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ANZAC doctors at Gallipoli and their contributions to anaesthesia in Australia

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SUMMARY

This year marks the centenary of the start of World War I and, with the coming centenary of the involvement of the Australian and New Zealand Army Corps in the Gallipoli campaign in April 2015, we look at the careers of four doctors who served at Gallipoli and their various contributions to anaesthesia. Drs Eric W. B. Woods, John W. B. Bean, Piero F. B. Fiaschi and Bernard T. Zwar all served as part of the Australian Army Medical Corps. All survived the war.

Key Words: ANZAC, Gallipoli, anaesthesia, doctors

The massive casualty burden of war acts as an imperative stimulus to drastic and often dramatic developments in surgery and medicine. One hundred years ago, at the beginning of the Great War, anaesthesia had changed little from the basic open-drop technique that had been used for the previous 50 to 60 years. Advances in anaesthesia were necessitated by the hundreds of thousands of wounded requiring surgery, especially in the European theatres of World War I.

Although some of these concepts seem basic today, at the time they were transforming. These developments included the following[1]:

- the use of oxygen in shock
- the use of oxygen, nitrous oxide and ether in shocked soldiers having surgery at casualty clearing stations (CCS). Geoffrey Marshall showed the mortality rate from thigh amputations could be decreased from 90% to 25%[2]
- specific equipment being developed allowing the more accurate dosage of anaesthetic agents, including machines developed by Marshall and subsequently Boyle
- the establishment of basic schools of anaesthesia for medical officers and students by Captain Arthur Guedel, who served at the Western Front
- concepts of resuscitation and blood transfusion, with direct transfusions being available in 1916 and stored blood available by the end of 1917.
- the appointment of special anaesthetists as additional officers to CCS in 1916
- the provision of forward resuscitation, including blood transfusion, saline and 6% gum arabic in saline intravenous infusions[3], by the Australian Field Ambulance Resuscitation teams in 1918[3].

Many of these developments occurred in the CCS of the Western Front[4], but this was difficult at Gallipoli due to the narrow beach where the First Australian CCS (1st ACCS) was established, which hindered landing supplies and the evacuation of the many wounded. However, as the campaign quickly progressed and the enormous number of wounded became apparent, little more treatment other than first aid or truly imperative surgery could be carried out. Butler states that the CCS continued to function chiefly as clearing units to the hospital ships[5] where the wounded would be transported to distant hospitals in Greece and Egypt. Hence, in 1915:

> *Sunday 2nd May… About 8pm the first wounded begin to come in and they kept coming just like the first day. Dreadfully wounded and mangled, arms and legs shattered, heads crushed in, chests and abdomens, a most hateful procession… No chance of giving anaesthetics… view to get them to the ships without delay*[6].

However, none of these advances in anaesthesia had been made when the Australians landed at

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Gallipoli on 25 April 1915 as part of the Australian and New Zealand Army Corps (ANZAC). Essentially at Gallipoli, anaesthesia was open-drop chloroform administered by a medical student or medical orderlies, and possibly by some of the doctors, who were mainly working as surgeons[7].

Now, as the centenary of this major theatre of war approaches, it is timely to look at some specific vignettes of individual doctors who were at Gallipoli and their contributions to Australian anaesthesia before, during and after the Gallipoli campaign.

Dr Eric W. B. Woods (1892 to 1936)

Eric William Beresford Woods was born in Albury, New South Wales, where his father, Dr William Cleaver Woods, was a prominent general practitioner, mayor and a pioneer of radiology in Australia. Four of the seven boys born to William and Margaret were to practise medicine and all four served in World War I.

His early education was at Albury Grammar School and subsequently Scotch College in Melbourne from 1906 to 1910. He then studied medicine from 1911 to 1914 at the University of Melbourne where he was a renowned Australian Rules footballer and was selected as fullback for Victoria in 1914. He had not finished his medical degree but enlisted in Tasmania on 7 November 1914 in the 1st ACCS as a private soldier. The

FIGURE 1: Captain Eric Woods 1916.

landing party from the 1st ACCS for the Gallipoli assault consisted of five officers (all doctors) and 58 men—orderlies and others with no clinical experience whatsoever. Until ten days before the landing, the 1st ACCS trained as an out-of-combat unit, a situation which was to change dramatically[8].

Anaesthesia at Gallipoli was largely performed by totally unskilled, non-commissioned officers and privates with no clinical experience. There was, however, one other member of the 1st ACCS who did have some clinical experience other than the officer-doctors and this was Eric Woods[9]. Lieutenant-Colonel Dr John Corbin wrote in 1915[6]: "Friday 30th April… operating table (temporary) fixed… sent out messages for operative work… and formed a regular staff with Woods as Anaesthetist".

There is no record of the number or types of cases that Woods anaesthetised or the methods he used in the brief six weeks he was at Gallipoli. It is not known who gave the first anaesthetic at Gallipoli but Woods was the first so designated.

Woods left Gallipoli on 8 June 1915 and returned to Australia to complete his medical studies. In this period, the University of Melbourne, concerned at the loss of future doctors leaving mid-course to join the ranks, had decreased the medical course to four years and one term[10].

After graduation, Woods re-enlisted on 24 May 1916, returning to Europe as a Captain in the Australian Army Medical Corps, and was in the 32nd Battalion Australian Infantry Force as Regimental Medical Officer. He received the Military Cross at Polygon Wood in 1917, his citation published in the London Gazette in November 1917 reading:

> *For conspicuous gallantry and devotion to duty. For several days he worked at his aid post under very heavy shellfire, attending to all stretcher cases in the open with great courage and complete disregard of danger. His untiring organisation and energy saved many lives…*

Woods returned to Albury after the war in September 1919, married Mollie in 1923 and had twin sons, Eric and Geoffrey, in 1924. He practised as a general practitioner in Hay, New South Wales, from 1922 until 1934/1935 when he moved to Melbourne due to ill health. He died the following year, aged 43 years, from peritonitis following surgery for a ruptured appendix, the operation being performed in a private hospital in Melbourne[11,12].

FIGURE 2: Captains John W. B. Bean, 3rd Battalion Medical Officer and Leslie W. Dunlop, in the 3rd Battalion dressing station, Wire Gully, Gallipoli, July 1915 (AWM G01333).

Dr John W. B. Bean (1881 to 1969)

John Willoughby Butler Bean was born in Bathurst, New South Wales, where his father was the Headmaster of All Saints College. The family returned to England in 1889, where John was educated at Brentwood School in Essex and later at Clifton College in Bristol. He studied medicine at Cambridge University, graduating with a BA, MB and BCh in 1909. After university studies he returned to Australia and set up practice in 1911 at Randwick, Sydney[13].

John Bean was one of the early anaesthetists in Sydney and is recorded as one of the four anaesthetic staff at St Vincent's Hospital, Sydney, in 1911 and 1912[14]. At this time he was also on the staff of the Royal Hospital for Women, the Women's Hospital Sydney and the Sydney Dental Hospital as an anaesthetist[15,16].

Bean published several papers on anaesthesia before WWI, one of which was illustrative of the poor teaching and recognition of anaesthesia in Australia compared with England at the time: 'A plea for the more systematic teaching of Anaesthetic Administration'[17,18]. Anaesthesia, he wrote, was "an art demanding judgment, highly trained powers of observation, resourcefulness and adaptability".

Of note is that John Bean was the younger brother of Charles E. W. Bean, a teacher and later journalist at the *Sydney Morning Herald*, who became the official Australian war correspondent with the First Australian Infantry Force. Charles Bean was famous for being close to the front line in all Australian-fought engagements during World War I—he was an embedded journalist long before the contemporary use of the term and took many frontline photographs throughout the war. Figures 2 and 3 in this paper are examples. Charles Bean later wrote the *Official History of Australia in the War of 1914–1918* and was instrumental in the founding of the Australian War Memorial in Canberra; he also helped popularise the ANZAC legend through his writings[19].

Both brothers were to land at Gallipoli on 25 April 1915. John Bean set up a dressing post behind Steele's Post and later a regimental aid post down Shrapnel Valley—names that are well known to all Australians through the ANZAC legend. John Bean was wounded in the buttock five days later and evacuated on a hospital ship but continued to help the two British doctors on board who had over 800 wounded to care for. He returned to Gallipoli in July and was present at the Lone Pine attack in August. Again he was wounded, being shot through

FIGURE 3: Captain Piero Fiaschi of the Australian Army Medical Corps with Lieutenant Colonel William Glasgow of the 1st Light Horse Brigade and Major H. Pope of the 16th Battalion, at the Destroyer Hill, Gallipoli, 1915 (AWM G01327).

the right wrist and hand, and was evacuated to Egypt and later England. He returned to the front and acted as an anaesthetist for a surgical team at the Battle of Pozieres in France[13]. John's brother Charles was also shot in the leg at Gallipoli on 6 August 1915 but refused to be evacuated, eventually leaving on 17 December, two nights before the final evacuation of Gallipoli[19].

After the war, John Bean lived and worked in Sydney until 1927 when he moved to Brisbane as medical officer to the Department of Public Instruction. He later set up private practice in Brisbane and retired to Hobart in 1939. However, he continued to have an interest in and contributed to the development of anaesthesia and was present in 1935 at the first annual meeting of the Australian Society of Anaesthetists in Hobart, Tasmania, where he presented a paper on chloroform[20]. This paper was similar to his papers presented over 20 years earlier[21,22] and was based on the writings of Richard Gill, Chloroformist to St Bartholomew's Hospital, London, from 1881 to 1913. Gill had been a teacher of Bean's and must have left quite an impression as Bean quoted extensively from Gill's 1906 work, *The CHCl3 Problem*[23]. This is a rare book in the history of anaesthesia and Bean described it as:

> *Superficially eccentric, full of oddities of style and expression, of metaphysical speculations, of quasimathematical formulae, which tended to bewilder and repel the casual reader*[24].

Bean continued to believe in and promote chloroform, stating in his paper in Tasmania in 1935:

> *A revived interest in chloroform was desirable, since the possibility of war was imminent, and chloroform, being portable and convenient, had a large place in military anaesthesia*[20].

Dr Piero F. B. Fiaschi OBE (1879 to 1948)

Piero Francis Bruno Fiaschi was born in Windsor, New South Wales. His Florence-born father, Thomas Henry Fiaschi, was honorary surgeon to the Sydney Hospital, served in the Boer War and commanded the 3rd Australian General hospital on Lemnos in World War I.

Piero went to the United States where he graduated from the New York College of Dentistry in 1903, attaining his MD from Columbia University in 1905. In 1906 he qualified as Membership of the Royal College of Surgeons and Licentiate of the Royal College of Physicians in England, returning to Sydney where he commenced practice in 1907, predominantly in genito-urinary medicine and venereal disease[25]. However, he did make several important contributions to anaesthesia before the start of World War I.

On Fiaschi's return from the United States, he described nitrous oxide/air anaesthesia using a Bennett's apparatus at the New South Wales branch meeting of the British Medical Association in Sydney—where, on this occasion, the discussion centred more on the anaesthesia than the surgery[26]. This is one of the earliest recorded uses of a Bennett inhaler, which used nitrous oxide/air for induction before the introduction of ether. The inhaler was designed by Dr Thomas Bennett when he was in Kansas from 1894 to 1897. Bennett later worked at the New York Hospital and the Mt Sinai Hospital. Which is where Fiaschi almost certainly witnessed and appreciated the use of this equipment during his studies[18].

FIGURE 4: *Il Porcellino,* which stands outside the Sydney Hospital, Macquarie Street, in memory of Dr Piero Fiaschi and his father Dr Thomas Fiaschi.

In 1912, at another British Medical Association meeting, Fiaschi reported his early interest in resuscitation. He discussed the first use of the Meltzer method of tracheal insufflation for postoperative respiratory arrest in a 24-year-old patient undergoing a radical mastoidectomy at the Sydney Hospital. In 1909, Dr S. J. Meltzer of New York (again, perhaps witnessed by Fiaschi) described the passage of a silk-woven catheter into the trachea until resistance was felt at the bifurcation. It was then withdrawn one inch and the ventilation performed using a foot bellows with a mercury manometer to assess the pressure given. On this occasion, the resident medical officers maintained respiration for eleven and a half hours before the heart stopped. Fiaschi then presented two dogs on which he had used this technique for thoracic surgery and expounded on the benefits of the technique to avoid the problematic pneumothorax that occurred when the chest was opened[27].

Again, in 1914, just before war broke out, Fiaschi performed a live demonstration of the Meltzer technique in thoracic surgery on four dogs in front of 100 colleagues at the Australasian Medical Congress in Auckland, New Zealand. He had brought a nurse and two male assistants who administered the anaesthesia with him while he operated; "both operator (Dr P. Fiaschi) and dogs received applause".

Several days later, Dr Fiaschi apparently demonstrated his technique of anaesthesia on a patient at the Auckland Hospital. At the same meeting, his father Thomas, realising that war was imminent, gave a paper on spinal analgesia in the field, recommending the use of Novocain. This was prepared sterilely from the solid powder by the surgeon and then injected; all subsequent clinical supervision was by an orderly[28]!

In 1909, Fiaschi joined the Australian Army Medical Corps. He enlisted in the war on 20 August 1914 and his unit, the 1st Light Horse Field Ambulance, arrived at Gallipoli on 9 May 1914. his unit was initially employed in staffing the hospital ships, evacuating and treating casualties, and was later assigned to treat casualties from the push at Lone Pine in early August. In November he fell ill with 'septicaemic poisoning', was evacuated to Alexandria and rejoined his unit briefly before leaving Gallipoli just prior to the final evacuation on the hospital ship *Ionian*[13].

On New Year's Day 1916, he was promoted to Major and went to France. During the Battle of Pozieres, reflecting his ongoing interest in resuscitation, he pioneered the treatment of shocked casualties using intravenous saline infusions. Fiaschi renewed his acquaintance with the famous Harvey Cushing at the 3rd Australian General Hospital at Abbeville, France, in March 1918, having met him before at John Hopkins Hospital in Baltimore[29]. While he was in Baltimore he also met the renowned Sir William Osler and remained in contact, mailing the Oslers photos from Boulogne[30].

Fiaschi's commanding officer at Abbeville, Dr F. A. Maguire, remarked in Fiaschi's obituary[31]:

> "*…in the Gallipoli campaign, Piero Fiaschi did more by his efforts than any other man to maintain the Australian troops on the Peninsula… Give him three men's work and a free hand, and one could put Piero and the work out of one's mind".*

In 1918, Fiaschi was mentioned in despatches, and was awarded the Order of the British Empire in September 1919 for his services during the war. Fiaschi returned to practice at the end of the war and retired from the army as an Honorary Colonel in 1935. During World War II he was a member of the Medical Commission for the inspection of prisoner of war camps.

Piero Fiaschi and his father are commemorated by a bronze replica of the *Il Porcellino* statue from Florence. This work sits prominently outside the Sydney Hospital on Macquarie Street and was presented by Piero's sister, Marchesa Torrigiani, in 1967.

Dr Bernard T. Zwar CMG (1876 to 1947)

Bernard Traugott Zwar was born at Kapunda, South Australia, to Lutheran parents who had fled religious persecution in Europe in 1849. Zwar commenced medical school at the University of Adelaide but graduated from the University of Melbourne. After his residency he was Medical Superintendent at the Austin Hospital from 1901 to 1904 before travelling to England and Germany for postgraduate studies in neurology and tuberculosis. On his return he was appointed to the staff of St Vincent's and the Melbourne Hospital in Melbourne[13,32].

In 1906, Zwar was Honorary Anaesthetist to St Vincent's Hospital, Melbourne. The first spinal anaesthetic in Australia had been administered in 1902 at Horsham in rural Victoria[33] and Zwar subsequently did much to popularise spinal anaesthesia using stovaine throughout Australia[34,35]. However, as his experience and that of others grew, more complications were reported. In 1908, Zwar

FIGURE 5: Major Bernard T. Zwar (courtesy of the Zwar family).

reported on his series of 278 cases of spinal analgesia and discussed in detail many of the complications of failure, nausea and vomiting, severe headache, temporary respiratory paralysis and a young adult who developed a long-term spastic paraplegia. He discussed techniques removing 6 to 10 ml of cerebrospinal fluid to mix with the local anaesthetics including the then new agents, Novocain and Tropacocaine, with the addition of 5% glucose to control the height of the block[36]. This paper was the first discussion on spinal analgesia at a congress in Australia[18].

Zwar was commissioned as a Captain in 1912 and Major in 1914. He served with the hospital ships from April 1915, treating the evacuated wounded from Gallipoli.

No-one estimated the extent of the casualties that would arise from the Gallipoli campaign. Initially, only two transport ships and one hospital ship were allocated to the ANZAC forces for the evacuation of the anticipated 1700 casualties that would occur at ANZAC Cove. In reality, the 1st ACCS received 700 casualties on day one, 2731 casualties in the first week and 37,000 casualties over the eight-month campaign; often there would be 600 to 700 casualties per day needing evacuation onto the hospital ships. These ships would then move the wounded back to stationary hospitals at Mudros (on the island of Lemnos in the Aegean Sea) and then to Australian Army general hospitals in Alexandria, Egypt, all the while under threat from lurking German submarines.

These injured troops were carried out by barges and hoisted aboard the transports ('black ships' which did not display the Red Cross) and the hospital ships ('white ships'), which were requisitioned merchant ships fitted out specifically for medical purposes, including an operating theatre. Typically these ships had six surgeons, an anaesthetist, a pathologist, a radiographer, an operating assistant, a dispenser and nursing staff. Ether was available.

There were no female nurses at Gallipoli but they were essential on the hospital ships. It was not uncommon that on each trip 40 to 50 men died, being buried at sea[7].

Zwar's unit set up an onshore hospital in early June 1915 but he was evacuated to England several weeks later with appendicitis, where the offending organ was removed on 3 July. He returned to Australia in 1916 and married. He resumed his practice as a surgeon at the Melbourne Hospital and was a founding Fellow of the Royal Australasian College of Surgeons. From 1937, Zwar was Chairman of the board of the Walter and Eliza Hall Institute of Research for ten years. He was awarded the Order of St Michael and St George in 1941 and was Deputy Chancellor of the University of Melbourne from 1943 to 1944.

The careers and contributions to anaesthesia of doctors who served in World War I are diverse and significant. Further research in these areas is warranted.

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