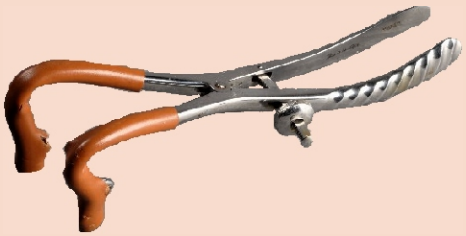
Hands On Learning
with Reading Museum Service

MEDICINE
PROTECTING THE AIRWAY

H372

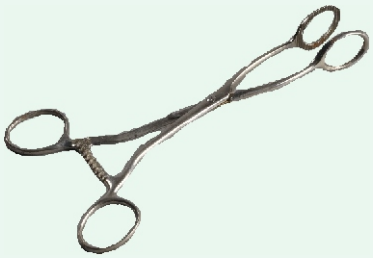
When somebody becomes unconscious there is a risk of 'swallowing the tongue': the tongue can fall backwards and obstruct the passage of air to the trachea (windpipe). Since anaesthetists regularly make people unconscious, they soon learned ways of helping to 'maintain the airway'. The simplest means was to lift and hold the jaw forward. In 1901 Dr Frederick Hewitt had to anaesthetise King Edward VII for an appendix operation shortly before his coronation. He kept the King breathing by pulling forward on the royal beard. The items in this box illustrate some of the alternative methods to this rough-and-ready technique!

Mason Mouth Gag



The gag is padded to protect the teeth. It was first used by surgeons to force and hold the teeth apart during operations for cleft palate. Soon anaesthetists used this and similar devices to force open the mouth when the airway was blocked by the tongue or by secretions or vomit. Gags stopped being used in the 1950s when new muscle relaxant drugs could be given if the jaw clamped shut during anaesthesia.

Tongue Forceps



These were used to grasp the tongue and pull it forward. This version dates from about 1910.

Phillips Airway



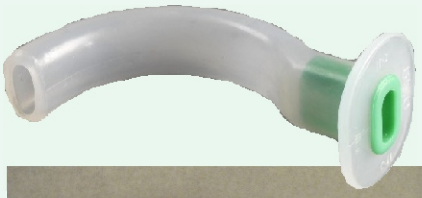
In the early 1900s instead of pulling the tongue forward, anaesthetists began to put an airway tube into the mouth and behind the tongue. This airway of about 1920 is made of rubber with a metal insert to prevent it being squashed by the teeth. The feed tube at the side is to provide a flow of fresh gas.

This example was made by Thackray Ltd., which was established in Leeds in 1902 as a retail pharmacy and grew to become one of Britain's principal medical supplies companies.

Hands On Learning
with Reading Museum Service

MEDICINE
PROTECTING THE AIRWAY
H372

Guedel Plastic Airway





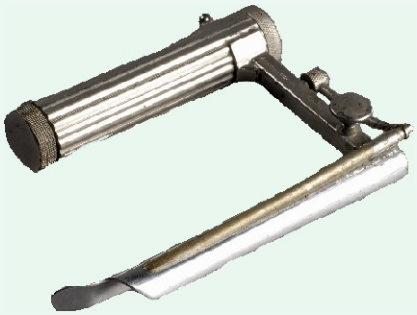
The Guedel design of 1933 fits neatly behind the tongue. It is still used today. It is important that the doctor chooses the right size for the patient. The coloured plastic insert in the mouthpiece indicates the size of the airway: violet indicates the smallest and yellow the largest. Green indicates an airway in the middle of the range. It can only be used on an unconscious or sedated patient; patients regaining consciousness will recover their coughing reflex and expel the (then useless) airway. Modern airways, such as this one, are made of plastic which is rigid enough to withstand the teeth clamping shut, but which is also disposable and therefore avoids the need for sterilising before re-use.

Water's Airway for a Baby



In small children the passages are so tiny that the airway is even more at risk. This small example for use with a baby was designed by the pioneering anaesthetist Dr Ralph Waters (1883-1979) in the USA.

Magill Laryngoscope



The safest way to make sure the airway is kept open is to pass a tube through the larynx (voicebox) into the trachea. Although this can be done 'blind', it is best to see the opening in the larynx and make certain the tube goes into the windpipe and not into the gullet. This laryngoscope is designed to help do this. It consists of a handle (which holds a battery) and the blade which is pushed into the mouth and throat, and which has a small light built into it so that the doctor can see what he is doing as he feeds the tube into the trachea.

Continued on next page.

Hands On Learning
with Reading Museum Service

READING MUSEUM SERVICE

THE BERKSHIRE MEDICAL HERITAGE CENTRE

MEDICINE H372

PROTECTING THE AIRWAY



Direct laryngoscopy is done with the patient lying on his or her back; the larygoscope is inserted into the mouth to push away the tongue and lift the epiglottis so that a view of the glottis is possible. This procedure is painful and extremely uncomfortable and is not usually done in conscious patients.

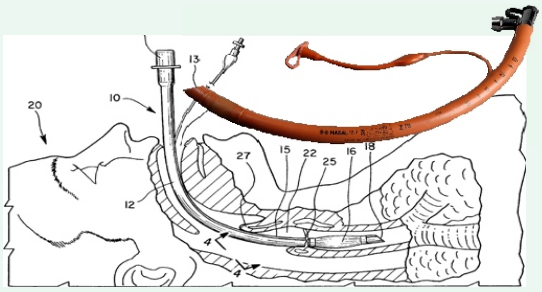
The Magill laryngoscope was invented by Sir Ivan Whiteside Magill (1888-1986) who anaesthetised thousands of servicemen wounded in the face and neck during the First World War and became a pioneer in this technique. He developed his laryngoscope because of the immense difficulties of administering anaesthetics such as chloroform and ether to men with severe facial injuries who could not have masks placed directly over the face.

Penlon Plastic Laryngoscope



Sir Robert Macintosh, Professor of Anaesthesia at Oxford, invented the curve-bladed laryngoscope, which is less damaging to the teeth. Modern versions such as this one are often made of plastic.

Magill Endotracheal Tube



The diagram shows a similar tube inserted through the mouth. The tube in this box is designed to be inserted through the nose.

The laryngoscope is used to help insert tubes such as this one. Various types of tracheal tubes are used. Many have an inflatable 'cuff' at the lower end. Once the tube is inserted the cuff is inflated to seal the trachea against air leakage and to stop liquids in the mouth draining into the lungs.

This example is suitable for the windpipe of a male adult, however it would not have been inserted through the mouth. It is more streamlined than usual and is designed to be passed through the nose. The small side tube is used to blow air in to inflate the cuff. The little balloon on the side tube inflates slightly, to indicate that inflation has taken place - it wouldn't do the patient much good to withdraw the tube with the end still inflated! The metal connector at the upper end is used to attach tubing from the anaesthetic machine.

Paediatric Endotracheal Tube



This tube is for a baby under 2 years. No cuff is needed because the child's soft tissues form a seal around the tube. This example would be inserted through the mouth.