

Ludwik Hirszfeld. A man above conflict.

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For the attention of
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1. Introduction

This report is written for integrated assessment in The Science and Technology in Society Unit tutored by John O'Neill and The Communication Unit tutored by Mark Hetherington.

The report is also a part of an international project "Heroes and Cultural Identity"¹ which students of six countries promote their chosen hero.

This report aims to outline a profile of Professor Ludwik Hirszfeld – Polish immunologist and microbiologist, whose work saved lives of many of his contemporaries and has an impact on the today's science.

This report is to be submitted on 25 May 2009.

2. Research methods and plan

All information presented herein was gathered from a number of internet publications. Detailed list of publication can be found in Bibliography section.

Following stages added up to The Science and Technology in Society:

- The Hero was chosen by 30 September 2008,
- The brief plan and summary was prepared by 28 November 2008,
- Research was mostly completed by 13 January 2009;
- On 16 March 2009 the power point presentation was delivered'
- The report was submitted on 25 May 2009.

3. Life and work of Professor Ludwik Hirszfeld

3.1 *Physician and Scientist of war times*

"Most efforts of the scientist live their own, anonymous life"² – these words superbly describe the work and achievements of the great Polish serologist, immunologist and microbiologist (and the very author of the quotation) Professor Ludwik Hirszfeld. The significance of Hirszfeld's achievements is very important as he lived and worked over two world wars and The Cold War – times difficult for everyone and even harder for those, who like himself, were of Jewish origin.

¹ More about the project you can learn form <http://www.stevenson.ac.uk/about-us/eu-programmes/comenius.html>

² Above quotation was translated by the author of the report.

Ludwik Hirszfelfd, born in 1884 in Warsaw, the capital of the country which at the time did not exist³, was growing up in times of increasing tension and social and political unrest. At the age of 18 he began his study of medicine in Germany, later taking also lectures in philosophy.

In 1911 he and his wife, Hanna, moved to Zurich where Hirszfelfd worked in the Institute of Hygiene of the University of Zurich until the First World War when news about an uncontrolled outbreak of the epidemic typhus spread through Europe drawing both Hirszfelfds to Serbia. There, on The Macedonian Front, he took a position of a head advisor for the Central Laboratory of Serology. It is worth mentioning that the Serbian army was supported by the Germans – Hirszfelfd himself at the time was not less tied to German culture than to the Polish one.

After the war The Hirszfelfds moved to Warsaw. Ludwik took an active role in organising of the National Institute of Hygiene, which he directed from 1926 to 1939. He was forced to step out of this position when the Germans encroached to Warsaw. At the very beginning of the German occupation L. Hirszfelfd started to organise a network of blood transfusion stations in Warsaw.

Soon he was forced to move to Ghetto where he stayed (refusing to take many opportunities to escape) until 1943. Hirszfelfd with his family lived in Warsaw Ghetto for two years. After that time they managed to escape. They hid under false names in the village not far from Warsaw, where Hirszfelfd's daughter – Maria, weakened by the horrifying conditions of Ghetto, died of pneumonia and where broken Hirszfelfd wrote "The Story of One Life" – his autobiography.

As soon as only the part of Poland was liberated in 1944 Hirszfelfd with his wife moved there. They went to Lublin and took an active part in setting up the University of Maria Curie. Next year he travelled to Wroclaw. He worked at the Wroclaw University – helping to create and becoming a dean of The Faculty of Medicine and later, The Institute of Immunology and Experimental Medicine nowadays named after him – The Ludwik Hirszfelfd Institute of Immunology and Experimental Therapy.

He died at the age of 70 in 1954 in Wroclaw.

3.2 Legacy of Professor Hirszfelfd

3.2a Serology

In 1907 Hirszfelfd completed his doctoral dissertation on the blood agglutination.

³ At the time Ludwik Hirszfelfd was born until after WWI Poland existed as a Kingdom of Poland actually governed by Russia.

At the beginning of his professional career Hirszfled worked with Professor Erich von Dungern in the Heilderberg Institute for Experimental Cancer Research.

The friendship and cooperation between them came to fruition in discovering that the blood groups are inherited according to mendelian rules.⁴ (Hirszfled used that finding straight away to establish the paternity exclusion test.) Thanks to this co-operation the unified naming for A,B,O was introduced in Europe in 1928 – the nomenclature that is in use in many countries nowadays.

Hirszfled intuitively understood the reason for the Haemolytic Disease of Newborn. He announced already in 1926, 11 years before Rhesus factor was discovered⁵, the hypothesis of the allergic incompatibility between mother and foetus and worked out that the whole blood transfusion in the newborn could safe its life⁶.

Many of his works Hirszfled carried with his wife Hanna. One of those was typing up and analysing blood samples from soldiers and civilians of sixteen different races during the First World War while they both worked on Macedonian Front. That extra work they carried on top of the main purpose of getting under control the epidemic of typhus – initiated the new branch of science – anthropological serology (or seroanthropology).

Some of the findings of the couple were used to investigate the dependency between diseases and blood types, some other to trace migration of different races. The one

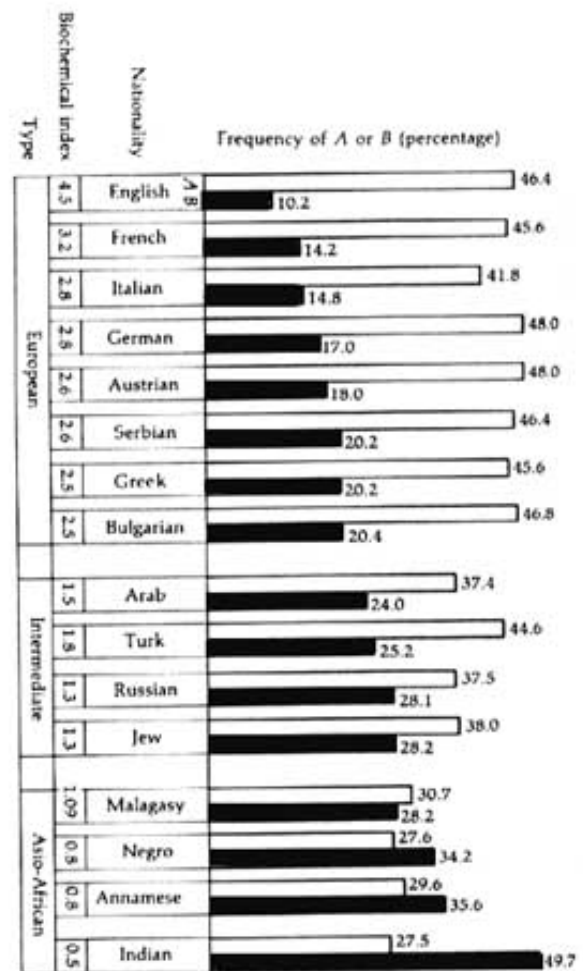


Fig. 1.5.1 This graph showing ethnic differences in ABO gene frequencies was the first use of genetic markers to study racial differences. The figures given are percentages of positive reactions with anti-A and anti-B reagents. The "biochemical index" is the ratio of A to B. (Taken from Hirszfled and Hirszfled [1919, pp. 505-537] by Bodmer and Cavalli-Sforza [1976, p. 576].)

Fig.1 Differences in ABO frequencies found by Hirszfleds.

⁴ At that time, 1910 – 1911, less than 40 years since Mendel died, it still wasn't clear if mendelian rules applied to humans.

⁵ Rhesus factor was discovered in 1937 by K. Landsteiner and A.S. Wiener.

⁶ The first whole blood transfusion of the newborn was made on 16 July 1949. It saved the life of the second baby of a woman, who after giving a birth to her first child had 8 miscarriages.

that seemed the most important at the time was that the A group was not exclusive for Arians but was widely spread in some other races, which was used as a scientific evidence against racism.

3.2b Microbiology

In 1919 Hirszfled published two papers in Lancet. The one of those was “Serological differences between the blood of different races” and the other: “A new germ of paratyphoid.”

The second one was on the bacterium he discovered while fighting the epidemic of typhus in Serbia⁷. He also manufactured effective vaccination against it saving lives of thousands.

He again saved many lives carrying out disinfection programs in Warsaw Ghetto and organising vaccination using vaccines smuggled from the “Arian side” illegally by his German friend.

Hirszfled introduced to Poland research on the use of bacteriophages⁸ against bacterial infections. Works on phages are still continued in The Ludwik Hirszfled Institute and give promising results in fighting resistant strains.⁹

These are the most spectacular of Hirszfled’s achievements in the microbiology field, but he also worked in Institute of Hygiene in Zurich, Institute of Hygiene in Warsaw, Marie Curie University in Lublin and University of Wroclaw, created Institute of Immunology in Wroclaw – all these years he was extending his knowledge and understanding, decided and influenced others.

3.2c Teaching

Ludwik Hirszfled was not only a scientist and physician – he was also a master.

“His [Hirszfled’s] lectures in Ghetto were so very popular that even people from outside, not only students, would come to listen”¹⁰ – one of the Ghetto survivors wrote in her memoirs.

⁷ It was the third species of bacterium causing typhus discovered named after it’s discoverer - *Salmonella hirszfledii* and known also as *enterica type C*.

⁸ Phage therapy – the method of fighting bacterial infections with use of bacteriophages – a type of viruses which attack bacteria.

⁹ http://www.aite.wroclaw.pl/index_en.html - here more information about phage therapy can be found

¹⁰ http://polish-jewish-heritage.org/Pol/Ksiazka_Wehr_Wspomn2.htm , translated by the author.

He gave lecturers, trained new physicians and researchers wherever he went - before the First War in Zurich, while working on the Macedonian Front, back in Warsaw in between Wars an against law in Ghetto, in Lublin and Wroclaw. He published, gave lectures and discussed matters with individual people – encouraged many people to take an interest in microbiology or immunology. From the circle of his students originated Dr Hilary Koprowski – the creator of the first ever polio virus vaccination and Felix Milgrom – professor of microbiology and immunology whose work significantly contributed to the knowledge of organ transplantation.

Professor Hirszfeld is an author or co-author of 394 papers and academic books.

He was awarded an honorary doctorate by the University of Prague and Zurich, honorary citizenship of Yugoslavia and Order of St. Sava.

4. Conclusion

Ludwik Hirszfeld was an extraordinary person – well known to his contemporaries and forgotten nowadays.

However he deserves to be remembered and learned from – for his achievements in a science field, for his devotion to work, science and society, for the choices he made.

He pointed out a path to follow – he showed that in the world driven by conflicts human beings can still live in peace and strive after an order against chaos - successfully.

5. Evaluation

The work on this report vastly contributed to my skills in writing in English, although I feel this work is not good enough to be published and I would rather avoid it.

I am glad that I have chosen Ludwik Hirszfeld. The more I learn about him the more impressed I am.

I regret that this report is based only on scraps I found in Internet – I have ordered Hirszfeld's autobiography and his biography but none of them found their way with a help of national mailing companies.

I also believe that more investigation is required in some areas.

6. Signature and Date

7. Bibliography

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 - 4) <http://www.osk.am.wroc.pl/cgi-bin/news/gazeta.cgi?nr=21&?zr=108>
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