John Snow will always be remembered and honoured for his enormous contribution to anaesthesia, but perhaps his most important contribution to medicine was his suggestion that cholera was transmitted by drinking water contaminated with sewage from patients suffering from the disease. This theory was confirmed when, in 1854, he persuaded the local authorities in Westminster to remove the handle of the Broad Street pump, as a result of which the virulence of the outbreak abated. This crucial epidemiological discovery solved a problem which had beset medical men in Britain for nearly a quarter of a century.

Cholera first appeared in Britain in 1831 as part of a pandemic which swept across Europe causing many thousands of deaths. The total ignorance of the medical profession of the nature of the disease, its treatment or mode of transmission is revealed in the numerous papers on the subject in the medical journals of the times. One or two are noteworthy, however, and among them was the first recorded use of intravenous saline by a young general practitioner from Leith, near Edinburgh—Dr Thomas Aitchison Latta.

Before the disease struck Edinburgh, preparatory arrangements were put in hand and a pungent account of them was published by Robert Christison (Christison, 1832), Professor of Medical Jurisprudence at Edinburgh University, who castigated government ignorance and inactivity: "members of a government so studiously inexperienced as ours in all matters relative to Medical Police ought not to feel surprised if . . ." (the Medical Police were the proposed forerunners of a public health service). The importance of such things as poor housing, poverty, hunger and dirt was recognized and attempts were made to deal with them. Under the supervision of the police, the closes, passages and dwelling-houses in the poorer areas were cleaned and limewashed. "Nuisances" were a particular problem—open sewers, a large tan-yard full of rotting horseflesh and "the keeping of pigs in dwelling-houses by the lower Irish—a vile practice which had gradually reached an excessive height in consequence of its being conceived that the Police Act and the Common Law did not entitle the authorities to put a stop to it". The magistrates were exhorted "not to weigh too nicely the amount of their powers but to accomplish as speedy a separation as possible between the Irishmen and their pigs".

Quarantine measures were difficult to enforce in the absence of statutory powers but buildings were equipped as hospitals and prepared to deal with patients. Medical manpower was mobilized and doctors were invited to submit reports on treatment to the Board of Health in London, a body which had been set up by the Privy Council. Among these reports was Latta's letter on "The treatment of cholera by the copious injection of aqueous and saline fluids into the veins" (Latta, 1831–32a).

Just prior to the publication of this report, three communications had appeared in the Lancet from a Dr W. B. O'Shaughnessy in London. In the first of these, O'Shaughnessy (1831–32a) discussed the problem of the "blue cholera". He thought that the skin became blue because of "stagnation of the venous system and rapid cessation of arterialisation of the blood". For the treatment of this, most people recommended venesection and some prescribed "oxygen gas" or a mixture of oxygen and atmospheric air or "the protoxide of azote, that singular compound to which the name of the 'laughing gas' has been applied". He noted that "detraction of blood by venesection is frequently impossible" and "conceived the idea of injecting into the veins such substances . . . most capable of restoring it to the arterial qualities". (He recommended potassium nitrate and potassium chlorate. The theory was that blood would be oxygenated by the decomposition of nitrous oxide or by oxidizing agents such as nitrates or chlorates.) He described a technique in some detail.

BRITISH JOURNAL OF ANAESTHESIA

When the current of the circulation is impeded, as in the blue choleram injections from the bend of the elbow can scarcely be efficient. I would therefore suggest that the tube, which should be of gold or ivory, be introduced into the external jugular vein immediately as it crosses the sternomastoid muscle.

The syringe . . . should contain no more than 3 ozs, the solvent should be distilled water heated to a blood warmth, and the syringe also equally warmed. The tube should not be more than an inch long and curved gently for the convenience of manipulation and it should have a marked conical form. After the vein is exposed, I would make a puncture with a lancet just sufficient to permit the introduction of the tube. Injection should be deliberately and slowly performed.

Although he had experimented with a dog, surprisingly he had not tried the technique in man. A few weeks later, he reported on "Experiments on the Blood in Cholera" (O'Shaughnessy, 1831-32b). He found that the blood was "unchanged in anatomical or globular structures" but that it had lost a large proportion of its water and of its saline ingredients and he now recommended, not the potassium salts, but the "normal salts of the blood".

Less than eight weeks later, in a letter dated May 23, 1832, Latta (1831-32a) reported the first clinical application of O'Shaughnessy's suggestions. He did not seek publicity for his work nor did he claim originality. His letter was written to the Central Board of Health in London and forwarded by them to the Lancet. He acknowledged the work of O'Shaughnessy: "I beg leave to premise that the plan . . . was suggested to me on reading in the Lancet the review of Dr O'Shaughnessy's report on the chemical pathology of malignant cholera."

Latta proceeded to give a lengthy and graphic description of his first case—an "aged female". All else having failed, he "resolved to throw the fluid immediately into the circulation. In this, having no precedent to direct me, I proceeded with much caution".

She had apparently reached the last moments of her earthly existence, and now nothing could injure her—indeed so entirely was she reduced that I feared I should be unable to get my apparatus ready ere she expired. Having inserted a tube into the basilic vein, cautiously—anxiously, I watched the effect; ounce after ounce was injected, but no visible change was produced. Still persevering I thought she began to breathe less laboriously; soon the sharpened features and sunken eye and fallen jaw, pale and cold, bearing the manifest impress of death's signet, began to glow with renewed animation; the pulse which had long ceased returned to the wrist, at first small and quick, by degrees it became more and more distinct, fuller, slower and firmer, and in the short space of half an hour when six pints had been injected she expressed in a firm voice that she was free from all uneasiness . . . her features bore the aspect of comfort and health. This being my first case, I fancied my patient secure and from my great need of a little repose left her in charge of the hospital surgeon.

Unfortunately, not long after Latta left, the vomiting and diarrhoea returned and the woman died a few hours later without Latta having been informed of her deterioration.

The solution Latta used was about half normal concentration of muriate of soda (NaCl) and sub-carbonate of soda (NaHCO₃), though in later cases the concentration of both salts was increased by about a third. (Many years later, Snow used a weak saline solution intravenously to treat cholera.) The solution was strained through "shammoy leather", and the temperature noted through the thermometer was "a clumsy instrument". He observed that if the temperature of the solution dropped to 100°F, the patient felt cold and had rigors. If it was as high as 115°F, the heart was "excited" and the countenance flushed. He recognized the need for repeated injections. One patient had 330 oz. in three injections within a period of 12 hours and two days later the patient was able to "smoke her pipe free from distemper".

The apparatus he used was a "Read's patent syringe" (an enema syringe!) (figs. 1 and 2) . . . having a small silver tube attached to the extremity of the flexible injecting tube. The syringe must be quite perfect, so as to avoid the risk of injecting air; the saline fluid should never be injected oftener than once into the same orifice and the vein should be treated with much delicacy to avoid phlebitis.

In the next few months, Latta reported a number of further cases and described successes and failures in detail (Latta, 1831-32b, 1832-33a, b). The latter he attributed to giving too little too late or to the presence of concomitant disease. In the fashion of the times, others tried to claim priority. William Jones (Jones, 1832-33) used it on a patient with tuberculosis and diarrhoea; "I determined, as the only shadow of chance, to try the effect of transfusion, an idea which I had for many years entertained". T. J. Murphy of Liverpool (Murphy, 1831-32) said he had had the idea "so long ago as May 15. . . . Of course previous to its publication in any journal". Murphy's attempts to claim priority were particularly ludicrous:
I determined on the use of some more efficacious plan. My first idea was to return into the system the alvine dejections, by injecting them into the venous system, an idea which arose from a quantity having been preserved for my inspection. It was clear, colourless, free from odour and in every respect resembled the serum of the blood. But as dejections are seldom preserved, it occurred to me to make an artificial serum.

In Edinburgh too, Latta had his critics. A Dr Craigie of Leith wrote a rather critical article to the Edinburgh Courant. An anonymous letter in the Edinburgh Observer supported Latta who complained to the Lancet. The anonymous letter was written by Mr John Mitchell, a ship-broker and a friend of Latta, who when he met Craigie in the street was alleged to have assaulted him with a child’s whip. Both were bound over to keep the peace.

Among Latta’s supporters were Thomas Wakley, the most famous of the Lancet’s editors, and Dr Lewins. Lewins was a colleague and it was he who encouraged Latta to report his experiences to the Central Board of Health. With some prescience, he described venous injections as “a method of medical treatment which will, I predict, lead to important changes and improvements in the practice of medicine; and will entitle Dr Latta’s name to be placed amongst the numbers of those alas! how few who have really contributed to the improvement of the healing art” (Lewins, 1831–32). It may be some indication of the pressures the cholera epidemic imposed on doctors when one notes on Lewins’ letters to the Lancet “1 o’clock a.m.” and “2 o’clock a.m.”.

**DOMESTIC COMFORTS.**

**READ’S PATENT INSTRUMENTS** for removing Poisons from the Stomach, alleviating Conatusness, and other complaints of the Stomach and Bowels, were first patented by the late Mr. Ashley Cooper, Sir H. Halford, Mr. Berebynty, and the most eminent Members of the Profession, and sanctioned by the Royal College of Surgeons. This distinguished Patronage induced many UNPRINCIPLED ADVENTURERS to palm upon the Public spurious imitations as improvements on, and superior to, Read’s Patent Instrument! R. B. has (to oblige his Agents and Friends) required all kinds of Instruments sent him for that purpose, and, by so doing, has discovered more than Twenty of different Manufactures, many of which were sold as “Read’s PATENT.” although the Public have repeatedly been cautioned against purchasing Machines that have not the Royal Arms and the Patentee’s Name stamped on them. That the Public may no longer be imposed upon, R. B. will forward a single Instrument to any part of the Kingdom on receipt of a Post Office order.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Price (£ s. d.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stomach Pump</td>
<td>2 s. 10 d.</td>
</tr>
<tr>
<td>Enema Syringe</td>
<td>1 s. 6 d.</td>
</tr>
<tr>
<td>Improved Enema Fountain</td>
<td>2 s. 0 d.</td>
</tr>
<tr>
<td>Ditto, with Reservoir and Metallic Tube</td>
<td>3 s. 10 d.</td>
</tr>
<tr>
<td>Breast Pump</td>
<td>1 s. 0 d.</td>
</tr>
</tbody>
</table>

Manufactured only at 39, Regent Circus, London, W.

---

**FIG. 1**

John Read was a gardener who invented a two-way syringe with ball valves. In 1820, he took out a patent for a surgical syringe for removing poison from the stomach and administering enemata. It was also used for drawing milk from a breast, removing air from cupping glasses and for dealing with blown cattle.

**FIG. 2**

Read’s syringe in use as a breast pump (Monthly Gazette of Health).

(Left) John Read’s two-way syringe.

(Below) Read’s syringe in use for administering an enema (left) and an enema of tobacco smoke (right).
Extensive search of the records in Register House, Edinburgh, has failed to show any evidence of the date of birth or of death of Latta or of any of his predecessors. It was, of course, not compulsory to record these vital statistics until the middle of the nineteenth century. It seems likely that the reason for the difficulties which have been encountered lies in the fact that Latta's father was an elder in the Associate Congregation in Leith. This was a dissenting body (United Presbyterian) and it may have been because of this that Latta senior did not register the births and deaths of the members of his family with the session clerk of the local parish church.

It has been possible to establish that Thomas was the fourth son of Alexander Latta of Jessfield, a property near Leith. It seems likely that he was born in the late 1790's and that he was orphaned when his father died in 1807. His father was presumably a widower since his will mentions five sons and a daughter but makes no mention of a wife. The oldest brother, Alexander, studied medicine at Edinburgh University from 1805 to 1811 though he did not graduate there. In 1811, he moved to Perth and started to practise medicine. He graduated MD Aberdeen in 1813 though the rules then governing the award of the degree were rather unusual: “When, by reason of his distance from Aberdeen, he (the candidate) cannot appear in person to be examined, he may be recommended and attested by two physicians who must be regular graduates in medicine and known personally or by repute to the Professor of Medicine.” These two physicians were required to examine him and to attest

... that he has attended courses and his acquirements are such as to entitle him to the degree of M.D.; or in cases where from distance of place such examination cannot be obtained, that they have been long personally acquainted with him and know that his medical education is as has been specified, that he has been for years in established practice as a Physician and in that capacity has rendered himself useful and respectable.

Alexander, whose “ample certificates” had “perfectly” satisfied the Faculty, was attested by Dr Charles Anderson of Leith and Dr James Gregory of the Royal Navy.

Thomas stayed in Perth, presumably with his brother, until he too went to Edinburgh in 1815 to study medicine. The degree of MD was conferred upon him on Monday, August 2, 1819, “after he had gone through the appointed examinations and publicly defended (his) inaugural dissertation”. His graduation thesis “De Scorbuto” was dedicated to his oldest brother in gratitude for all his help and kindness.

In 1822, he was in general practice in Leith. He married in 1825 and sons were born to the Lattas in 1826, 1828 and 1830. The evidence suggests that the first two boys died in infancy or childhood and the third, Walter, although alive in 1841 has not been traced after that date. Latta himself died in 1833, less than a year after his last contribution on cholera to the Lancet. I am indebted to the Scottish Widows Fund for permission to quote from the Minutes of the Ordinary Court of Directors of that Society. (Latta had taken out a policy for £1000 with the Scottish Widows Life Assurance Society which was formed in 1815.) The Minutes of October 28, 1833, contain the entry: “The Manager read to the Court an intimation of the decease of Dr Thomas Latta on the 19th instant.” In proof of his widow’s claim, a certificate was later presented and recorded:

Leith. 31st October 1833.
This certifies that Dr Thomas Latta died here on 19th instant of Pulmonary Consumption.
(signed) J. S. Combe, M.D.

Latta’s widow died of carcinoma of the breast in 1873.

That Latta’s contribution to medicine was no mere accident of fate but the outcome of a reasoned approach by a highly intelligent and scientifically oriented mind may be deduced from one other fact which is known about his life. It has been mentioned that his graduation thesis was on scurvy. It refers at one point to the fact that those who voyaged on whaling ships to the Arctic were often severely afflicted by the disease. This was an observation derived from his own experience for, in the previous summer, when he was still a medical student, he had sailed to the Greenland whaling grounds as “companion and surgeon” to that most remarkable man, William Scoresby the younger. Scoresby’s first voyage in a whaler was when he was only 11 years old and his career was full of interest, variety and excitement. As a whaleboat captain, he attended classes at Edinburgh University for several winters and went whaling in the spring and summer. He contribu-
ted over ninety papers to learned societies on various aspects of natural history. He was made FRSE in 1819 and FRS in 1823. His book, *An Account of the Arctic Regions and Northern Whale Fisheries*, published in 1820 was immediately recognised as a standard work and was the cornerstone of Arctic science. After his first wife died in 1820, he gave up his sea-going career and spent the last 30 years of his life as a curate at Bessingby and a vicar at Bradford.

Such, briefly, was the status and reputation of the man with whom Latta took issue in 1820. Scoresby had written a paper, published in the *Edinburgh Philosophical Journal*, giving an "Account of the Seven Icebergs of Spitzbergen" (Scoresby, 1820). Latta did not agree with Scoresby's deductions and replied in the same journal with the "Observations on Ice Bergs made during a Short Excursion in Spitzbergen" (Latta, 1820). He began:

The interest which of late years has been excited by the Northern Regions renders every communication concerning them important which may contain anything like information. Though those by whom these communications are made may be but young in science yet the facts which may have come under their own observation may not be altogether unworthy of notice. From the high rank which Captain Scoresby holds in the literary world, from his intimate acquaintance with the Arctic Seas and after the works he has published on the phenomena these present it may seem presumptuous to question the opinions of that enlightened navigator or to state facts which may have escaped his observation. As both these, however, may be done in perfect consistency with the high respect I cherish for the distinguished talents of Captain Scoresby, I shall take the liberty to state some facts concerning the icebergs of Spitzbergen which I had the opportunity of personally observing.

He described going ashore and spending several days on the north-west coast of Spitzbergen where he had a narrow escape when he fell into a chasm and was nearly engulfed. With carefully reasoned arguments, he disagreed with some of Scoresby's conclusions and offered alternative explanations. For instance, the ice was traversed by rents which Scoresby thought were due to melting ice. Latta considered they were due rather to "the expansive power of water when subjected to the freezing process".

Two further publications came from Latta's pen in 1826-27 (Latta, 1826-27, 1827), again in reply to observations from Scoresby on the glaciers and climate of Spitzbergen. To prove a point about the influence of wind as well as that of altitude on air temperature, he carried a thermometer on three successive days to the summit of Arthur Seat elevated scarcely 700 feet above the plain. During the first ascent, the decrement of heat gave it an altitude of about 135 feet, the second 1755 feet, the third 1350 feet which discrepancy was chiefly produced by the wind.

Captain Parry, RN, was planning an attempt to reach the North Pole and Latta discussed his plan and suggested modifications such as taking three sledges (not two), each capable of carrying five men, one of which should be left at 84° or 85°N and the other at 87°N. Latta also stated, "It may be premised that an erroneous opinion has long been cherished—that the vicinity of land is necessary ere ice can be formed on the sea", and suggested that the Pole had no land near it. This paper was read to the Wernerian Natural History Society of which Latta was probably a member. One paper of his has the letters "M.W.S." after his name though a proposal for membership does not appear in the Minutes of that Society.

These papers reveal a keen and lively enquiring mind, that of a man interested in all he saw and able to make proper deductions from his observations. This brings a new light to his work on intravenous infusions, showing again that chance favours the prepared mind; that his was not the unthinking search for something novel but the application of sound principles by a keen intellect.

**ACKNOWLEDGEMENTS**

It is with pleasure that I record my indebtedness to Mrs Eaves-Walton, Archivist to the Royal Infirmary of Edinburgh, for all her help and encouragement in what were, for me, new avenues of research. I wish also to thank the Registrar-General for permission to search the records in Register House and the Librarians of the Universities of Edinburgh, Aberdeen and St Andrews and of the National Library of Scotland. Also, the Secretary of the Scottish Widows Fund and Life Assurance Society for searching their Minutes and giving me permission to quote from them.

Figures 1 and 2 are illustrations from *Ancient Therapeutic Arts* by William Brockbank (1954) and are reproduced by kind permission of the publishers, William Heinemann Medical Books Ltd, London.

**REFERENCES**

The personal details of the Latta family have been gleaned from the parish records, records of the Kirk session of the Associate Congregation, Leith; deeds, sasines, services of heirs, record of inventories and census returns, all of which are contained in Register House, Edinburgh. The records of university classes and of the Wernerian Natural History Society are in the Edinburgh University Library. The sources of some other references are contained in the text.


—— (1827). Observations on the glaciers and climate of Spitzbergen made during a visit to that island with a reply to Mr. Scoresby’s remarks. *Edinb. philosophical J.*, 17, 91.


—— (1832–33a). Saline venous injections in cases of malignant cholera performed while in the vapour bath. *Lancet*, 1, 175.

—— (1832–33b). Saline venous injections in cases of malignant cholera performed while in the vapour bath. *Lancet*, 1, 208.


---

**ANAESTHESIA AND DRUGS**

**TO BE HELD AT ACADEMISCH ZIEKENHUIS, LEIDEN, HOLLAND**


Course Leaders: Dr S. A. Feldman (London); Prof. Joh. Spierdijk (Leiden)

**THURSDAY, SEPTEMBER 30, 1971**

Reception of the Speakers; Preliminary Conversation; Panel Discussion

**FRIDAY, OCTOBER 1, 1971**

*Morning Session* (President: Prof. Joh. Spierdijk)

ANAESTHESIA AND THE HEART

Introduction: Prof. Joh. Spierdijk (Leiden)

Alpha and beta blockers during anaesthesia

Dr H. Laborit (Paris)

Advantages and disadvantages of isoprenaline

Dr Thomas (London)

Use and misuse of oxygen

Prof. Rolley (Ghent)

Anaesthesia of patients with a pacemaker

Dr P. J. Janssen (Leiden)

*Afternoon Session* (President: Dr S. A. Feldman)

New concepts of muscle relaxants

Dr S. A. Feldman (London)

The action of muscle relaxants on cholinergic mechanisms of the heart

Dr V. A. Goat (London)

Changes of acid-base balance and muscle relaxants

Prof. J. Crul (Nijmegen)

The use of pancuronium bromide

Dr D. T. Popescu (Leiden)

**SATURDAY, OCTOBER 2, 1971**

President: Dr D. T. Popescu (Leiden)

EFFECTS AND SIDE EFFECTS OF ANAESTHETIC AGENTS

The truth of anti-hypertensive and anaesthetic drugs

Dr L. Stamenkovic (Leiden)

Interaction of drugs with anaesthesia

Prof. E. Noach (Leiden)

**Panel Discussion on Muscle Relaxants**

Dr S. A. Feldman Dr D. T. Popescu Prof. H. Rolley

Prof. J. Crul Dr H. Laborit Prof. Joh. Spierdijk

Dr V. A. Goat Prof. B. R. Simpson Dr V. R. van Hemert

About the toxicity of halothane

Prof. B. R. Simpson (London)

The dangers of anaesthetic agents in personal working in operating theatres

Prof. Joh. Spierdijk (Leiden)

Closing (12.30 p.m.) by Dr S. A. Feldman (London)