

History of Evolution of Anaesthesia in India

S. PRAMANIK

I am grateful to the members of the Indian Society of Anaesthetists for granting me the great honour and privilege to deliver the third Indian Oxygen Oration this year. I also express my gratefulness to Messers Indian Oxygen Ltd. for this oration which will go a long way in the development of the academic aspect of anaesthesiology.

I have chosen the subject of this oration as the "History of evolution of anaesthesia in India". I have put in a great deal of effort to establish the history of our speciality based on documents available from different sources. I hope my efforts will be of some benefit to the members of our Society.

Medicine is part of general culture and its development cannot be understood without a knowledge of the past traditions. Hence it is our purpose to explore what was the practice in the ancient days of Ayurveda and Unani.

HISTORY OF ANCIENT DAYS

India can rightly be proud of continuing with the heritage of one of the most ancient civilizations of the world. It is now well known and

The Indian Oxygen Limited Oration 1979.

Prof. S. Pramanik, M.B.B.S., D.A. (LOND) F.F.A.R.C.S.(ENG).
Past Editor and Professor of Anaesthesiology, Medical
College Hospitals, Calcutta

documented that the art and science of fairly advanced surgery was practised nearly 5000 years B.C. in this subcontinent.

A search of the available literature makes one feel that not much was either known or practised by the surgeons for producing painless surgery in those days.

5000 B. C.

In Rig Veda: There is mention that surgical operations were performed in an era of 5000 years B.C. but there is no mention of prevention of pain during surgery.

500 B. C.

Sushruta—a descendant of Vishwamitra family flourished near about the Buddhist era—some 500 years before the birth of Christ. He is reported to have performed all types of operations including intracranial and plastic operations and had written a notable book on surgery known as Sashruta Samhita. As can be gathered from the available documents the problems of anaesthesia greatly handicapped the ancient surgeons in their operations.

As a matter fact the patient was tied and secured firmly with a rope and deeply narcotised by Indian hemp, opium, wine or some other intoxicants. Wine was mostly the remedy of

choice. (Shiam Nath Consul, Jaipur, *Jour. Ind Med. Assoc.* (1926) 15 437).

We find the following sloka in Sushruta Samhita (Ch. 17, sloka 14):

प्राक् शास्त्र कर्मणश्चेष्टं भोजयेदातुरं भिषक्
मद्यं पाययेन्मद्यं तीक्ष्णं यो वेदनाऽसहः ।

Before operation the feeble patient is to be fed. Those used to drinks should be given strong wine to stand the pain.

नव वैश्विहिता केष्याः क्षान्दान्यस्तेष्वयं विधिः ॥

स्निग्धवान्भिरिषतस्य निवातातपस्यणि ॥ ३ ॥

(आर्षदंष्ट्रं गृहीतस्य केष्यन्त्युत्तमशक्तिः ॥)

दुर्बोपक्रमतेन वातसा सुसर्वाहितः ॥

The patient, after having been given oleation, emesis and purging therapies should be made to lie down supine in a room free from sun and wind and held firmly in position by reliable persons.

(Sushruta Samhita Ch 13, sloka 1 & 2)

FIG. 1

500 B. C.

Jibaka (about 500 B. C.) physician to Lord Buddha is reported to have successfully performed craniotomies and laparotomies. Craniotomy was done with the patient lying down and tied to the bed while for laparotomy he would be standing tied to a pillar.

There is no mention of anaesthesia. Before cutting Jibaka speaks thus: "If I give you pain—you must not attribute this as a crime, but give me permission thus to afflict you; physicians afflict their patients for their benefit, that by this means they may free them from diseases.

527 A. D.

In Bhoj Prabandh—a renown record written by Pandit Bhallala in 527 A.D. an account is given of a cranial operation performed by the two brother surgeons upon Raja Bhoj himself. It says that they used a drug known as 'Sanmohini' which made the king insensible before the operation, which when completed they applied healing balm to the wound and then administered another drug known as 'Sanjibani' which restored the royal patient to consciousness.

Al Razvi was the first person to introduce the use of alcohol for medical purposes. The muslim surgeons applied anaesthetics for unconsciousness in surgical operations; they used to keep the patient unconscious for several days (PROF. H. NAYYAR WASTY, S. K. (1962) in Muslim Contribution to Medicine, Lahore, Pakistan).

However, no mention has been made as to what drugs were used or how it was done.

PAINLESS SURGERY IN INDIA BEFORE ETHER

1843 :

James Esdaile a medical graduate from Edinburgh joined the Bengal Medical Service in 1843.

A keen student of mesmerism he began his experiments of painless surgery under mesmerism at the Imambarah Hospital, Hoogly.

1845 :

The first operation was performed on 4th April, 1845. Published records show that 216 operations were performed thus in a specially sanctioned hospital. The Mesmeric Hospital in Calcutta (PRAMANIK S., *Ind. J. Anaesth.* (1970) 18, 71). A large number of these operations were performed before the first demonstration of ether anaesthesia in October, 1846. A Committee was appointed by the Government of Bengal to "Observe and report on the surgical operations done by Dr. J. Esdaile upon patients under the influence of alleged mesmeric agency."

The report of the Committee was favourable. The committee observed :

- i) in successful cases the patient was truly insensible to pain and the surgery could be performed without subjective and objective evidence of feeling pain,
- ii) however, the method was not either universally practiced nor uniformly successful

REPORT



COMMITTEE APPOINTED BY GOVERNMENT

TO OBSERVE AND REPORT UPON

Surgical Operations

"

DR. J. ESDAILE,

75
58

UPON PATIENTS UNDER THE INFLUENCE

"

ALLEGED MESMERIC AGENCY.

PRINTED AT THE PRESS OF THE GOVERNMENT OF INDIA.

• CALCUTTA

W. ESDAILE, MILITARY SURGEON GENERAL

1845.

FIG. 2

Reports of Esdaile's performance appeared in the local newspaper (*The Englishman*, 22nd September 1845) and this drew patients from far away places like Assam, Bihar and Orissa to come to Calcutta with the hope of being operated under mesmerism.

FIRST ADMINISTRATION OF ETHER IN INDIA

The first administration was on Monday, March 22nd 1847 (*The Englishman*, now known as *The Statesman*) in the Medical College Hospitals Calcutta. The surgeon was Dr. O'Saughnessy, the name of the administrator is not known. The first administration of ether anaesthesia in London was on 19th December 1846 by Dr. Francis Boot (for an extraction of molar tooth from Miss Lonsdale by Mr. Robinson). The *Lancet* which published this news was released on 30th December 1846.

We have been able to find out how long it took for the ship carrying that copy of the *Lancet* to reach shores of India. It appears that this news thus reached India in the 2nd week of March 1847 and the first administration took place in about a week's time.

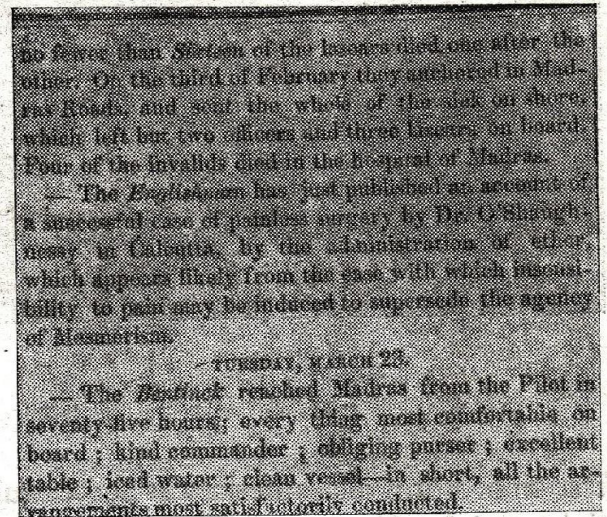


FIG. 3

Information regarding despatch of mail from Southampton to India during the year 1846—1847 : The average number of days to convey a mail from Southampton to Calcutta by overland route is 42 days. Peninsular and Oriental Company steamers leave Southampton on the 20th of the month and proceed to Malta where it is joined by the packet made up in London on the 24th of the month. Malta—Alexandria—Aden — Bombay — Ceylon — Calcutta. (Post Office Records, Postal Headquarters, London).

CONTROVERSY AFTER INTRODUCTION OF ETHER IN INDIA

A controversy arose as to which is more suitable for painless surgery, mesmerism or ether. Prof. O'Saughnessy observed: "now that the surgeons possess a medicine whose power is known, whose action is certain, whose effect long trial has proved to be harmless and by which surgical operations are rendered painless — I look upon mesmerism as no longer of serious consideration by surgeons."

DISCOVERY OF CHLOROFORM ANAESTHESIA IN EDINBURGH AND ITS INTRODUCTION IN INDIA

DR. DAVID WALDIE

It is well-known that Dr. J. Y. Simpson has been credited for introducing chloroform in clinical anaesthesia.

It is not so well-known that David Waldie recommended to Simpson that chloroform should be tried as an anaesthetic in human beings.

It is still less known that Dr. Waldie came to Calcutta in 1853, and spent the last 36 years of life as an analytical and manufacturing chemist and died on 23rd June 1889.

A tablet was erected in his memory in the room of the Asiatic Society of Bengal.

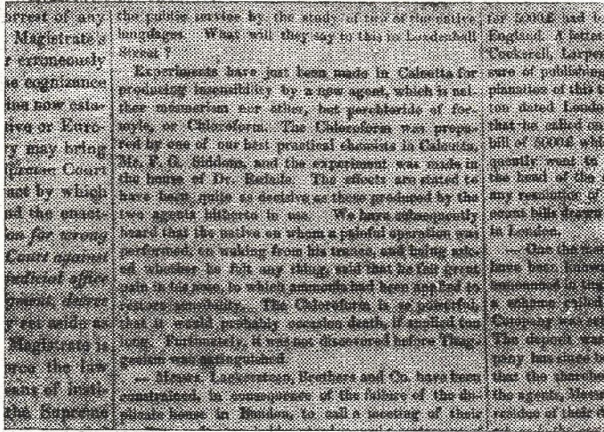


FIG. 4

First chloroform anaesthesia was successfully administered by Simpson on 15th November, 1847 (D. Guthrie, *History of Anaesthesia*). The first chloroform anaesthesia was administered in India on January 12, 1848. The news of this administration was published in *The Englishman* dated January 13, 1848 (quoted in the *Friend of India* dated January 20, 1848). A table showing the dates of first ether and chloroform anaesthesia in different countries of the world as reported in the literature so far, is given here:

In Memory of DAVID WALDIE
 Born in Linlithgow, Scotland, Feb. 27th, 1813. David Waldie was associated with the discovery in 1847 of the Anaesthetic Properties of Chloroform. Arriving in Calcutta in 1853, he became the pioneer of chemical manufacture in India. He was an active member of this society for twenty-five years and served on the Council for ten years. Died in Calcutta, June 23rd, 1889. Erected by D. Waldie and Co. in 1913.

Introduction of anaesthesia in different countries of the world

Country	First administration	Administered by
America (Boston)	Ether : October 16, 1846	Wm. T. G. Morton
Britain (London)	Ether : December 19, 1846	Dr. F. Boott
	Chloroform : November 15, 1847	Dr. J. Y. Simpson
France (Paris)	Ether : January, 1847	Dr. Malgaigne
Germany	Ether : January, 1847	Not known
Denmark (Copenhagen)	Ether : February, 1847	Dr. S. E. Larsen
India (Calcutta)	Ether : March 22, 1847	Not known
	Chloroform : January 12, 1848	Not known
South Africa (Capetown)	Ether : April 20, 1847	Mr. A. Raymond
Australia (Tasmania)	Ether : June 7, 1847	William Russ Pugh

A handsome bronze medallion has been put up on the front of the house where David Waldie lived at 67, High Street, Linlithgow.

The wording on the medallion is as follows :

DAVID WALDIE, L.R.C.S.(ED), Surgeon and Chemist, Member of the Asiatic Society of Bengal.
 Born—Linlithgow 1813.
 Died—Calcutta 1889.
 To him belongs the distinction of having been the first to recommend and thus make-practicable use of chloroform in the alleviation of human suffering.

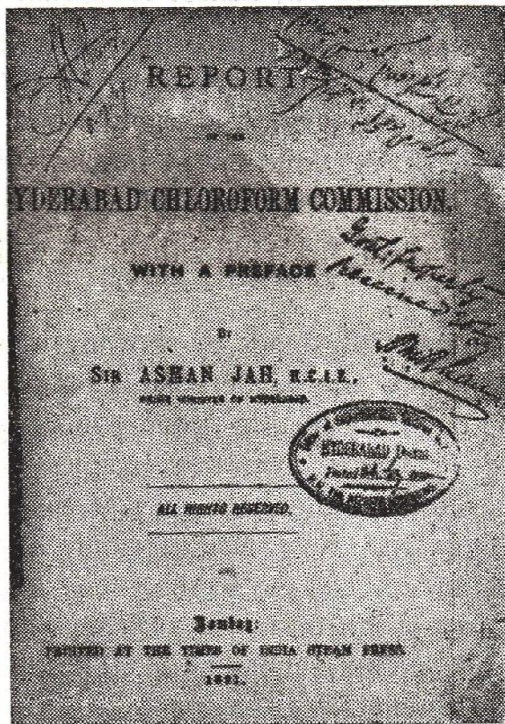


FIG. 5

CHLOROFORM COMMISSIONS

Till 1864 :

First 16 years of chloroform anaesthesia
 Reported deaths: From Chloroform 393
 From Ether 48
 There sprang two schools of thoughts to explain the cause of such fatalities.

Edinburgh School :

Headed by Simpson and then by Syme.
 They claimed: Chloroform paralysed respiration and had no effect on the heart.
 Death occurs from respiratory failure and only respiration should be watched and not pulse.

London School :

Headed by John Snow and then by Joseph Clover.
 They claimed: Chloroform paralysed the heart and that is the primary danger. They advised that a finger should kept be on the pulse throughout the administration. They also advocated precision in administration.

1864 :

Committee appointed by the Royal Chirurgical Society (now the Royal Society of Medicine).
 Following animal experiments the committee concluded that:
 i) concentration of chloroform between 2—4% in air is safe,
 ii) higher concentrations were liable to lead to cardiac syncope.

1875 :

British Medical Association appointed the Glasgow Committee. The report appeared in 1880.
 It concluded: Chloroform was found injurious to heart and in comparison more dangerous than ether.

Thus both these committees supported the London School that chloroform produced fatalities because of its injurious effect on heart.

1888 :

At this stage the First Hyderabad Commission came into picture. Major Edward Lawrie got the sanction from H.E. Nizam to start a fresh commission at Hyderabad. He claimed that by then he had administered about 40,000 anaesthesia without a single fatality.
 This Major Lawrie was a confirmed pupil of Edinburgh School and Prof. Syme in parti-

cular. It was his endeavour to establish his professor's theories on a scientific basis.

Prof. Syme taught: "And this is most important—we are guided as to the effect not by circulation but entirely by respiration; you never see anybody here with his finger on the pulse while chloroform is given." (Syme's Lecture quoted from *The Lancet* (1884, 20th January).

First Hyderabad Commission :

In the First Hyderabad Commission—141 animal experiments were made and the report concluded :

"Chloroform may be given with perfect safety and without any fear of accidental death if only the respiration and nothing but the respiration is carefully attended to throughout."

When the report appeared in print, *The Lancet* was bitter with criticism: It said "Mr. Larwrie as a disciple of Simpson and Syme arrives at conclusions agreeing with the teaching of those great clinicians but utterly at variance

with the experience and practice as carried out in Europe (LEADING ARTICLE, *Lancet* (1890) January 18th.)

Origin of 2nd Hyderabad Commission :

The *Lancet* further wrote: Our hesitation to accept the conclusion, led Dr. Lawrie to propose a second Commission to which the *Lancet* should send a representative and for this the Nizam Government most graciously offered to contribute the sum of £ 1000 with a request to select and depute a reputed scientist to guide the commission. We accordingly selected Dr. Lauder Brunton FRS and on his arrival at Hyderabad on October 22 a second commission at once was formed consisting of Surgeon Lawrie as President, Drs. Lauder Brunton, Bomford and Rustamji as members. (LEADING ARTICLE, *The Lancet* 1890, Jan. 18th.)

In the second Hyderabad Commission experiments were carried out on 430 animals (dogs, monkeys, horses, goats, rats rabbits and cats). Studies were also done on 54 human subjects in the Afjulagunge Hospital.

The report of the Hyderabad Commission was as under :

"The report thus ends by showing how thoroughly the Hyderabad Commission has succeeded in proving that the late Professor Syme's principles of chloroform administration are right. This is the most fitting tribute the Commission can pay to the genius and wisdom of the illustrious surgeon, who, by his teaching and example, elevated and ennobled British surgery.

- | | |
|-------------------|------------------|
| EDWARD LAWRIE | <i>President</i> |
| T. LAUDER BRUNTON | |
| G. BOMFORD | <i>Members</i> |
| RUSTOMJI D. HAKIM | |

Thus it appears that the two Hyderabad Commissions were started and concluded with a bias that Syme's theory was correct and hence the commission did not carry out unbiased scientific observations.



FIG. 6

USE OF CHLOROFORM IN U. S. A. AND IN BRITAIN

In U. S. A.

Chloroform never earned any popularity and ether held its position. In 1890 after 20 years with records of accident from use of chloroform, surgeons all over the world began to discard chloroform for ether (GWATHMEY, 1925).

In Britain 1848 - 68 :

Success of chloroform was so overwhelming that it rapidly superseded ether for the next 20 years (Sykes, 1972).

1889 :

Ether is now largely used in this country as well as in America for producing anaesthesia in surgical operations. (LEADING ARTICLE, *Lancet*, 1889).

1914 :

From 1914 the use of chloroform ostensibly diminished in Britain. Strictures by Coroners after fatalities had influenced the profession against chloroform. (ARMSTRONG DAVIDSON, M.H.—1960, *Brit. J. Anaesth*, 32, 141).

USE OF CHLOROFORM IN INDIA

1848 - 1928 (80 years) :

Chloroform was introduced in India on Jan. 12th 1848. From that day onward, chloroform became the sole anaesthetic displacing ether completely.

Operations on The Bladder and Prostate

Date	Nature of operation	Duration of operation	Quantity of ether used	Temp. of theatre
30—11—1926	Litholapexy	½ hour	4 oz.	76° F.
4—1—1927	Litholapexy	20 minutes	1½ oz.	70° F.
27—1—1927	Litholapexy	1 hour	4 oz.	68° F.
13—4—1927	Litholapexy	45 minutes	8 oz.	96° F.
10—5—1927	Suprapubic cystomy	45 minutes	9 oz.	86° F.
25—5—1927	Prostatectomy	1 hour	10 oz.	100° F.

Average ether used per head : 5.15 oz.

Cost per operation : 15 annas 6 paise

The influence of the British Raj was at its highest during this period. All available literature upto 1928 shows that chloroform was the only anaesthetic used. In fact chloroform became a synonym for anaesthesia and in the Indian Medical Gazette anaesthesia was often described as 'the patient was chloroformed.'

Dr. M. C. Ganguli once observed that the leniency of the Coroners is an important factor determining the continuance of this most dangerous anaesthetic in India. (*Ind. Med. Gaz.* (1933), 68 93).

REASON FOR CHLOROFORM SUPERSEEDING ETHER IN INDIA

Objections were raised on the score of :

- i) expense,
- ii) technical difficulties,
- iii) induction of anaesthesia is impossible.

1928 :

An article appeared in *Ind. Med. Gazette* (1928, 63, p. 512) by Jyothi Prasad, LMP, Anaesthetist and J. Hance, MD, FRCS, Jodhpur Recording of cases (done under open ether anaesthesia) were done both in cold and hot weather for comparison.

Following points were recorded:

- The nature of the operations
- Duration of anaesthesia
- Amount of ether expended
- Temperature of the operating theatre

Conclusions drawn :

1. That the administration of open ether is perfectly practicable, even in hot weather in India.
2. The quantity of ether used was reasonable.
3. The cost per operation did not appear excessive (*Ind. Med. Gazette* (1928), 65, 514).

Thus it appears that only from 1928 the use of ether was again started in this country and that the use of chloroform continued till that time.

SOME NOTABLE OPERATIONS DONE
UNDER CHLOROFORM ANAESTHESIA IN INDIA

1879 :

Cayley (1879) reports of a successful removal of an aneurysm of the femoral artery of the size of a duck's egg. The patient had extensive valvular disease of the heart. The operator took considerable time and in spite of the extensive heart disease anaesthesia and recovery were uneventful. (*Ind. Med. Gaz.* (1879), 15, 71).

1880 :

Osteosarcoma of hard palate projecting in the throat impeding deglutition and respiration. Mac Reddie (1880) states that the method decided upon was MacEwen's procedure. An elastic catheter was introduced into the trachea and chloroform administered. This appears to be the first recorded case of endotracheal anaesthesia in India (*Ind. Med. Gaz.* (1880), 16, 131).

1924 :

Mahatma Gandhi had to be operated for an emergency appendicectomy in Sasoon General Hospital, Poona. at about the midnight of 12th January, 1924. Dr. Date administered the anaesthesia and Dr. Dalal stood by while a British Surgeon Col. Maddock operated on him.

Mahatma was a prisoner at this time and he was removed to the hospital from the Yavada prison.

One interesting feature about this notable operation was that the electric supply failed during the operation, a torch was commissioned which also got fused and the operation had to be completed in the light of a kerosene lamp.

The hospital records show that all operations were done at this time under open drop chloroform anaesthesia. Hence it is presumed that the Father of the Nation was also subjected to open drop chloroform only. (D. G. TENDULKAR, in MAHATMA GANDHI, VOL. 2, Page 76).

Claims of certain first reports which appeared in Indian medical Journals and have so far not been given due credit in the history of anaesthesia.

DELAYED CHLOROFORM POISONING

1869 :

J. Frayer reports of a case of compound fracture of leg in a man of 27. Setting of fracture with other treatment was done under chloroform anaesthesia. The patient was well but started vomiting 24 hours later and on the third day developed jaundice and coma. On the 4th post-op. day he developed anuria and died.

Post-mortem: "This is clearly one of those cases in whom the nervous system is seriously injured and those portions of it which govern the hepatic function seem to suffer most of all" (*Ind. Med. Gaz.* (1869), 4, 260).

In the literature Guthrie has been given credit of reporting for the first time on a series of cases in 1894 and 1902 (*Lancet*). Frayer's report which appeared in the *Ind. Med. Gazette*, 25 years earlier has so far been ignored.

PRE-ANAESTHETIC MEDICATION

1880 :

Alexander Crombie of the Presidency General Hospital, Calcutta in a letter to the Editor of the Indian Medical Gazette stated that he was using morphine hypodermically before chloroform anaesthesia for some time and feels convinced that this method made the subsequent anaesthesia smoother and reduced the dose of chloroform needed for a particular operation.

This is the first documented use of pre-anaesthetic medication. (*Ind. Med. Gazette* 1888, 23, 34).

In two American books on anaesthesia viz. Anaesthesia: by James T. Gwathmey, Triumph over pain: by Rene Fueleoep Miller.

Alexander Crombie of Calcutta has been credited for advocating the combination of use of morphine and chloroform for smooth anaesthesia.

The text books from United Kingdom seems to have ignored this claim.

USE OF LOCAL ANAESTHETICS IN INDIA

1894 :

First report of cocaine anaesthesia in India appeared in 1894. The first report was however for removal of a tumour on the face where 4% cocaine was injected at the base of the tumour before operation.

SPINAL AND EPIDURAL ANALGESIA IN INDIA

1908 :

The first report appeared in 1908. Capt. A. Chalmers of Trichinopoly reports of a series of cases done with hyperbaric Stovaine. The results were satisfactory. He observes: one patient had chloroform before. She said she liked this method. (*Ind. Med. Gaz.* (1908), 43 417).

1910 :

First reported death from spinal analgesia : Dr. W. Gabbett, Madras reports that distilled water 3 c.c. containing strychnine 1 mg. and novocaine 1 g was administered at the level of T₁₁ & T₁₂. Patient had difficulty in breathing and died. (*Ind. Med. Gaz.* (1910), 44, 54).

1915 :

Spinal analgesia in children : by J. Rutter Williamson. "Our own experience has been extremely gratifying—although text books caution surgeons against using it in very young. Formerly I obtained the solution (Barker's

Stovaine) from London but lately the Director of King's Institute, Saidapet, Madras, prepared them from me and they have acted very much more promptly than those obtained from London." (*Ind. Med. Gaz.* 1915, 50, 156).

1933 :

Stovaine : discarded from anaesthetic practice "It is scarcely to be wondered at that it never came into universal use and that it is now practically obsolete and relegated to realm of historian." J.C. DRUMMOND, (*Ind. Med. Gaz.* (1933), 68, 699).

1933 :

Spinocaine and Percaine: I used Spinocaine in herniographies where small dose suffices and prolonged action are not needed. I have given it up in favour of Percaine in recent times. (J.C. DRUMMOND, *Ind. Med. Gaz.* (1933), 68, 699).

CAUDAL AND LUMBAR EXTRADURAL ANALGESIA

1924 :

G. R. Kokatnur, Belgaum: I have used this method (1% novocaine 40 to 60 cc.) so far from 1924 in over 400 cases and have done all types of operations in the perinium with no risk whatsoever. (*J. Ind. Med. Assoc.* (1946), 15, 342).

1935 :

Dr. Hari Rao, MBBS, FRCS, DLO, Vizagapatam: Published a series showing anaesthetic drugs and techniques used during the period 1935-1939. In this series there were 970 cases of caudal extradural analgesia and 6 patients were given lumbar epidural analgesia. (*J. Ind. Med. Assoc.* (1941), 10, 448).

EARLY WHOLE TIME ANAESTHESIOLOGISTS IN INDIA

A news item appeared in the Indian Medical Gazette (1914, Vol. 49, p. 192).

The well known Mayo Hospital and Sambhunnath Hospital, Calcutta have advertised for the post of Hony Surgeon, Hony Physician,

2 O.P.D. Medical Officers and one paid Anaesthetist and one paid Pathologist. Similar appointments are being made in Sasoon Hospital, Pune.

We tried to search the old records of the Mayo Hospital and the Sambhunath Hospital, Calcutta. Fortunately, the old records maintained at the Sambhunath Hospital revealed that:

Dr. Jyotindra Nath Mukherjee, LMS was appointed as the Anaesthetist of the Hospital on 1st September 1914 on a salary of Rs. 50.00 per month.

EARLY USE OF BOYLE APPARATUS IN INDIA

The earliest document that we could recover in this context is about a Boyle apparatus—the order for which was placed in June 1934 and the apparatus arrived in Calcutta on 22nd January 1935.

The description of the apparatus on the bill of Messrs Down Bros Limited shows that the same was supplied with fine adjustment valves (the pressure reducing valves were not introduced till then) and the water-sight-feed bottle for ether. A two way stop cock for re-breathing/non-re-breathing and Shipway's Carbon dioxide absorption apparatus.

The cost of the apparatus along with 2 filled 100 gallon N₂O cylinders and two 30 gallon filled O₂ cylinders and inclusive of custom's duty and delivery charges was Rs. 645.00.

HISTORY OF THE INDIAN SOCIETY OF ANAESTHETISTS

The idea to form an All India Society of the Anaesthetists originated during the centenary celebration of ether anaesthesia held in Bombay in October 1946. Dr. S. K. Bakshi, Dr. B. N. Sircar, Dr. Satyendra Singh, Dr. Mukteswar Prasad, Dr. G. S. Talwalkar and Dr. M. N. Desai formed a negotiating committee at Bombay. Dr. F. Saher wrote letters to leading anaesthetists of the country and solicited their opinion for the formation of a Society of Anaesthetists in India. Unfortunately, Dr. Saher

expired soon after, following an emergent operation in the early part of 1947. Dr. B. N. Sircar took over the work and tried to establish the Society. After this pioneering effort—the Indian Society of Anaesthetists was founded in 1947.

The first All India Annual Conference was held on 23rd and 24th of December, 1949 at the Seth G.S. Medical College, Bombay. Dr. M. N. Desai (Bombay) was the Chairman of the Reception Committee and Dr. J. R. Jagose (Bombay) presided over the conference. The following delegates were present in the first All India Conference :

1. Dr. Hari Rao (Vishakapatam),
2. Dr. G.S. Talwalkar (Treasurer, Bombay)
3. Dr. B.N. Sircar (Secretary, Bombay)
4. Dr. J. R. Jagose (Bombay)
5. Dr. M. N. Desai (Bombay)
6. Dr. G. M. Lewis (Vellore)
7. Dr. G. S. Ambardekar (Bombay)
8. Dr. V. Bhargav (Bombay)
9. Dr. Satyendra Singh (Delhi)
10. Dr. Mukteswar Prasad (Patna)
11. Dr. P. D. Dhameja (Delhi)
12. Dr. K. M. Bakshi (Bombay)
13. Dr. I. Iqbal (Bombay)
14. Dr. W. P. Thatte (Bombay)
15. Dr. A. T. Gokhale (Pune)
16. Dr. B. M. Joshi (Ahmedabad)
17. Dr. R. B. Bedkar (Bombay)
18. Dr. R. P. Parulkar (Bombay)
19. Dr. V. V. Jadhav (Bombay)
20. Dr. Awalegaonkar (Bombay).

OFFICIAL JOURNAL OF THE SOCIETY

The Indian Journal of Anaesthesia, the official journal of the Society was first published in July 1953 and was published once yearly till 1957. The journal became a bi-annual publication from 1958 and from 1959 it is being published quarterly.

The Editors of the journal since its first publication are as under :

1. Dr. M. C. Ganguli (Calcutta)—1953-1957.
2. Dr. S. K. Bakshi (Amritsar)—1958
3. Dr. G. S. Talwalkar (Bombay)—1959.

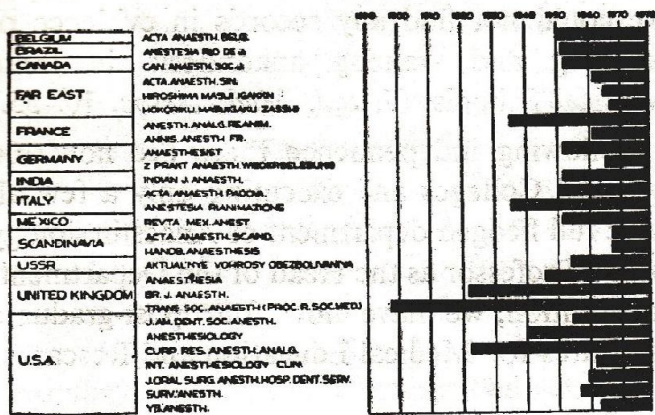


FIG. 1

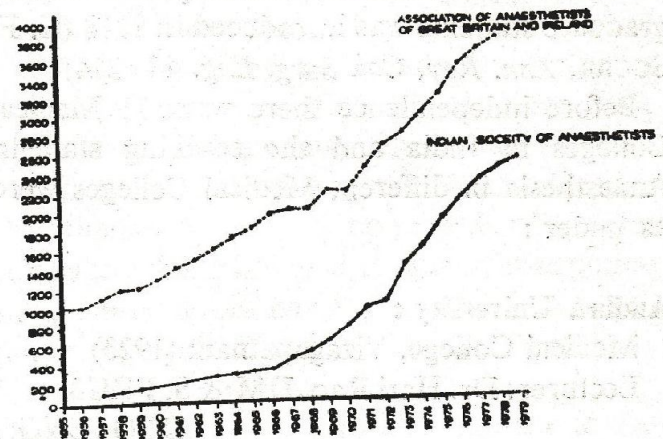


FIG. 2

4. Dr. Lt. Col. G.S. Tandon (Delhi)—1960-'63
5. Dr. Pritam Singh (Amritsar)—1964-'69
6. Dr. S. Pramanik (Calcutta)—1970-'79

A comparative graph is given here, in Fig. II, showing the growth of the membership of the Association of Anaesthetists of Great Britain and Ireland and of the Indian Society of Anaesthetists.

In 1956 the Indian Society of Anaesthetists joined as a founder member of the World Federation of the Societies of Anaesthesiologists and has hosted the Vth Asian Australasian Regional Congress at Delhi in September 1978.

TEACHING AND TRAINING IN CLINICAL ANAESTHESIA IN INDIA

The Society has been holding the Annual Conferences regularly at the end of each year from 1949 and till 1964 along with the Association of Surgeons in India. Since 1965 the Annual Conferences of the Society are being held independently and the first such conference was held at Hyderabad.

1890 :

The Society has state branches in the following States : Assam, Gujarat, Karnataka, Kerala, Madhya Pradesh, Orissa, Tamil Nadu, Uttar Pradesh and West Bengal.

In Hyderabad Medical School a methodical system of note taking was instituted for all cases given chloroform anaesthesia. Two students were deputed to the work—one administering the anaesthesia and the other taking detailed notes till the patient was ready to be sent to the ward. Thus each year a number of thoroughly trained Chloroformists were dispersed throughout the country. (HEIR, P. (1893), *Ind. Med. Gaz.* 27 80).

1906 :

The city branches have been formed in the following cities : Bangalore, Allahabad, Ahmedabad, Chandigarh, Delhi, Guntur, Gorakhpur, Gwalior, Hubli, Hyderabad, Kanpur, Lucknow, Madras, Madurai, Meerut, Nagpur, Patna, Pondicherry, Trivandrum, Vishakhapatnam and Varanasi.

The earliest document showing the inclusion of lectures on anaesthesia for the students of MBBS course in India could be traced in the "Rules of the Medical Faculty of the Calcutta University, 1906."

The membership of the Society has grown from less than 100 in 1955 to over 2500 in 1979.

In the syllabus for surgery—mention has been made that there will be instructions on the administration of anaesthetics. Incidentally

in Britain, anaesthesia teaching for undergraduate students was introduced in 1918 (C. F. SCURR, *Ann. Roy. Col. Surg. Eng.* 48 274).

Before independence there were 11 Medical Colleges in India and the teaching staff in Anaesthesia in different Medical Colleges were as under :

Andhra University :

Medical College, Vizagapatnam (1923)
Lecturer: Dr. Hari Rao, DM & S, FRCS,
DLO (ENG.)

Bombay University :

Grant Medical College (1845).
Lecturer: S. G. Talwalkar, DA (ENG.)
Seth G. S. Medical College (1925).
Hony. Lecturer: Dr. M. N. Desai,
MBBS (BOM), DA (ENG.)

Calcutta University :

Medical College of Bengal (1835).
Lecturer: Dr. M. C. Ganguly, MB DA(ENG.)
Carmichael Medical College.
Dr. H. G. Barat, MBDA (ENG.), FRCS.

Lucknow University :

KG's Medical College (1911).
Lecturer: Dr. R. Pramanik, B.Sc., MBBS,
DA (ENG.)

Madras University :

Madras Medical College (1835).
Lecturer: Dr. P. V. Francis, BA., MBBS.
Stanley Medical College (1938).
Hony. Lecturer: Dr. T. Gopalakrishna
Baganath, LRFPS.

Patna University :

Prince of Wales Medical College (1925).
No teacher in Anaesthesia.

Lahore University :

Lady Hardinge Medical College, New Delhi.
Lecturer: Dr. E. Soundravalli, MBBS.
King Edward Medical College, Lahore.
No teaching Staff of Anaesthesia.

There were 27 Medical Schools in India, but we could not find any records in evidence of teaching and training anaesthesia in these Medical Schools, (*J. Ind. Med. Assoc.* 10, 55.)

Following independence there are now 106 Medical Colleges and excepting only a few all have full fledged department of Anaesthesiology with a Professor as the Head of the Department. In addition, we have now four post-graduate Institutes for Medical Education and Research.

CURRENT STATUS OF UNDERGRADUATE TEACHING
AND TRAINING IN ANAESTHESIOLOGY

Between 8 to 15 didactic lectures for the under-graduate students have been fixed in the schedule of the medical curriculum. As regards training in clinical anaesthesia. Medical Council of India has recommended participation in pre-operative and post-operative care and exposure to practical use of anaesthetic techniques during the internship period. (Recommendations on Undergraduate Medical Education, as modified upto April 1978).

POST-GRADUATE TEACHING AND TRAINING
IN ANAESTHESIOLOGY

Diploma in Anaesthesia - 1946 :

The Diploma in Anaesthesia Course was first started in India by the Bombay University in 1946. Subsequently, the D.A. course was started by the College of Physician and Surgeons of Bombay in 1948 (*Jour. Ind. Med. Assoc.* 16 244).

At present Diploma in Anaesthesia course is taught in 45 universities of different States of India.

MD / MS - 1955 :

The MD/MS course in Anaesthesia: The first MS course in Anaesthesia was started by the Bihar University, Muzaffarpur in 1955. Currently 43 Universities and 3 Post-graduate Institutes have arrangements for MD/MS in Anaesthesia.

Ph.D. in Anaesthesia - 1958 :

The first anaesthesiologist to acquire Ph.D. in Anaesthesia is Dr. J. R. Mitra of Calcutta. He prepared his thesis under Prof. H. G. Barat and the thesis was examined by Prof. Sir R. R. Macintosh and Dr. B. N. Sircar of Bombay.

Post-graduate qualifications in Anaesthesia acquired by Indian Anaesthetists from abroad.

Dip. in Anaesthesia (Eng.)—The first Indian to get D.A. (Eng.) was Dr. G. S. Talwalkar of Bombay. F.F.A.R.C.S. (Eng.) The very first examination was held in 1953 and 3 Indian Anaesthetists Dr. B. L. Bhattacharya, Dr. Y.G. Bhojraj and Dr. S. Pramanik acquired the qualification by examination.

EVOLUTION OF ANAESTHESIA IN THE ARMED FORCES IN INDIA

1940 :

In 1940 Anaesthesia in the Armed Forces happened to be empirical and unscientific. It was left to novices like junior medical officers.

1941 -'42 :

Anaesthesia took on a new look in 1941 -'42 with the arrival in the country of a number of leading anaesthetists from Great Britain for service in the Armed Forces and with them the necessary equipments. In this the names of Dr. H. K. Asheworth, Dr. T. A. B. Harris, Dr. U. F. Hall and Dr. W. S. McConnel are worth mentioning.

1946 -'47 :

By 1946 -'47 the present generation of army Anaesthetists in India had taken over all the various aspects of anaesthesia for general and specialised surgery like neuro-surgery thoracic and faciomaxillary surgery.

**Specialist Anaesthetists in the
Armed Forces :**

By 1941 a large number of young medical officers undertook specialisation of this much neglected branch of medicine. The seeds of specialisation thus sown now bloomed and flourished.

Specialist training in Anaesthesia :

During the war years after an initial period of 28 days' training in anaesthesia, under a selected instructor suitable officers were given independent assignments, where they learned their work in the hard way and became Graded Anaesthetists. After varying periods of time of such successful training they were for a period under observation by a senior member and granted recognised status with an acting rank of Major.

Subsequently the training in anaesthesia has been extended to one of intensive training in all aspects of anaesthesia initially in the Armed Forces Medical College and later on in a selected Command Hospital. The syllabus is exhaustive and would readily fit the trainee to take with confidence any higher examination in the speciality in India or abroad.

After 5 years of successful tenure and post-graduate qualification they become eligible to become Classified Specialist with the prospect of becoming a senior specialist in the Armed Forces (RAMA RAO AND KHANDEKAR (1960), *Ind. J. Anaesth.* 8 99).

CONTRIBUTION OF THE INDUSTRY IN THE DEVELOPMENT OF ANAESTHESIA IN INDIA

In this the role of Indian Oxyacetylene Company (now Indian Oxygen Limited) has been of prime and considerable importance.

ANAESTHETIC APPARATUS, GASES AND ACCESSORIES

Till 1935 :

Both Oxygen and nitrous oxide cylinders had to be refilled from the United Kingdom. The procedure was expensive and time consuming.

1935 :

First oxygen plants in India were installed in Calcutta and Bombay.

1945 :

The N₂O plant was commissioned in Calcutta, Other centres were opened subsequently as under :

1962 — Bombay

1966 — Madras

At present (1979) distribution of refilling centres in the country are as under :

	Asansol	(1943)
	Calcutta	(1935)
Eastern region:	Gauhati	(1961)
	Jamshedpur	(1943)
	Bangalore	(1945)
Southern region:	Hyderabad	(1964)
	Madras	(1946)
	Vishakapatnam	(1951)
Western region:	Ahmedabad	(1956)
	Bombay	(1935)
Northern region:	Kanpur	(1949)
	Delhi	(1951)

Figures within brackets indicate the year of starting

PIPE LINE SUPPLY OF GASES

1954 :

Installed for the first time in India in the Christian Medical College, Vellore.

1979 :

Today there are over 150 institutions all over the country having facilities of pipe line system.

MANUFACTURE OF THE ANAESTHETIC APPARATUS IN INDIA

1950 :

In 1950s manufacture of Boyle's apparatus was started in India. At the outset majority of the components were imported.

1956 :

Boyle's apparatus are being made almost entirely from indigenous components (only face masks and cylinders of oxygen, nitrous oxide, carbon dioxide and cyclopropane are imported from abroad.

1965 :

During Pakistan aggression in 1965, Indian Oxygen Ltd. designed and developed a special

anaesthetic apparatus for the Armed Forces Medical Services for use in normally inaccessible areas.

CONTRIBUTION OF THE INDUSTRY IN THE DEVELOPMENT OF THE ACADEMIC ASPECT OF ANAESTHESIOLOGY IN INDIA

1976 :

Indian Oxygen Ltd. financially assisted A.I.I. M.S., New Delhi, in developing the Air-Trilene vaporizers, thereby encouraging national talent to devise an anaesthesia equipment to suit the varied conditions in the country.

1976 :

Indian Oxygen Ltd. instituted the annual IOL Oration to be delivered by a person selected by the Indian Society of Anaesthetists. The first IOL Oration was delivered by Dr. A. J. Dhruva (Bombay) at the annual conference held at Pune.

1977 :

To assist the anaesthesia profession, a Reference Library in Calcutta for books and journals on Anaesthesia has been set up at the Oxygen House.

1975 :

Indian Oxygen Ltd. presented silver medals to the past Presidents of the Indian Society of Anaesthetists on the occasion of the Silver Jubilee Conference of the Society held at Madras.

Acknowledgements

I wish to express my sincere indebtedness to the following for helping me in collecting and preparing the material for the oration :

1. Mr. P. C. Bagga, Record Officer, Post Office Record, British Postal Head Quarters, London.
2. Dr. A. Banik, MBBS, DA (Eng.), Senior Anaesthetist, Medical College, Hospitals Calcutta.

3. Dr. D. Dasgupta, MBBS, MD, Professor of Anaesthesia, Seth G. S. Medical College, Bombay.
4. Mr. K. P. Dev, Medical Division, Indian Oxygen Limited, Calcutta.
5. Jb. A. H. Khan, Librarian, Institute of History of Medicine and Medical Research, New Delhi.
6. Dr. N. K. Misra, MB, DA (Eng.), Hony. Secretary, Indian Society of Anaesthetists, Patna.
7. Sri J. A. Mulliyil, Medical Division, Indian Oxygen Ltd., Calcutta.
8. Miss Ann Muir, Secretary, Association of Anaesthetists of Great Britain and Ireland.
9. Sri H. N. Narayana Rao, Medical Division, Indian Oxygen Ltd., Calcutta.
10. Dr. Kapildeo Prasad, MBBS, MD., Treasurer, Indian Society of Anaesthetists, Patna.
11. Dr. (Smt.) Sandhya Saha, MBBS, MD, Department of Anaesthesia, Medical College, Calcutta.
12. Sri Ranajit Sen, Directorate of Archaeology, West Bengal.
13. To the Professors and Heads of the Department of Anaesthesiology of different Medical Colleges of India.

Lastly but probably most importantly I am deeply indebted to my wife, Smt. Kannika Pramanik, for her forbearance and patience without which this task would have been well nigh impossible.

BOOK REVIEW . . .

Topics in Anaesthesia and Intensive Care by J. Andrew Thornton and Cyril J. Levy. Published by Henry Kimpton Publishers, London. Price: £ 4.60, p. 152.

Publishers state that this book is for undergraduates. However the reviewer found it very useful book for surgical residents and perhaps surgeons and physicians. With ever expanding knowledge and widening of the scope of Anaesthesiology as a multi-faceted speciality with positive contribution to therapy, it is becoming increasingly difficult for those in other than specialities to keep pace with the advancements in this science. The authors have tried to incorporate the bird's eye view of the all important aspects of the speciality without going into details. Some chapters like 'Coping with concurrent drug therapy', 'Some conditions requiring special management', 'Post operative Hypoxaemia', 'Water and Electrolytes Balance', 'Acid Base Disturbance', 'Problem of Chronic Pain' are very useful. Emphasis has been given to the physiological principles. At the end, a list of facts and figures giving normal values, electrolyte and energy value of I.V. fluids are quite useful. It is an extremely readable book with excellent get up. It also gives some very useful graphs, tables and charts like 'Pathophysiology of Crush Injury', 'Gate control theory of Pain' etc. It will become popular with both anaesthesia and surgical residents.

— A. J. DHRUVA.

