

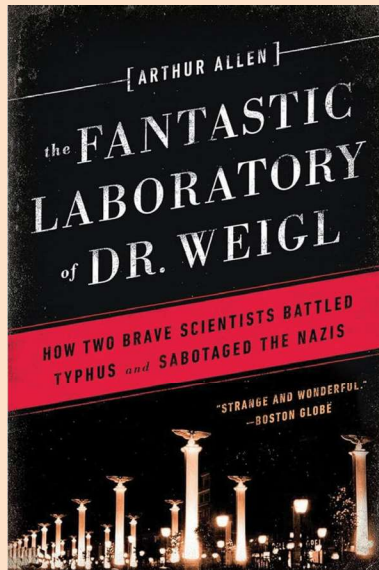
## Book review

### The fantastic laboratory of Dr Weigl

How two brave scientists battled typhus and sabotaged the Nazis.

By Arthur Allen,  
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Review by Bryan  
Rhodes



I came across this book a few years ago, and it remains one of my favourites. I was already interested in the history of typhus as it features prominently in the history of medicine in Lancaster. The so-called 'black assizes of the northern circuit' which occurred in the late 16th century, and in which the judge and his sergeant died from jail fever, involved a court case in Lancaster Castle. In 1746, Henry Bracken, surgeon of Lancaster, was imprisoned in the castle on suspicion of having Jacobite sympathies. His son died of jail fever after visiting him there.

Whilst serving as a military physician, John Pringle studied various forms of fever and recognised that ship fever, hospital fever, camp fever and jail fever were identical conditions. He published his findings in his book 'Observations on Diseases of the Army' in 1752. The word typhus, which comes from the Greek word for hazy, came into use in the 1760s. David Campbell, Lancaster physician and founding President of the Lancaster Medical Book Club, published a treatise on typhus in 1785 after treating several hundred patients from major outbreaks in the Lancaster area.

Allen's book covers the more recent history of typhus, specifically the period leading up to and including World War II. The first chapter gives an excellent history of typhus and how the disease has affected various armies and world events. The French scientist, Charles Nicolle, in the early 1900s was the first to prove that the body louse was responsible for transmission of the disease. The primitive bacteria, *Rickettsia prowazekii*, was identified and named by Henrique da Rocha Lima in 1915.

Despite the efforts of multiple laboratories worldwide, progress in producing a suitable vaccine against typhus had been very limited before 1930. However, Rudolf Weigl, a Polish scientist based in Lwow (modern day Lviv in Ukraine) published a report on his new technique for establishing a stable colony of *Rickettsia prowazekii* in 1930. The complex methodology he developed was difficult to replicate and involved feeding lice by allowing them to bite human volunteers,

and subsequently injecting the lice per anum with the rickettsia culture using a very fine micropipette. The work was dangerous and there were ten serious outbreaks of typhus in Weigl's laboratory. However, by 1938 enough vaccine had been produced to vaccinate 68,000 Polish people.

The majority of the book covers the war time period between 1939 and 1945, and focuses on Weigl's laboratory, Rudolph Weigl himself and one of the Jewish scientists associated with the laboratory, Ludwik Fleck. The Nazis considered typhus to be a Jewish disease (geomedezin or race hygiene theory was the Nazi theory that certain diseases were characteristic of certain races) and their public health measures to control the spread of typhus included the establishment of Jewish ghettos. The overcrowding in the ghettos led to more epidemics of typhus. Weigl allowed batches of his vaccine to be smuggled into the ghettos, saving the lives of many of the occupants.

Fleck had set up his own laboratory and in the early 1940s worked in a small hospital inside the Lwow ghetto. He continued his research on typhus and published research suggesting that typhus antigens could be identified in the urine of infected patients. In February 1943, Fleck, his wife and son and other co-workers were taken by the Gestapo and put on a train to Auschwitz. For a Jewish family, being transported to Auschwitz was almost universally a death warrant but remarkably this was not the case for Fleck's family. By this time, typhus was ravaging Hitler's armies in Russia and the desperate need for supplies of typhus vaccine led to the formation of Waffen SS Hygiene Institutes within some concentration camps. Fleck spent about ten months in Auschwitz before being transferred to the Hygiene Institute at Buchenwald, leaving his wife and son and co-workers behind. The author provides evidence supporting the idea that Fleck collaborated in providing fake vaccine for the Nazi soldiers while real vaccine was used for camp occupants.

The book is a fascinating if somewhat harrowing account of the experiences of two important microbiologists set within the context of World War II and the history of typhus. It has an easy-to-read style, and I cannot recommend it highly enough.