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## Trauma Resuscitation

**1774**

### **First Successful Trauma Resuscitation**

July 16th 1774

Humane Society, London UK

The Humane Society was founded in the Chapter Coffee House, St Paul's Churchyard, London in 1774, originally as 'The Institute for Affording Immediate Relief for Persons Apparently Dead from Drowning'. Only 3 months after the society was founding, a member of the society was called to attend a 3-year-old child named Catherine Sophie Greenhill, who had fallen from an upper story window onto flagstones in nearby Pudding Lane, and been pronounced dead. The society member, an apothecary named Squires, was on the scene within twenty minutes, and history records that he proceeded to give the clinically dead child several shocks through the chest with a portable electrostatic generator. This treatment caused her to regain pulse and respiration, and she eventually (after a time in coma) recovered fully.



**Humane Society**

The founders, Dr William Hawes (1736-1808) and Dr Thomas Cogan (1736-1818), originally positioned attendants at intervals along the banks of the river Thames and paid them 2 guineas to attempt resuscitation to anyone who had drowned (provided their attempts lasted longer than 2 hours!). Prior to this it was generally felt that the best thing you could do to a drowned man was pick his pockets.

At this time the function of the lungs was unknown. Oxygen had not yet been discovered (Priestley 1776) and Galen's idea that the function of the lungs was to cool the heart was widely accepted. The standard resuscitation regimen at the time was to dry and warm the body by applying friction to the skin, and to administer tobacco smoke enemas.

There were recent clues as to the lung's function however. William Harvey had described the circulation

of the blood in 1628, and it had been noted that dark venous blood exposed to the air became bright red. Additionally there were reports of successful resuscitation of drowned men (and dogs) with bellows. Paracelsus (1493-1541), an alchemist and perhaps the greatest physician of his age, was said to have attempted the resuscitation of a corpse using bellows, a trick he perhaps picked up from Arabic medical writings. And Andreas Vesalius (1514-1564), the father of modern anatomy, reported successfully using bellows to resuscitate asphyxiated dogs. By the 1740s, several cases of successful mouth-to-mouth resuscitation had been reported, the most famous of which was Tossach's 1744 report of the resuscitation of a clinically dead coal miner who had been suddenly overcome after descending into a burned-out mine.

## **1856**

### **Airway clearance introduced**

Marshall Hall

In 'Asphyxia, its rationale and its remedy' Hall put forward that the restoration of warmth without preventing the victim's tongue from blocking his airway or providing immediate ventilation was detrimental. Hall correctly added airway and breathing to the initial steps in resuscitation.

## **1918**

### **Original data supporting the 'Golden Hour' concept produced from French World War I data.**

'In World War I, there was a real appreciation of the time factor between wounding and adequate shock treatment. If the patient was treated within one hour, the mortality was 10 percent. This increased markedly with time, so that after eight hours, the mortality rate was 75 percent.'

| <b>Time<br/>from<br/>injury</b> | <b>Mortality</b> |
|---------------------------------|------------------|
| 1 hr                            | 10 %             |
| 2 hr                            | 11 %             |
| 3 hr                            | 12 %             |
| 4 hr                            | 33 %             |
| 5 hr                            | 36 %             |
| 6 hr                            | 41 %             |
| 8 hr                            | 75 %             |
| 10 hr                           | 75 %             |

This data was subsequently used by R. Adams Cowley in his 'Golden Hour' concept.

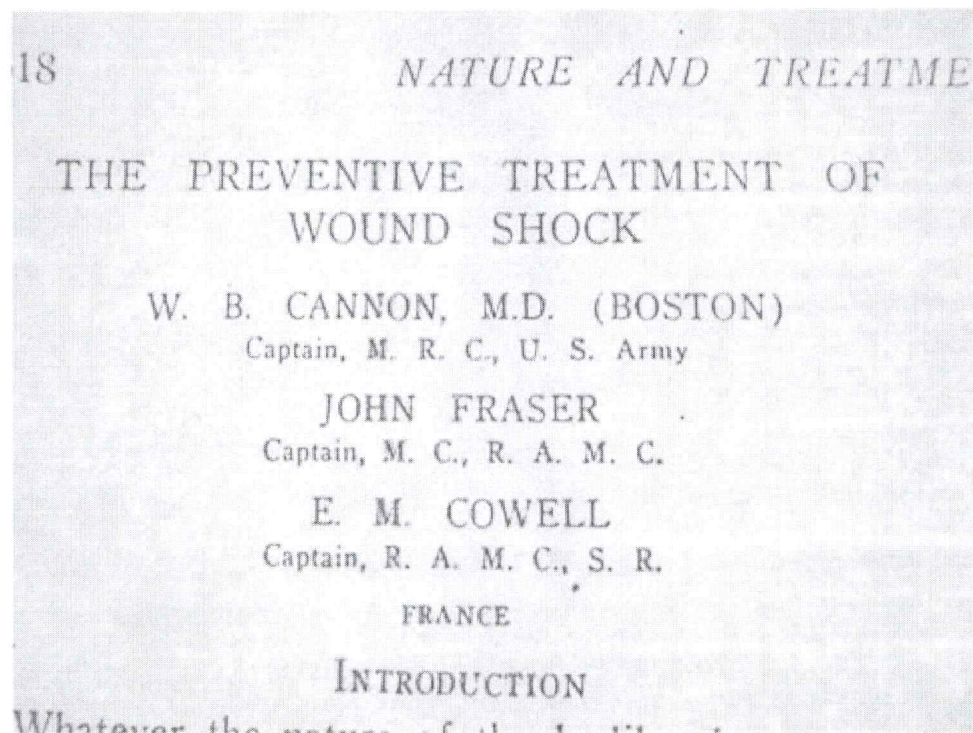
Santy, P. Marquis Moulinier, Da Shock Tramatique dans les blessures de Guerre, Analysis d'observations. Bull. Med. Soc. Chir., 1918, 44:205

## **1918**

### **Permissive hypotension starts here!**

WB Cannon publishes on the preventive treatment of wound shock and shows poor outcome with intravenous fluid resuscitation. Remains largely forgotten until renewed interest in late 1980's & early 1990's.





Cannon W, Fraser J, Cowell E. The Preventative Treatment of Wound Shock. JAMA 1918:618-621

[More permissive hypotension references](#)

## 1994

### **Bickell reintroduces the world to permissive hypotension**

Prospective, randomized pre-hospital trial had 598 patients with penetrating torso trauma and systolic BP < 90. The study comparing Standard resuscitation vs Limited resuscitation (until surgical intervention). Limited resuscitation gave ~ 375 ml IV fluids - 30% mortality and 23% complication rate. Standard Resuscitation averaged 2,480 mls IV fluid - 38% mortality (p=0.04) and 30% complication rate - Higher than 'limited fluid' group.

Bickell WH, Wall MH, Pepe PE, Martin RR, Ginger VF, Allen MK, Mattox KL, 'Immediate versus delayed fluid resuscitation for Hypotensive patients with penetrating torso injuries' N Engl J Med 1994 Oct 27; 331:1105-9

Department of Emergency Services, Saint Francis Hospital, Tulsa, Oklahoma, USA

[More permissive hypotension references](#)