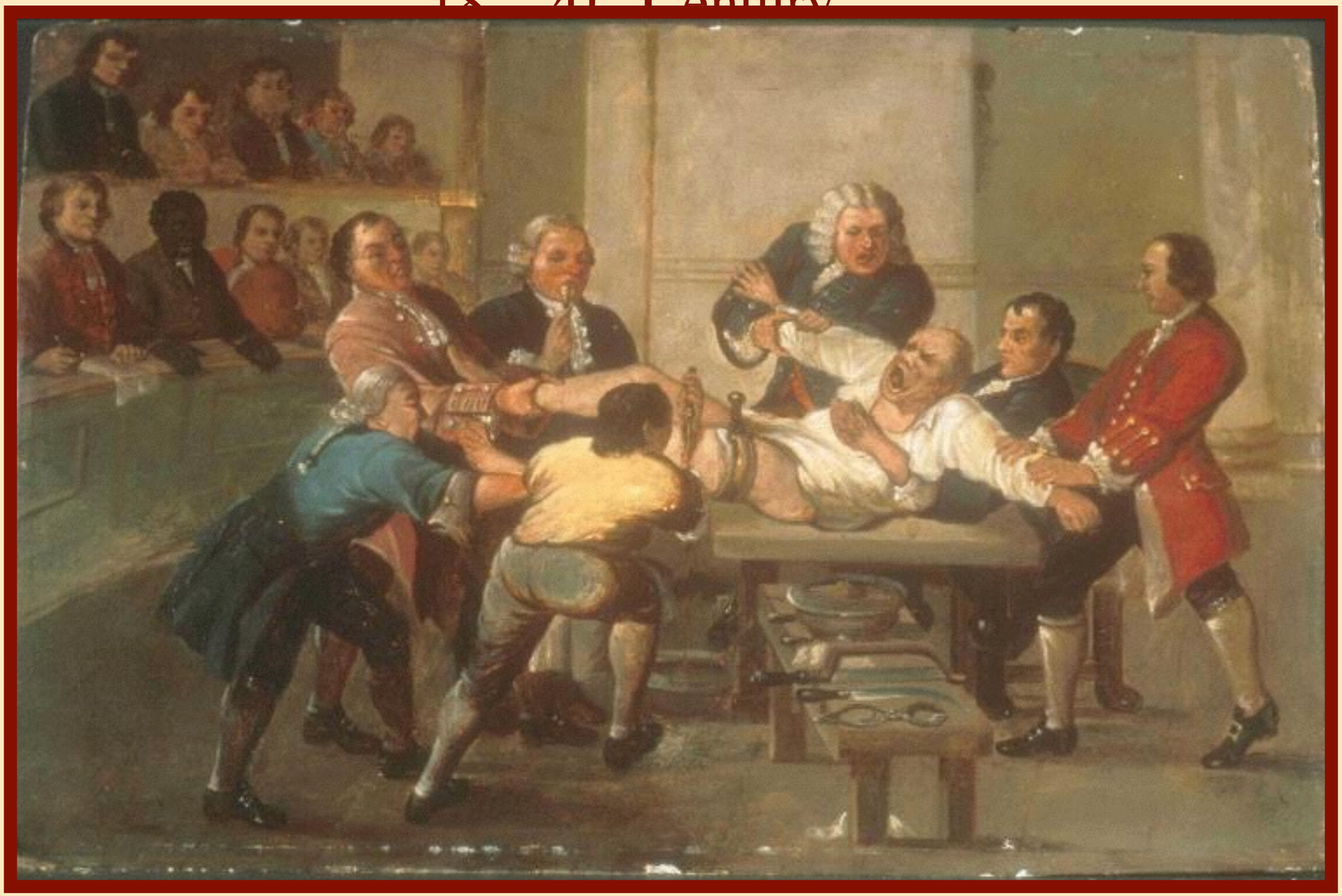
British Surgery from the 18th-20th Century



An 18th century amputation scene

THE OLD OPERATING THEATRE
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The Old Operating Theatre

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The Operating Theatre

"The general arrangement of all the theatres was the same, a semicircular floor and rows of semicircular standings ,rising above one another to the large skylight which lighted the theatre. On the floor the surgeon operating with his dressers, the surgeons and apprentices of both hospitals and the visitors stood about the table upon which the patient lay, and so played that the best possible view of what was going on was given to all present.

The floor was separated by a partition from the rising stand-places, the first two rows of which were occupied by the other dressers, and behind a second partition stood the pupils, packed like herrings in a barrel, but not so quiet, as those behind them were continually pressing on those before and were continually struggling to relieve themselves of it, and had not infrequently to be got out exhausted. There was also a continual calling out of "Heads, Heads" to those about the table whose heads interfered with the sightseers. The confusion and crushing was indeed at all times very great, especially when any operation of importance was to be performed and I have often known even the floor so crowded that the surgeon could not operate till it had been partially cleared."

John Flint South *Memorials* 1884

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Three Key Figures

Robert Liston

1794-1847

A surgeon renowned for his skill snd speed in **surgery** before anaesthetic.

Nicknamed “the fastest knife in the West End.”

James Simpson

1811-1870

A pioneer in the field of **anaesthesia**.

Developed the use of Chloroform in 1847

Joseph Lister

1827-1912

A surgeon and pioneer in the use of **antiseptic**.

Considered by many to be “The Father of Modern Surgery.”

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Pre-anaesthetic surgery

A description of Robert Liston performing surgery

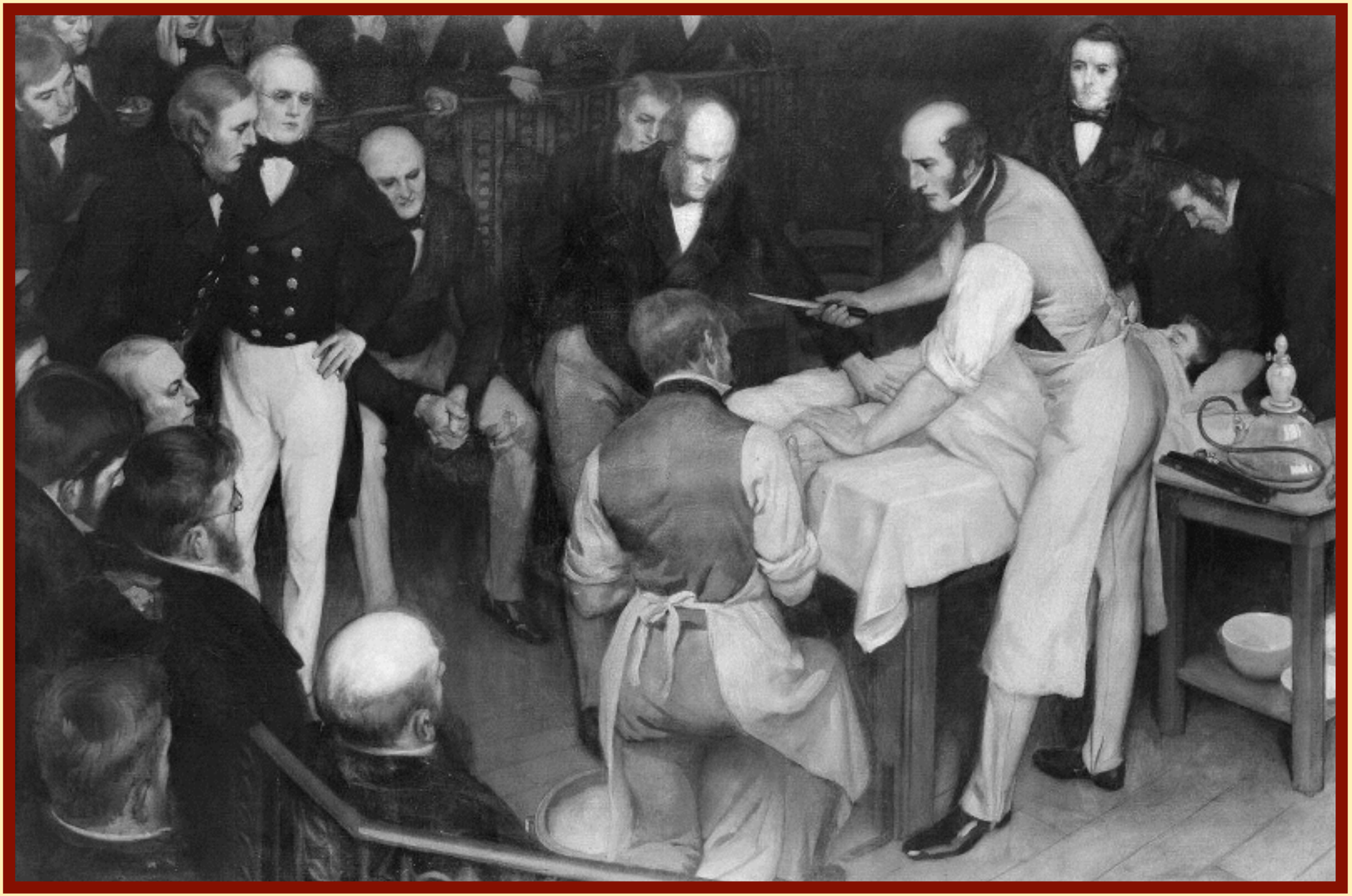
"He was six foot two, and operated in a bottle-green coat with wellington boots. He sprung across the blood-stained boards upon his swooning, sweating, strapped-down patient like a duelist, calling, 'Time me gentlemen, time me!' to students craning with pocket watches from the iron-railinged galleries. Everyone swore that the first flash of his knife was followed so swiftly by the rasp of saw on bone that sight and sound seemed simultaneous. To free both hands, he would clasp the bloody knife between his teeth."

Richard Gordon

Observing an Operation

"I was always very anxious to see all I could and soon got over the blood-shedding which necessarily ensued; and so long as the patient did not make much noise I got on very well but if the cries were great, and specially if they came from a child, I was quickly upset, had to leave the theatre, and not infrequently fainted….The heat had probably something to do with this failing, for the theatre was invariably crammed to excess and the atmosphere almost stifling."

John Flint South, *Memorials* 1884



Robert Liston performing the first operation in Europe under modern anaesthesia using ether,
21 December 1846 at the University College Hospital

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Key developments:
Changes in surgical treatments

Before the arrival of anaesthetic, all operations had to be very quick which limited surgeons to only a few procedures, such as amputations (the removal of a limb.)

But even if a patient survived the initial shock of feeling their limb being removed or did not bleed to death on the operating table, they were at risk of later dying from infection.

19th century amputation set

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The Arrival of Anaesthetic 1846-1847

For centuries, surgeons had attempted to numb the pain of surgery by using various methods on their patients but without much success.

“Laughing gas’ (nitrous oxide) was introduced in 1795 and proved quite successful but only in cases of minor operations such as having a tooth removed.

In 1846, Ether was the first anaesthetic given to a patient undergoing a major operation. The surgeon, Robert Liston, successfully anaesthetised a patient and then amputated his leg.

In 1847, a surgeon named James Simpson discovered Chloroform and was the first person to knighted for his service in medicine.

Although Chloroform proved a safer chemical than Ether, which was highly flammable and irritated the patient, both continued to be used throughout the 19th century.

The Arrival of Anaesthetic

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To what extent did the introduction of anaesthetic in the 1840s revolutionise surgery?

Positive side:

- Patients no longer had to suffer the agony of undergoing an operation which often sent them into shock.
- Surgeons were able to take more time as their patients were still which meant they could be more accurate.
- This meant that surgeons were able to perform more complex operations: Internal surgery became possible .

Negative side:

- Sometimes surgeons accidentally administered to much which resulted in the patient not waking up. Or sometimes too little was given and the patient would awake during the operation.
- The chemicals sometimes affected the heart, which caused some healthy people to die after inhaling it.
- Because anaesthetic allowed surgeons to go deeper into the body- blood loss and infection became more of a problem.

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Surgery before Antiseptic

The introduction of Anaesthetics was a major breakthrough in the history of medicine. However, because it allowed surgeons to perform deeper and longer surgery, it increased the chance of the patient contracting an infection.

Before the 1860s, there was no understanding about how germs spread, so as a result surgeons did not make an effort to keep themselves, their instruments or the operating theatre clean.

Most surgeons washed their hands after the operation rather than before. They also would wear frock coats or aprons that were covered in dried blood from previous operations to show their experience.

Operating theatres were traditionally designed as a ‘theatre’ so that a large number of medical students could gather in close proximity to the patient in order to closely observe the operation.

The Arrival of Antiseptic: 1865

During the 1860s, a surgeon named Joseph Lister began to study some of the infected wounds of his patients. He compared his findings with the work of Louis Pasteur, who had identified germs.

Lister, sought a chemical that would clear the bacteria from the wound and discovered that carbolic acid was effective.

In August 1865, Lister applied a lint dressing soaked in carbolic on the leg of a boy named James Greenless who had a compound fracture. Most compound fractures would become infected within a few days and would result in the patient having to undergo an amputation. But when Lister removed the dressing on young boy's leg there appeared to be no sign of an infection. The boy was discharged from the hospital after six weeks completely recovered with both of his legs.

Lister published his results in the Lancet (a medical journal) and listed various examples where carbolic acid had successfully prevented infection.

Lister’s carbolic spray

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Opposition to Antiseptics

It is now recognised that what Joseph Lister had proven in 1865 was the watershed between two eras of surgery: the primitive and the modern. But at the time, not all surgeons agreed with Lister and continued to operate without using carbolic acid.

Some surgeons argued that because carbolic acid dried out the skin making it sore, it would only worsen a patient's wound rather than heal them.

Some of the surgeons' reluctance may have been because they did not understand the science behind this new method; Lister was more interested in encouraging his fellow surgeons to use carbolic acid rather than scientifically proving his theory.

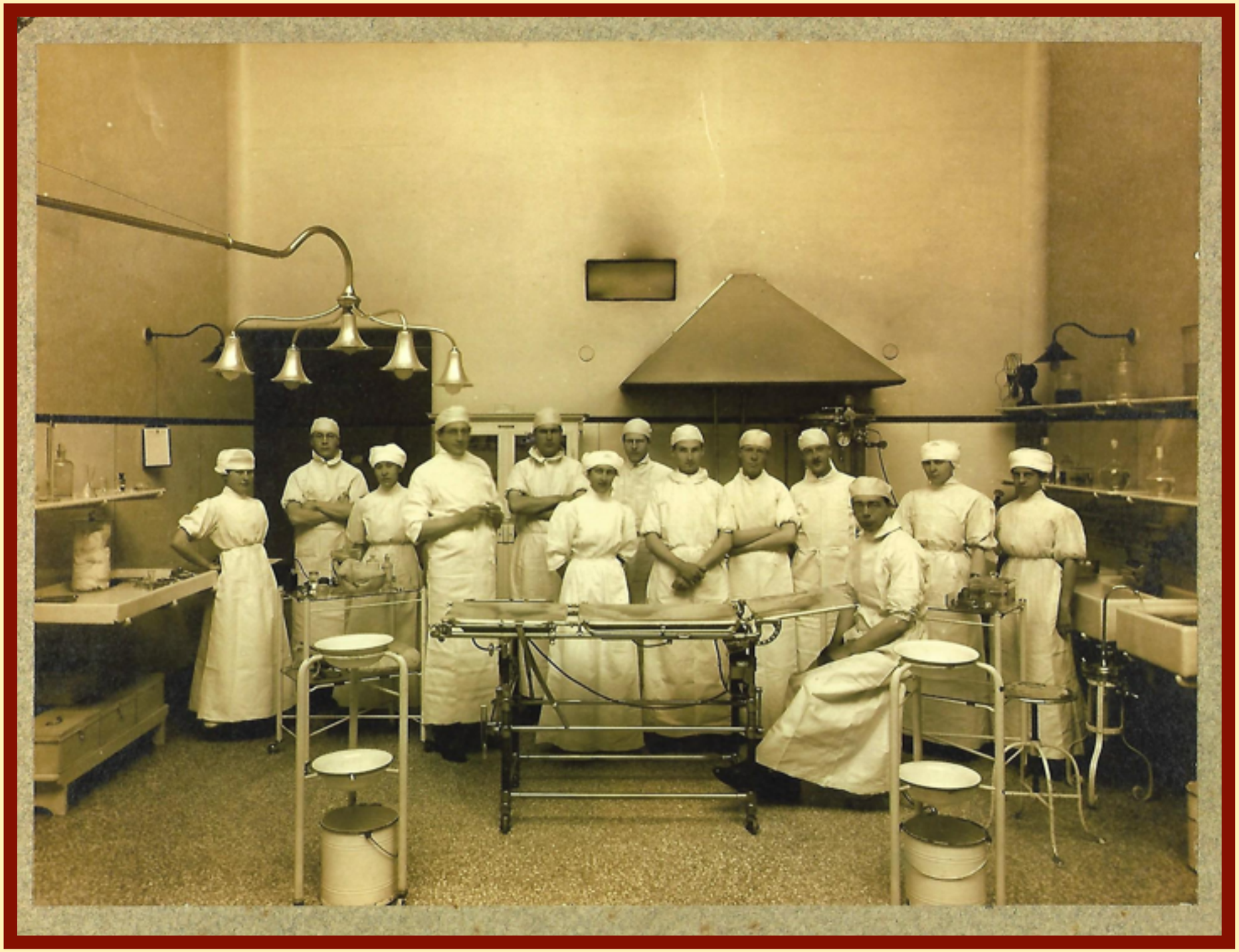
The introduction of Aseptic Surgery

By 1890, carbolic acid stopped being used as a method of preventing germs during an operation and was replaced by aseptic surgery.

Aseptic surgery is when germs are prevented from getting into a wound in the first place by the surgeon wearing rubber gloves; face masks and clean gowns; sterilised surgical instruments and metal operating tables replacing wooden ones. By 1900 operating theatres began to look more like sterile enclosures rather than 'theatres'.

By 1900 the attitudes of surgeons had changed towards antiseptic and aseptic surgery. They understood how infections can be prevented and it was now their duty to perform operations in a safe environment.

Developments in Aseptic Surgery



St Thomas's Hospital 1898

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The New Operating Theatres 1898

“The light is obtained from the skylight facing north and beneath this at the north end is the auditorium, reduced now to the very modest dimensions in comparison with that of the old theatres. It consists of four raised tiers, the bottom one of which is nine inches above the floor level, and broader than the succeeding tiers; it is intended for the accommodation of Hospital Staff. The remaining tiers are intended for the Students and Visitors, and are made narrow and of considerable height so that a good view of the operation can be obtained even form the top step.

The whole auditorium is made of solid white marble, it having been decided that skeleton staging was objectionable on account of the difficulty of keeping it clean and free form dust.

On the wall facing the auditorium are arranged the sterilisers for instruments, porringers, and operation trays as well as rose burners for the boiling flasks containing normal saline.

Opposite to the sinks a large glazed earthenware slab is provided for the mixing of plaster and the making of plaster splints and above a shelf for the reception of hypodermic injections and various articles that may be required in an emergency.

In the Surgeon’s room there are sinks for the washing of the hands, and here will be kept the operation boots and sterilised blouses. In this room the operator and his assistance will remove their outer clothing and substitute in their stead clean boots and blouses so that no dirt is carried into the theatre proper.

The floor is laid as a slight slope toward the drain under the sink so that the whole theatre can be quickly flushed out with water.

Simple sinks with simple taps have been fixed. These are fitted with roses so that they can deliver a spray of water at the required temperature and keep running the whole time during the operations. The surgeon can therefore wash his hands without being compelled to touch the taps, and in addition he washes his hands in constantly changing water.“

(LMA H01/st/y/57-60)