

# Early artificial ventilation: the mystery of “Truehead of Galveston” — was he Dr Charles William Trueheart?

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During an address to America’s Southern Surgical and Gynecological Association in late 1898, Rudolph Matas<sup>1</sup>[p.65-6] drew attention to a device for the supply of rhythmic artificial ventilation in resuscitation of the apnoeic newborn. He referenced its documentation by “Dr Truehead of Galveston” in the German medical literature 28 years previously.<sup>2</sup> Matas repeated this historical item in his 1900 article in the *Journal of the American Medical Association*.<sup>3</sup>[p.1374-5] However, apart from repetition of his phrase “Truehead of Galveston”, first in 1933 by Waters, Rovens-tine and Guedel,<sup>4</sup> then in 1945 by Keys,<sup>5</sup> there appears no obvious medical record of any Dr Truehead, or any writings by such a person. Also, in briefly mentioning Truehead’s apparatus only by quotation from Matas, these later writers shed no further light on the identity of this inventor.

That puzzling silence stimulated me to try to identify Truehead, but I could find no medical Trueheads recorded either in print or on the Internet. Initially, my invaluable librarian friends were unable to locate the Truehead paper Matas had quoted. But on enquiry to the Wood Library–Museum of Anesthesiology, archivist Felicia Reilly suggested that “Dr Truehead may really be Dr Trueheart”; as an Internet search will reveal, there are many Truehearts in Galveston and Texas — but no Trueheads.

## Charles William Trueheart of Galveston

Charles William Trueheart (Figure 1), born in Virginia on 27 February 1837 and dying in San Antonio, Texas, on 14 December 1914,<sup>6</sup> was contemporary with any such Truehead, even to being in Berlin around 1870, the time Matas indicated Truehead was writing. Trueheart is a notable figure in Texan history and, together with his older brother Henry Martyn Trueheart (1832–1914), was the subject of Edward B Williams’s 1995 publication *Rebel brothers, the Civil War letters of the Truehearts*.<sup>7</sup> This book provides some information about Trueheart’s medical career. During the American Civil War, he functioned both as a soldier and as a medical attendant, undergraduate then graduate (see Footnote 1).

## ABSTRACT

It seems strange that the medical literature from the United States has only a single original source of reference for a device (from circa 1870) for artificial ventilation in neonatal resuscitation. The invention is attributed to “Dr Truehead of Galveston, Texas”. I argue that this mystery arises from two separate misspellings of the inventor’s name, and propose that the correct name is Dr Charles William Trueheart (1837–1914), also of Galveston.

Crit Care Resusc 2008; 10: 334–338

Williams’s account continues into post-war times:<sup>7</sup>[p.216]

For the next several years after returning to Galveston, Charles practiced [sic] medicine there. ... [After his first wife’s death, 1867] Charles continued his medical education, first at Bellevue Medical College in New York, and then in Europe at Göttingen, Germany [for 6 months<sup>8</sup>]; [he studied a year and a half<sup>8</sup> at] Vienna, Austria; and [a year<sup>8</sup> at] Berlin. In 1870–71 he served with the Germans during the Franco-Prussian War as a surgeon in their military hospitals. At the close of [that] war he returned to Galveston, where he resumed practice.

Rick Cox reported,<sup>7</sup>[p.216] in the *North San Antonio Times* of 11 March 1982, that reputedly Charles “brought the first fever thermometer to the United States upon his return from Germany [in 1871]”. Archivist Jodi Koste, at Virginia Commonwealth University, Richmond, VA, advised that “in 1872 he published an article on ‘Conjunctivitis granulosa chronica treated by galvanization’ that appeared in *Medical Record (NY)* 1872, volume 7, page 569. He listed himself as surgeon to ‘The Eye, The Throat, and Ear Department’ of Galveston City Hospital” (personal communication).

Later attainments in Trueheart’s medical career are outlined in the *Handbook of Texas on-line*,<sup>6</sup> while Williams lists engineering accomplishments (reminiscent of George Fell’s

**Footnote 1.** Williams<sup>7</sup> states (pages 8–10) that Trueheart started medical studies in 1858–59, transferred to the University of Virginia in 1860, and campaigned in a “University Volunteers” military company from April/May 1861 until leaving university for private soldiering in a unit in the field, October 1861 (page xii). He participated in various campaigns, then was a hospital steward from September 1862 until the following September, before returning to Richmond to complete his medical training by March 1864, and then was assigned as an assistant surgeon. In December, he transferred to the 1st regiment of Confederate Engineers to return to the war front. He surrendered with that unit, 9 April 1865, then 3 days later took part in the official surrender ceremony.

**Figure 1. Charles William Trueheart (1837–1914)**



*Dr Charles Trueheart at some time around 1866, aged about 30 years.*

non-medical activities<sup>9(p.390)</sup>). Stephen Greenberg at the US National Institutes of Health's National Library of Medicine (NLM/NIH) kindly unearthed for me Trueheart's "dozen or so articles, but none is in German, and none is concerned with artificial respiration". (Late press: The Texas Physicians Historical Biographical Database<sup>10</sup> lists 18 Trueheart references, including 10 of his papers.)

At this stage, stalemate had been reached as, apart from exceptional geographic coincidences of time and place, there was no reliable indication that Trueheart was Matas's Truehead, the innovator in intermittent positive pressure ventilation (IPPV) at Berlin around 1870.

### Trueheard aus Galveston

After considerable difficulty (because the author's correct name was not as Matas provided, and also — as per Figure 2 — because it was associated with the article only indirectly), librarians eventually located for me the article<sup>2</sup> Matas quoted; it declared itself the German translation of the text of a lecture given by a "Trueheard" (named as such without fore-initials) to an obstetrical conference in Berlin on 26 June 1870 — a date 3 weeks before the outbreak of the Franco-Prussian War in which Trueheart served. At publication of the text of the lecture 2 years later, authorship was attributed not to Truehead, as recorded by Matas, but to "Trueheard aus Galveston". Based on this, Stephen Greenberg from the NLM/NIH further suggested that the

"Truehead" I was enquiring about should be Trueheard. So I then looked past Trueheart as being Matas's subject.

For Trueheads at Galveston, the Internet supplied a lone entry: in the *Sam and Bess Woolford papers for 1834–1979*, held by the University of Texas Library.<sup>11</sup> ("Lone", except remarkably that a fortnight later ANZCA librarian Jenny Jolley sent me another referencing of the name Trueheard, when Michael Obladen's article on the history of neonatal resuscitation<sup>12</sup> came on-line, 9 July 2008. It is likely to be the first appearance of "Trueheard" for many years.) But when I saw Google's Woolford result had Trueheard's forenames spelt as Henry Martyn — identical with those of Trueheart's brother, even to the less common spelling of Martyn — the revelation struck me that this Trueheard was likely to be a Trueheart. Attempts by archivist Nikki Lynn Thomas at the University of Texas to locate the Woolford file's specific section were unproductive, and she believed "it is safe to assume that the Trueheard of the Woolford Tales is, in fact, Henry Martyn Trueheart, as there is only one Henry Martyn that I can find of any importance in Texas history". So in the Berlin publication, "Trueheard aus Galveston" actually seems a likely misspelling for "(C W) Trueheart". And for me, Felicia Reilly's original advice now appeared correct!

In personal communication, Michael Obladen expects that the name "Trueheard aus Galveston" "probably was misspelled in the proceedings of the Society of Obstetrics and Gynecology, and afterwards Knapp and others copied the misspelling from there. But this explanation is purely speculative of course". But my conviction is strengthened that the Berlin Trueheard is a misspelling of (C W) Trueheart, who neatly fits the minimal life features attributable to Matas's Truehead. It has always seemed to me to be too great a coincidence that a Dr Trueheart and a Dr Trueheart, both from Galveston, went to Germany and Berlin around

**Figure 2. First page of "Trueheard's" article**

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Sitzungs-Berichte.

### Nachtrag zur Sitzung vom 26. Juni 1870.

(Hierzu Taf. VIII., IX. u. X.)

Herr Trueheard aus Galveston hat nachstehende Beschreibung nebst Zeichnungen der von ihm am 26. Juni 1870 der Gesellschaft vorgelegten Instrumente eingesandt. (Uebersetzung aus dem Englischen).

1.

Ein Apparat zur künstlichen Respiration bei Asphyxie.

(Taf. VIII. u. IX.)

*From the proceedings of the Society of Obstetrics and Gynecology, Berlin, published 1872. (With acknowledgement and thanks to the Society.)*

1869, where Trueheard invented a resuscitating machine (Figure 3).

So, there is an 1872 article in German that documents a neonatal life-saving device but, although generously illustrated, provides minimal data on treatment; there are no obvious English-language articles that record the device's practical application. Obladen's recent article<sup>12</sup> has an illustration of the device from Ludwig Knapp's 1904 book,<sup>13</sup> wherein it is pictured from Trueheard's original paper. Obladen doubts (personal communication, July 2008):

... that Adolf Gusserow (Berlin Chair of Obstetrics from 1878 to 1904) used 'Trueperson's' portable ventilator for neonates in his delivery room. [*We communicated, somewhat irreverently, about 'Trueperson'. With apologies where due — RVT.*] He was not too keen towards technical advances, and when the 1896 industrial exhibition closed (to which he had loaned 8 pre-term infants believed chanceless) he did not buy Lion's incubators, despite the fact that 6 of the infants had survived. On the other hand, Ludwig Knapp's textbook of 1898 (*The apparent death of the neonate*) was so successful that a second edition appeared in 1904,<sup>13</sup> both of them referring to 'Trueheard's' respirator in text and figure. So I assume, the ventilator was used at least in 'Deutsche Frauenklinik zu Prag', where Knapp was professor and 1st assistant. Moreover, the device was manufactured by companies in two European capitals, Mattich in Berlin and Leiter in Vienna.

### To summarise regarding the names

To date the available evidence appears to suggest strongly that:

- Matas's Truehead was in reality Charles William Trueheart.
- The Trueheard now deemed misspelt in the 1872 Berlin article illustrating a novel neonatal ventilator was not Trueheard but Trueheart.
- The Trueheard cited from the Berlin paper by Knapp in his 1904 book was Charles Trueheart.
- Henry Martyn Trueheard, said to be referred to in the Woolford papers at the University of Texas, was Henry Martyn Trueheart, Charles's brother.

A possible sequence to provide a logical explanation of the three names is:

- Trueheart gave a talk in Berlin but its text, published after translation from his English text, had the final letter "t" of his name changed in error to "d".
- Another error arose when Matas quoted the article from the German text but omitted the final "r" of Trueheard, giving the name Truehead (see Footnote 2).

So Trueheard, correctly in my opinion, would need to be referred to as Trueheart, as I will employ hereafter.

### Pioneering intensive therapy?

Matas regarded Trueheart's "complicated" IPPV device as an American first, as it "*anticipates in principle almost all the essential characteristics of [O'Dwyer's] latter but more simple appliance*".<sup>13</sup> Whatever use it was put to in Europe, so far it appears that this invention was not taken back to the US on Trueheart's return to Galveston in 1871, nor does Matas mention its use in the US. Yet, because the device featured in successive editions of Knapp's textbook in Germany — with one edition over 30 years after its initial description — and because at the time it was still being manufactured in at least two European countries, it seems it was known and being used. Even if Trueheart was not a pioneer of mouth-to-tube IPPV in his own country, through his device he still qualifies as a pioneer, seemingly without recognition hitherto for introducing his mode of neonatal intensive therapy. We should rescue him from such oblivion for this pioneering advance, and honour him accordingly. Indeed, in the history of IPPV devices, Matas regarded Trueheart's rhythmical inflating device for neonates as "entitled to precedence over [O'Dwyer's]".

An obvious difficulty is why Trueheart, after his return to Galveston, appeared so uninformative about his invention of a device with life-saving potential. Surely it would have been welcomed by the medical fraternity? But, so far, it seems that the US medical literature is bereft of mention of the invention until Matas gave his description (Figure 3). Further research is needed.

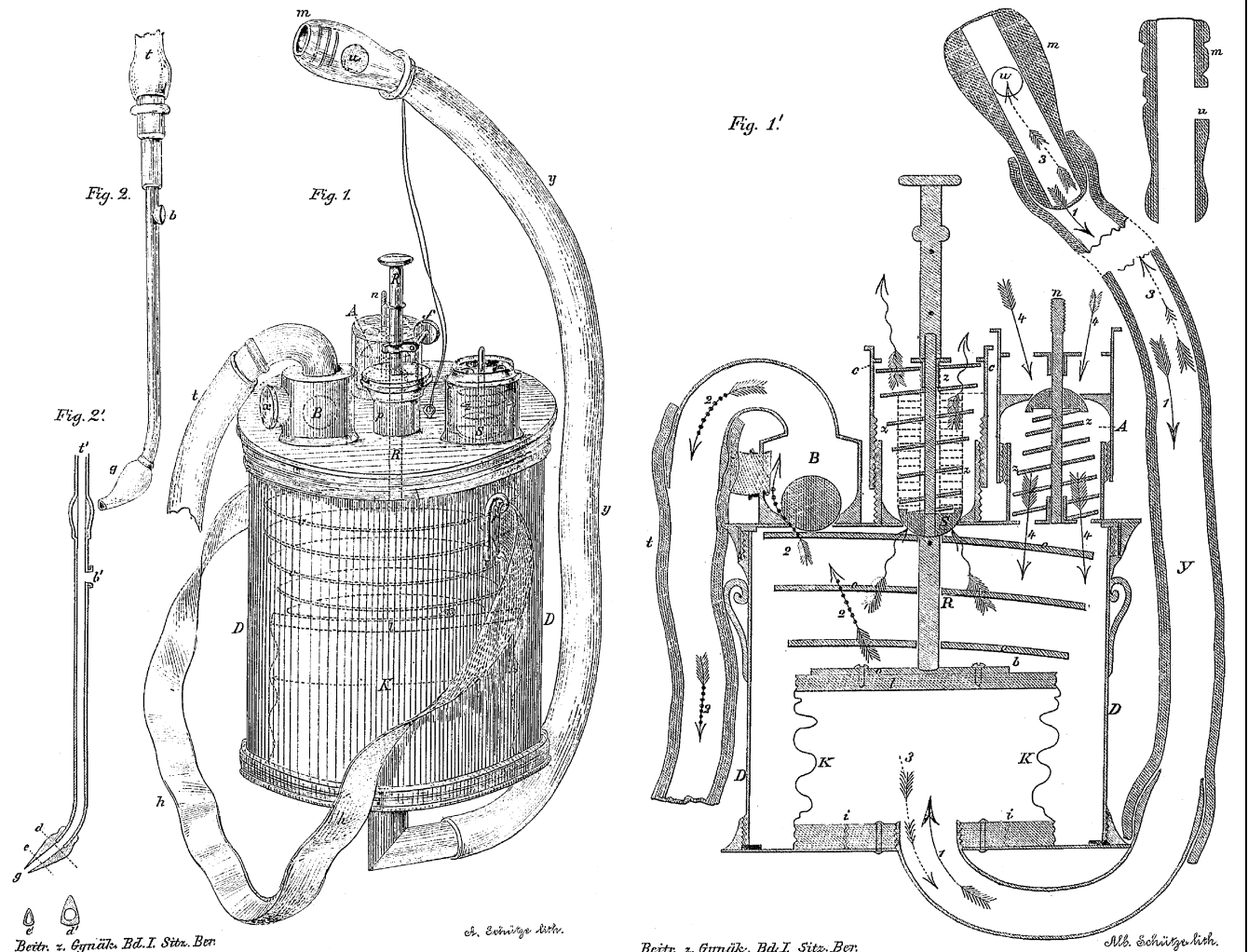
Without having absolute confirmatory evidence (Hurricane Ike devastated Galveston the day after I sent four separate enquiries there about Trueheart, precluding answers), there are of course elements of conjecture in my contentions, and I would welcome any enlightening comments.

### Acknowledgements

The following people have been most helpful in following the "Trueperson" paper trail: Jenny Jolley (ANZCA Library, Melbourne) and Marianne Forbes (University of Auckland Library); Felicia Reilly (Archivist, Wood Library–Museum, Park Ridge, IL); Stephen J Green-

**Footnote 2.** *In a comment to me, Tony Newson, FANZCA, wrote (personal communication, August 2008): "The copperplate script that was popular before typewriters were introduced made misspelling so common, and this is a good example of an "ed" vs "et", especially when the "d" is made with a flourish. [Christopher "QWERTY" Sholes patented his typewriter in June 1868 — RVT.] Then of course, once an error gets into the system it just 'keeps on keeping on'." And further, "Another example of misspelling [was] from 1846 when 'Medical' became misread as 'Musical'. This must have been from typescript since the Spectator (London) referred to JH Bigelow addressing a paper on ether to a Boston musical Society (actually the Boston society for the Advancement of Medicine and the Arts)".*

Figure 3. Trueheart's apparatus in his original drawings



Matas wrote:<sup>1,3</sup> "The rather complicated appliance was originally intended to insufflate air into the lungs by means of an intubating canula which was inserted into the glottis and larynx. There are at least two sizes of the intralaryngeal pieces, graded to suit the ages of the patients — chiefly newborn infants. The laryngeal piece is pyriform in shape, and is made to conform to the size and outline of the glottic orifice. It fits closely to the larynx, and its conical shape facilitates its tampon action. The mouthpiece is shaped like a curved catheter, and this is connected to a bellows which works on a vertical axis and automatically injects and aspirates air in and out of the trachea in a rhythmical fashion. As a true intubating canula and respiratory machine supplied by a bellows, it clearly anticipates — though it is a far more complicated way — the second American invention, with which we are familiarly acquainted as the Fell-O'Dwyer apparatus".  
 (From the Proceedings of the Society of Obstetrics and Gynecology, Berlin, published 1872. With acknowledgement and thanks to the Society.)

berg (Coordinator, History of Medicine, NLM/NIH, Bethesda, MD); Jodi Koste (Archivist, Virginia Commonwealth University, Richmond, VA); and Nikki Lynn Thomas (Manuscripts Archivist, University of Texas at San Antonio, TX). Michael Obladen (neonatologist [retired], Berlin), who has been most generous and helpful with information. Howard A Brody (Director of the Institute for the Medical Humanities, University of Texas Medical Branch, Galveston, TX) also joined the hunt, enthusiastically recruiting a team, but met similar frustrations, especially now with Hurricane Ike.

I am also grateful to Dr Tony Newson for his comments, and acknowledge the valuable help received from managing editor Kerrie Lawson and my wife Elizabeth.

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