A Cooke's tour to find the remaining pathology specimens collected during WW1 by the pathologists in the various combatant countries

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Nearly all the combatant Nations collected pathological specimens and records with the same object in mind

To provide material for information now, and for research and teaching

AFTER THE WAR IS OVER

I became interested in this topic about 10 years ago when I encountered a pathologist who had an example of a “trench foot” in his museum.

This kindled an interest in pathology specimens from soldiers who fought in WW1.

It has taken me many years of fossicking to find the specimens that remain.

When I got my first glimpse of what was available, I thought that it might be useful to try to find what if any, similar specimens remained in the other combatant nations.
Trench foot occurred in the first few months of WW1 when the trench warfare began.

It was caused by immersion in cold water that flooded the trenches.

The soldiers had tight boots and putties and did not take their boots off for days on end.

The feet became numb and swollen.

The skin blistered and ulcerated.

Ulcers became infected.

The feet then became black and the skin ulcerated down to tendons and bone.

Description by a pathologist.

Trench foot described by a nurse:

Putties encrusted with mud had to be cut off.

Then heavy service boots removed – a terrible task with feet so blistered and painful.

Finally come the socks - socks almost taking root in the charred and broken flesh.

Some black, swollen and shapeless, covered with huge blisters as if they had been severely scalded.

Others completely gangrenous.

The gangrene in cases extending far up the leg.
This amputated trench foot illustrates what the nurse described.

The gram negative organism, *Pseudomonas aeruginosa* was a very common cause of wound infection.

In culture it produces a pale green colour, and the green colour in this foot probably indicates the presence of this organism.

Simple treatment was not always effective and amputation of affected feet was usually needed.

At one stage there were 20,000 British soldiers with trench foot.

There may have been an equal number of German soldiers with this as well.
Prevention

Dry the feet each day and change into dry socks.

Boots were supplied a few sizes too big to allow for shrinkage and to wear more than one layer of socks.

Soldiers were instructed to inspect their neighbours’ feet each day to ensure that the feet were dried and socks were changed.

A medical orderly inspecting the black foot of a soldier.

This appears to be the same soldier being transported to the Casualty Clearing station

In Australia, the UK and in other countries of the then “British Empire” women members of the Red Cross Society organised social groups for knitting socks “for the boys” and these were transported to the front.
In the early stages of WW1 there was very little attention paid to the medical conditions confronted by the soldiers on either side of the conflict, and there was little knowledge of what these medical conditions were.

On the British side the Director of Medical Laboratory Services was William Boog Leishman, a career Army Medical officer. He had established himself as an international expert in Tropical and clinical laboratory Medicine.

He established a service that would provide assistance to the medical teams dealing with current problems, and for collection of data for 'research and training after the war is over.'

In 1923 he published the findings of this data collection.
The Head of the German Military Medical Service was Ludwig Aschoff.

He was a leading pathologist with an international reputation, and was no less outstanding than Leishman.

He was President of the IAMM (IAP) 1914-1916.

In contrast to Leishman, Aschoff was strictly a morbid anatomist.

Here he is performing an autopsy on a German soldier who shows the types of injuries caused by the new explosive ammunition.

Surgeons had to learn how to deal with these injuries.
Aschoff was assisted by two other leading pathologists, Walter Koch in Berlin and Max Borst in Munich.
The Germans too, were collecting data that could be analysed and studied ‘after the War is over.’

German bacteriologists were leading the world in bacteriology in 1914 but they did not play much of a role in Aschoff’s Medical Corps.

This may have been a result of the bias of Aschoff, but possibly the main problem may have been due to internal forces.

The clinicians were somewhat overwhelmed by the fame of people like Robert Koch and his pupils, and by Aschoff himself.

The laboratory investigations were done by Pharmacists who were given unsatisfactory specimens that arrived in the lab some days after they were taken.

As a predictable result of this, the reports were not reliable.

Clinicians who were not convinced by the usefulness of bacteriology and other laboratory tests, saw an opportunity to reassert their place in the firmament.

They began trumpeting their opinions that all diseases could be classified on clinical grounds alone, and that they were caused not by living organisms but by miasms (the smell of rotting excrement etc.)

The British pathologists visited the patients to liaise with them and the doctors, and to take the specimens themselves to make sure they got proper specimens and proper histories.
As a result they were able to apply the scientific knowledge obtained by Louis Pasteur, Robert Koch and their pupils to the practice of clinical medicine and to establish the basis for the specialty of Infectious diseases after penicillin was invented.

The account by Leishman is more systematic than that currently available from the German side, but the diseases encountered were very similar on both sides of the conflict.

The British specimens were all sent to the Hunterian Museum at the Royal College of Surgeons in London.

They were collected from the hospitals in France and also from the hospitals in England to which soldiers were sent.

The vast majority of the British specimens were destroyed during WW2 by a bomb that hit the Royal College of Surgeons during the blitz of London on May 11, 1941.
I have checked all the hospitals in England to which soldiers were sent. Most of them have been demolished and there are no records.

However in Leeds there is one section of trachea of a gas lung that was preserved by the pathologist Matthew Stewart.

When I visited the Hunterian Museum to see what specimens they still had, the conservator Martyn Cooke did not know whether he had any.

When I returned a year later he had found 3 gas lungs and two trench feet.

The German specimens were sent to

Freiburg  (Aschoff)
Munich   (Borst)
Berlin   (Koch)

where the main pathologists were Professors in civilian life

and also to the famous Narrenturm Museum in Vienna.

The German specimens in Freiburg and Berlin were destroyed by British and American bombs during WW2.

It took me quite a while to find out where the specimens of Max Borst were in Munich, but finally Peter Meister courtesy of Karl-Heinz Wurster one of his former Trainees obtained permits for us to visit the Sanitasacademie in the Head Quarters of the German Army in Munich.
History
A German soldier who died on 10-10-1916, 32 hours after exposure to the Gas.

The type of gas is not recorded.
The label on the specimen container says
Laryngo-tracheo-bronchitis
Bronchopneumonia
Peribronchial fibrosis  Max Borst
The Narrenturm Museum in Vienna has a few bones and fragments of shrapnel, but they also have pathology specimens of lung and skin from three people who were killed in an accident in a mustard gas factory in Hamburg.

This may have been a factory that manufactured gas for WW1.
The United States joined the War in July 1917 and carried on till Nov 1918 when the War finished.

The Museum at the Armed Forces Institute of Pathology / Walter Reed Hospital in Washington had been receiving War pathology specimens from the time of the Indian wars.

It was natural that they would be interested in collecting specimens from WW1.

The Army issued a memorandum instructing the Medical Officers to preserve pathology specimens and send them to the Museum attached to the Armed Forces Institute of Pathology in Washington.

No specimens were being received, so they appointed a leading US pathologist, James Ewing (1866-1943) from Cornell University, and the Sloan Kettering Cancer Center, New York to visit France to investigate.

He found that the Americans had many laboratories that were well equipped and they had scientific staff, but no pathologists because they had been diverted to more clinical duties.
Another leading US pathologist, William MacCallum (1874-1944), Foundation Professor of Pathology at Johns Hopkins Hospital in Baltimore was also recruited to investigate the lack of specimens being referred to the AFIP.

He made similar observations. He did many post mortems himself, particularly on soldiers dying from influenza. He also managed to streamline the organisation, and then specimens began to flow.
After my visit, Brian Spatola the Curator of the specimen collection at the National Museum of Health and Medicine, has found many other specimens from WW1 and he is arranging a display.

What happened to the specimens 'after the was over'

German specimens

I have not been able to find whether any of these were used for education or research until Gregor Babaryka began to section some of them for this project.

WW1 Specimens in France

In July 1916 there were casts, illustrations, moulages and photographs that complemented 10,000 specimens in the Val de Grace Hospital in Paris and they had a public showing of these specimens at about that time.

I have not been able to trace these.

WW1 Specimens in the UK

Following the public display of specimens in Paris in 1916, it was decided to do something at the Hunterian Museum as soon as possible.

On Oct 11, 1917 an exhibition was opened that occupied 3 rooms.

The overall intention was to present to the visitor all the possible wounds and conditions of war inflicted on the soldier showing drawings and photographs of the clinical features, and the specimens to illustrate the progress of the condition from diagnosis to healing, treatment and results of treatment.
Where possible the weapon that caused the injury would be shown, and any attempt to protect from the injury such as helmets would be included.

The organisers were very disappointed at the small number of visitors they had to this demonstration.

Almost all the visitors were professional medical people. The general public did not attend.

WW1 specimens in Canada

63 boxes of museum material were received from London.

They contained wet pathological specimens, macerated bones and several cases of captured German medical war accessories - splints, drugs, bandage, etc

They were curated at McGill Uni by Maude Abbott and her assistant Mr E. Lionel Judah

They made a display for a meeting of the Canadian Medical Association in Hamilton, Ontario, in May–June 1918.

and another at the American Congress of Surgeons meeting in Montreal in October 1922.
Expectation of the organisers

The collection when finally assembled in Ottawa will form an excellent nucleus for the future Canadian National Medical Museum.

It should be very valuable for the teaching of Medical Science.

The specimens were not seen again.

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WW1 specimens in Australia

William Keith Inglis (1888-1960), an Australian pathologist was stationed in a hospital in France during the War.

He performed many post mortems and sent specimens to the RCS War Collection.

Post war he assisted in the curating of the specimens at the Hunterian Museum.

After a lot of heated negotiations with the British administrators he obtained 727 specimens from the War Collection, and distributed these to then existing Medical Schools, Sydney, Melbourne and Adelaide.

There is no trace of those sent to Adelaide.
In 1946 most of the Sydney and Melbourne specimens were sent to The Australian National Uni. Canberra where they were placed into storage.

There does not seem to have been any other public showing of the specimens, presumably to the disappointment of Keith and his colleagues.

WW1 specimens in Turkey

The Turks did not perform autopsies but they did keep good bacteriology records.

Sitki Tuslali has analysed the Turkish bacteriology records.

They show similar results to those obtained by Leishman in Europe, except for amoebic and bacterial dysentery and malaria.

All the European War Collections contain Drawings and models of war injuries made by artists.

War artists still play a role in armies in spite of the availability of high quality photographic facilities.
What follows are 2 full size wax models showing some of the injuries of WW1 soldiers.

They were created by Eleanor Crook to be displayed in the Gordon Museum of Guy’s Hospital, London in 2016.

Conclusion

Is it worth honouring the soldiers who donated their specimens, and the medical staff who spent so much loving time and expertise preserving them, in another attempt to carry out teaching and research 100 years AFTER THE WAR IS OVER

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Gunter Kloppel, Pathology Institute of Technical University Munich, and formerly Professor of Pathology Kiel, Germany.

Annette Schmidt-Graeff, Professor of Pathology, University of Freiburg, Germany.

Martyn Cooke, Head of Conservation Unit and Carina Phillips, Curator of the Wellcome Museum of Anatomy and Pathology, Royal College of Surgeons of England and also Samuel Alberti, Keeper of Science and Technology National Museum of Scotland (Formerly Director of Museums and Archives, Royal College of Surgeons of England), London, UK.

Eduard Winter, Curator, Pathologisch-anatomische Sammlung-NHM, Vienna, Austria and Doris Hoeflmayer, Institute of Pathology, University Medical Center Hamburg-Eppendorf, Germany.

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