more poisonous than the cultivated variety, and he is supported in this opinion by M. Latour and Prof. E. Pelikan who found by careful analysis that the wild variety contained a larger quantity of the poisonous principle. In the hills and in Western and Southern India, the root is said to be commonly used by women for suicidal purposes. The use of the *Nerium* root for suicidal purposes is, however, not common in Bengal; the fruits of the yellow oleander are more largely used for this purpose. During the fifteen years ending 1888, fourteen cases of *Nerium* poisoning were referred to the Chemical Examiner, Bombay, and eleven to the Chemical Examiner, Madras; only two cases were dealt with by the Chemical Examiner, Bengal, during the same period.

In Bengal, the root of *Nerium Olorum* is used chiefly for the purpose of causing criminal abortion, it being applied locally and given internally for this purpose.

ON THE CHEMISTRY AND TOXICOLOGY OF *NERIUM ODORUM* WITH A DESCRIPTION
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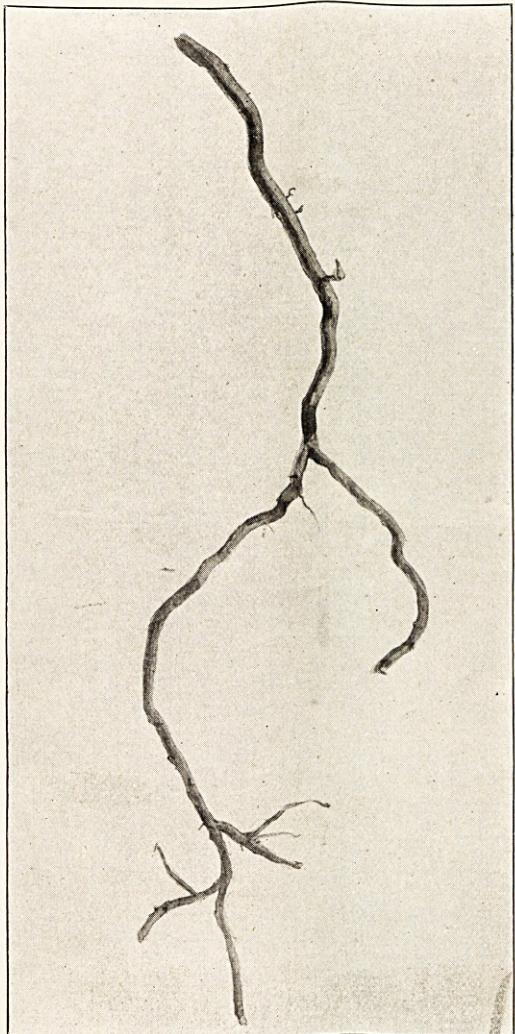
BY ASST.-SURGEON RAI CHUNILAL BOSE BAHADOOR, M.B., F.C.S.



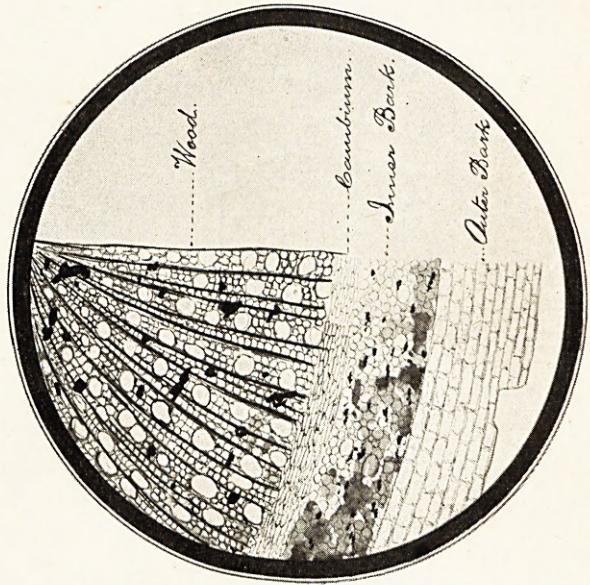
Nerium Odorom Leaves and White Flowers.



Nerium Odorom Red Flowers.



Nerium Odorom Root.



Nerium Transverse Section of the Root
(under the microscope).

Dr. Watt mentions that the goat appears to be able to feed on the foliage of the plant with impunity, but it proves fatal to camels and other animals. The plant is said to be poisonous to insects also.

The employment of the root by ignorant persons for the cure of gonorrhœa and syphilis has been attended with fatal results.

The use of Nerium Odorum root for homicidal purposes is not common in Bengal. It may appear strange that a plant which possesses such marked toxic properties is not largely utilized to serve the purposes of the poisoner. The fact is that its toxic properties are not widely known; most people consider it and the yellow oleander to be quite harmless, and as such largely grow them in compounds and gardens.

CASES.—(1) Suicidal. The first recorded case of Nerium poisoning was reported in 1843 by Dr. Greig of Sitapore. It occurred on the 9th March, 1840. A man, aged about 50, took some Nerium root mixed with mustard oil to destroy himself on account of a domestic quarrel. He was brought to the hospital about an hour and a half after the ingestion of the poison in an apparently insensible condition. The principal symptoms noticed in the case were—*Vomiting; preternaturally slow but regular pulse, and insensibility.*

The man was making favourable progress when, after making certain exertions, he suddenly died, probably from heart failure, about twenty-four hours after he had taken the poison. He never complained of any pain in the abdomen.

At the *post-mortem* examination small patches of congestion with red points were discovered near both the pyloric and cardiac ends of the stomach posteriorly; there were also two slight abrasions on the mucous membrane of the stomach. The cavities of the heart, particularly the ventricles, were filled with black fluid blood. Other organs were found healthy.

(2) Suicidal.—Dr. Broughton, Civil Surgeon of Kolhapore in the Bombay Presidency, reported a case of Nerium poisoning, which was treated in the civil hospital at Kolhapore in August 1858. The history pointed to an attempt at suicide by swallowing a little more than an ounce of the expressed juice of Nerium (it is not stated whether the juice was expressed from the leaves or bark). He fell senseless within five minutes and was removed to the hospital. The following symptoms were noticed in the hospital:—Face and eyes flushed, head hot and perspiring, breathing stertorous, “foaming at the mouth,” violent spasmodic contractions of the muscles of the entire body, but more marked in the superior than in the inferior extremities and also more developed on the left than on the right side. During the intervals of the spasms, the patient lay flat upon his back. There were insensibility, quick thready pulse, involuntary passing of greenish watery stools, and collapse. After thirty-six hours reaction was established, spasms ceased, but insensibility remained as before. He regained his speech and senses after forty-eight hours. The man recovered.

(3) Accidental.—In the *British and Foreign Medical and Chirurgical Review*, 1860, Maschka related the case of a boy who ate two handfuls (?) of Nerium oleander. The effects commenced in ten minutes; the child was uneasy and vomited. In six hours a sleepy condition came on; the face was pale, the skin cold, the pupils contracted, and the pulse slow and regular. After the sickness, the boy woke up, but again fell asleep, and this occurred frequently; coffee was given, which appeared to do good. The pulse was intermittent. On the following day, the child was still ill, with an intermittent pulse, frequent vomiting, feebleness, sleeplessness and dilatation of the pupil; there was no diarrhoea. (Blythe on Poisons, p. 435.)

(4) Accidental.—Dr. Dwarka Nath Mukerjee reported a case of Nerium poisoning, which was admitted to and

treated in the Calcutta Medical College Hospital on the 3rd August 1866. The history pointed to the patient's taking about 180 grains of the root of white-flowered Nerium for the cure of chancre and syphilitic eruptions on the skin. The following symptoms were reported to have developed in the case:—

Giddiness, general uneasy sensation, considerable restlessness, vomiting, tetanic convulsions, lockjaw, constant muscular twitchings all over the body, rigidity of the voluntary muscles. The patient stated he never lost consciousness, and that his mind was quite clear throughout. The man made a good recovery in 24 hours under treatment.

(5) Accidental.—In a case of Nerium poisoning reported by Dr. Kamikshya Nath Acharya in 1866, a boy was given powdered bark of the root of Nerium Odorum as a remedy for intermittent fever from which he was suffering. Lockjaw and tetanic convulsions were noticed in this case. The boy recovered under treatment.

(6) Accidental.—Dr. Cleghorn in 1868 reported two fatal cases of Nerium poisoning which occurred at Harriparah in the district of Murshidabad under the following circumstances:—Three persons came to the house of a prostitute who gave them in milk the powdered root and bark of Nerium Odorum as a cure for gonorrhœa. Soon after they became sick, vomited, complained of pain in the abdomen, writhed about on the floor and became *sleepy*. The woman got frightened at the condition of these men and bolted from the house. The bodies of two of the men were afterwards recovered from her house, and Dr. Cleghorn made the *post-mortem* examination on them. The fate of the third person is not known.

In one case he found engorgement of venous sinuses of the brain; abundant puncta sanguinea; vessels on the exterior surface of the heart congested; right ventricle distended with dark fluid blood; congestion of vessels in the stomach at its posterior surface near the greater curvature with well defined patches of congestion near its pyloric and cardiac ends; mucous membrane of intestine throughout of a dark colour with very distinct large veins; a large patch of congestion in the duodenum; spots of congestion scattered in the jejunum and ileum; large patches of congestion in the sigmoid flexure; large vessels of the liver congested; the kidneys were intensely congested.

In the other case, the brain, the lungs, the intestines and the kidneys were reported to be healthy. There were two ounces of serum in the pericardial sac; both the ventricles of the heart were filled with fluid blood; the stomach bore well marked specks of stellate congestion; there were also spots of congestion on the anterior and posterior surfaces of the peritoneal coat of the stomach, covering its cardiac end.

(7) Dr. Murray reported a case of Nerium poisoning in the September number of the *Indian Medical Gazette*, 1877. A native male, aged about 35, took a strained watery decoction of four ounces of the Nerium root. Soon after taking the poison, he was attacked with vomiting and cramps, and in two or three hours he became insensible. The following symptoms were noticed eight hours after the ingestion of the poison:—Insensibility; skin cold and clammy; pulse weak and thready; muscles of the jaws stiff; eyes turned up, whites only visible; hands pretty open, but fingers rigid, thumbs turned inward; frequent convulsive spasms. The end of the case is not known as the friends of the patient removed him from the hospital while he was still in an insensible condition. The motive for the administration of the poison is not mentioned in Lyon's book on *Medical Jurisprudence* from which the above notes have been compiled.

(8) Accidental.—In December 1897, a case of poisoning by Nerium root was successfully treated in the Calcutta Medical College Hospital. I am indebted to

Assistant-Surgeon Satya Saran Chakrabutty, Registrar, Medical College Hospital, for supplying me with the notes of the case.

A man, aged 35 years, by profession a *Palwan* (wrestler), took a quantity of *Nerium* bark for the relief of cough. On admission, he was found unconscious, with small extremely feeble and slow pulse, 30 per minute; respirations quick; occasional convulsions; putting out of the tongue, and inability to speak. Strychnine and ether were injected hypodermically. Pulse was better half an hour after the injection, 92 per minute; respirations 52 per minute. 30 grains of zinc sulphate were introduced through a nasal tube, as the stomach pump could not be introduced by the mouth owing to violent convulsions, after which there was nausea but no actual vomiting. Two hours after admission, the patient was found perspiring, getting spasms all over his body, laboured respirations (44 per minute), pulse irregular and small (about 90 per minute), heart-sounds irregular. About five hours after admission, 14 ozs. of urine were drawn off by a catheter. The urine was free from albumen. There was an irregular rise and fall in the pulse rate ranging between 35 and 60 per minute, and at times becoming intermittent, for several hours. About twelve hours after admission, the patient's condition grew worse, had difficulty of breathing. Extremities cold, unconscious, getting spasms, pulse feeble and slow. Ether was hypodermically injected and hot bottles applied to the extremities. He continued in this condition for nearly six hours after which he recovered gradually, the pulse rose to 80, and the respirations came down to 20. His consciousness returned. He was discharged cured on the 4th day after admission.

(9) *Accidental*.—In November 1898, two cases of *Nerium* poisoning were treated in the Calcutta Police Hospital under Major J. B. Gibbons, I.M.S., and were reported in the April number of the *Indian Medical Gazette*, 1899, by Assistant-Surgeon Kali Mohan Sen who was in charge of the cases.

The cases were admitted into the hospital on the 24th November 1898, at about 10 A.M. The history pointed to each having taken a cupful of a strong decoction of the *Nerium* root at about 7 A.M. for the cure of pain in the loins from which both of them had been suffering.

(A) Mahomedan male, aged about 50. Vomited several times before and after coming to the hospital; vomited matter consisted of yellowish frothy fluid. At the time of admission he was quite conscious and able to speak and swallow; complained of no pain in the stomach; pulse small, soft, slow (about 60 per minute) but regular; respirations normal; eyes congested; pupils unequal, the right one being contracted.

Two hours after admission, drowsiness and twitchings of the muscles of the hands were noticed. An hour after, spasms were noticed, most marked in the upper extremities and face but slight in the legs. There was no lock-jaw but dysphagia was a marked symptom, and the patient was unable to speak, although he appeared to understand when spoken to and frequently smiled vacantly. Respirations were hurried, and the pulse slow and small, about 50 per minute.

Four hours after admission, he began to get tonic convulsions of all the muscles of the body, especially of the upper extremities; no lockjaw. An hour after the whole body was found rigid, and there were lock-jaw, twitchings of the fingers and bending of the neck towards the right; froth coming out from the mouth. The pulse was frequent (about 100 per minute), and the respirations hurried (about 70 per minute).

About 12 hours after admission, the upper extremities were found still rigid, but the lower extremities were flaccid; breathing was hurried and stertorous, and the pulse was frequent and small.

Rigidity of the muscles began to disappear gradually, but the general condition of the patient became worse. The pulse began to fail, the breathing continued stertorous, and the conjunctival reflex was lost. The patient died about 26 hours after the ingestion of the poison.

Post-mortem appearances.—Dr. Gibbons held a post-mortem examination on the body about four hours after death and recorded the following conditions:—

"Rigor mortis well marked; body still warm to the touch. Right pupil a little smaller than the left. Thumbs resting against fingers. *Lungs*, adherent behind and very congested with fluid blood. *Heart*, right side full with blood, left side nearly empty; spots of sub-endocardial haemorrhage on front wall and towards apex on both walls. *Liver*, *spleen*, and *kidneys* congested. *Stomach* contents, about 1½ oz. of greenish-yellow fluid and much mucus, no smell; stomach in folds with tops congested, mucous membrane congested, especially along the lesser curvature. *Small intestine* contents, yellow mucus, slight congestion of upper part of duodenum and a few scattered spots of congestion. *Large intestine* healthy, contained liquid faeces. *Brain* healthy. *Trachea* congested, and frothy liquid in the bronchi.

(B) Mahomedan male, about 28 years of age. The symptoms in this case were similar to those in the first case, excepting that they were apparently of a comparatively mild nature: there were vomiting, slow and feeble pulse, hurried respirations, twitchings of the muscles of the upper extremities, which, however, developed about twelve hours after the ingestion of the poison as against five hours in the first case; unequal dilatation of the pupils; bending of the head towards the right; general tonic convulsions of the whole body, opisthotonus; lockjaw. A movement of the head from side to side was noticed, and there was a slight rise of temperature on the second day of poisoning. Under treatment he began to improve steadily, but remained in a debilitated condition for about three weeks, after which he was discharged from the hospital cured.

The treatment in both the cases consisted in giving emetics and alcoholic and diffusible stimulants, mustard plasters over the heart and hypodermic injections of sulphuric ether.

The viscera of the deceased and the vomited matter of both the persons were sent to the Chemical Examiner, Bengal, for analysis. A *narcotico-irritant* principle was detected both in the viscera and in the vomited matter which produced vomiting, weakness of the heart, general uneasiness and drowsiness in a cat, but not twitchings or convulsions. The poisonous principle could not be identified.

Remarks.—From the study of the above-mentioned cases and from the action of the poison on cats (*vide* Chemical Notes), the *symptoms* and the *post-mortem appearances* one may expect to find in a case of *Nerium* poisoning, may be generalised as follows:—

A. *Symptoms*.—Vomiting; general uneasiness and restlessness; frothy salivation; slow and feeble condition of the pulse; hurried respirations, sometimes stertorous; twitchings of the muscles of the extremities, specially marked in the upper ones and more developed on one side than on the other; rigidity of the voluntary muscles; tetanic spasms of the whole body, sometimes opisthotonus; frequently lockjaw; drowsiness passing into insensibility; collapse. Diarrhoea usually absent.

B. *Post mortem appearances*.—Patches of congestion in the stomach and upper portion of the small intestine; congestion of the liver, lungs and kidneys; engorgement of the general venous system; both sides of the heart full of blood.