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SOURCES FOR THE FORGOTTEN 1912 DISCOVERY OF THE PROBIOTIC BACTERIUM *BACILLUS CARPATHICUS* IN *HUSLANKA* AND THE FORGOTTEN DISCOVERER: DR. W. S. KINDRACZUK: PHARMACIST OF ŁAŃCUT[*]

Bibliographic sources on the 1912 discovery and naming of the probiotic *Lactobacillus* bacterium *Bacillus carpathicus* in *huslanka* are found outside Poland and outside Ukraine, although the discoverer, scientist and chemist Dr. Włodzimierz Sylwester Kindraczuk, was born on January 9, 1882 in the town of Horodenka (today western Ukraine), and obtained his Master [Magister] of Pharmacy in 1909[1] and his Ph.D. at the University of Lviv in 1911[2], where he worked in the laboratory of Dr. Bronisław Radziszewski[3], and was a pharmacist in Łańcut, Poland for almost thirty years, from 1915 to 1944.

At the time of Dr. Kindraczuk's discovery in 1912, Horodenka, Lviv, Kraków and Łańcut were all part of the Province of Galicia, which was part of the Austro–Hungarian Empire ruled by Kaiser Francis Joseph. The capital of this province was Lemberg (Lwów in Polish, Lviv in Ukrainian and Leopolis in Latin). During this period, the University of Lviv was called *C. K. Uniwersytet im. Cesarza Franciszka I we Lwowie* [*The Imperial Royal University of Kaiser Francis I in Lviv*]. Dr. Kindraczuk was from a middleclass family of mixed ethnicity. His mother, Maria Konstancja Polańska, was Polish Roman Catholic, the daughter of Marcel Polański, the mayor of Dolyna, his father, Jan (Ivan), was Ukrainian Greek Catholic, a civil servant in the post office, and his maternal grandmother was German Lutheran, the granddaughter of German craftsmen who had settled in Lviv in the 18th century. Dr. Kindraczuk was fluent in three languages: Polish, German and Ukrainian.

The results of his research on *Bacillus carpathicus* in Hutsul *huslanka*, a fermented milk product of the Eastern Carpathian Mountains, were published

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[*] A shorter version of the paper was given at the Warsaw East European Conference (WEEC), University of Warsaw, July 15–18, 2013 and has been expanded with additions based on the research done in Poland thereafter. This article forms part of a soon to be published biography of Dr. Kindraczuk.

[1] *Protokół z egzaminów ścisłych Magistrów farmacyi* (Derzharkhiv lvivskoi oblasti), fond 26, opys 15, sprava 973. *Stopień magistrów farmacyi* in: *Czasopismo Galicyjskiego Towarzystwa Aptekarskiego* 39, 8/1909, (1 serpnia 1909), p. 136.

[2] *Katalog Głowny Słuchaczów Zwyczajnych Wydziału Filozoficznego w C. K. Uniwersytecie Lwowskim* (Derzharkhiv lvivskoi oblasti, 1905–1911), fond 26, opys 15, sprava 613–620, 622, 624–625.

[3] W. Hahn, *Kronika Uniwersytetu Lwowskiego*, vol. 2: *1898/99–1909/10*, Lwów 1912, p. 472.

under the name *Dr. Wladimir Kindraczuk* in September 1912 in Vienna, the capital of the Austro–Hungarian Empire, in the German–language Austrian journal *Oesterreichische Molkerei–Zeitung* [*Austrian Dairy Journal*], which was printed using the Gothic script. The article was titled *Huslanka und Yoghurt und die Vergleichung der Säuerungserreger der beiden Sauermilchsorten* [*Huslanka and Yogurt and the Comparison of the Acidifiers in Two Types of Fermented Milk*][1]. In this article Dr. Kindraczuk describes *huslanka* as a popular food among the *Ruthenian* (Austria's official designation for Ukrainians) clans of the Hutsuls in the Eastern Carpathian Mountains of Galicia and Bukovyna. He describes how *huslanka* is prepared by boiling and then cooling skimmed milk and then adding some previous *huslanka* to this skimmed milk and then placing it in a warm oven in pots covered with thick cloth or in wooden barrels near a fire. After coagulation the barrels of *huslanka* are stored in a cool place and the barrels are sealed air tight. He states that *huslanka* has a very long shelf life (1–2 years) due to the specific bacterium, which he identified and named *Bacillus carpathicus*. He states that this bacterium is a distinct species and different from *Bacillus bulgaricus* as it produces larger amounts of lactic acid. Dr. Kindraczuk indicates that he obtained samples of *huslanka* directly from the Hutsuls during a visit to the Carpathians and that he then proceeded to conduct the microbiological analysis of the lactobacteria of these samples of *huslanka* in Vienna in the bacteriological laboratory of Professor Dr. Willibald Winkler, professor of dairy industry and agricultural bacteriology at the K. k. Hochschule für Bodenkultur [The Imperial Royal University of Agriculture], today called the University of Natural Resources and Applied Life Sciences. Dr. Winkler was also the editor of the *Oesterreichische Molkerei–Zeitung*.

Today probiotics (*Lactobacillus* bacteria that are important lactic acid fermentative agents in fermented milks such as yogurt and *kefir* as well as in sauerkraut, salt–rising breads, and in various kinds of cheeses) are widely recognized as being beneficial in the diet of humans and in treating gastro-intestinal diseases. This scientific information about probiotics, however, was not available at the beginning of the 20th century. The scientific study of probiotic (from the Greek *for life*) bacteria as well as of antibiotics (from the Greek *against life*), compounds that kill the growth of bacteria, was still in its early phases at the beginning of the 20th century. Penicillin, for example, was not discovered until 1928 by Alexander Fleming. When in 1912 Dr. Kindraczuk published the results of his chemical analysis of Hutsul *huslanka* and identified and named the probiotic lactic acid bacterium within it as *Bacillus carpathicus*, this was cutting edge research on the therapeutic properties of probiotic *Lactobacillus* bacteria.

Although people have been making and eating fermented dairy products, such as yogurt (a Turkish word), for over 5000 years, *Lactobacillus* and its role in the making of lactic acid was first discovered by Louis Pasteur in 1856. The specific *Lactobacillus* organism found in fermented milk was first

[1] W. Kindraczuk, *Huslanka und Yoghurt und die Vergleichung der Säuerungserreger der beiden Sauermilchsorten* in: *Oesterreichische Molkerei–Zeitung* 19, Nr. 17 (September, 1912), pp. 257–259.

identified by the Bulgarian medical student Stamen Grigoroff who in 1905 in Geneva examined the microflora of Bulgarian yogurt and called it *Bacillus bulgaricus*[1]. Another type of *Lactobacillus* bacterium, the *acidophilus* organism in the intestines of humans, was first identified by Ernst Moro in 1900 and named by him *Bacillus acidophilus*[2]. Also in 1900 and in 1905 Henry Tissier researched another *Lactobacillus* intestinal organism found in breastfed infants which he called *Bacillus bifidus*[3].

The probiotic qualities of *Lactobacillus* were first promoted by Elie Metchnikoff (Ilya Mechnikov in Russian) who was born in a village near Kharkiv in the Russian Empire (today in Ukraine) and who after being a professor in Odessa became a professor at the Pasteur Institute in Paris. The 1908 Nobel Prize was awarded to Metchnikoff for his discovery of phagocytosis, a process of digestion in microorganisms, such as in the larvae of starfish, which he applied to white blood cells in the human body. His theory that white blood cells could engulf and destroy bacteria in the body was an important discovery for immunology. In another study and book *Essais optimistes* [*The Prolongation of Life: Optimistic Studies*, 1907] Metchnikoff developed a theory that lactic acid bacteria could improve intestinal health by replacing harmful and toxic bacteria, which caused the aging process, in the intestines. Metchnikoff proposed the drinking of Bulgarian milk (milk fermented with *Bacillus bulgaricus*) to prolong life. Metchnikoff believed that the good results of fermented Bulgarian milk were due to the implantation and proliferation of *Bacillus bulgaricus* in the intestines[4].

After the death of Metchnikoff in 1916 the centre of research into probiotics moved to the United States where Leo F. Rettger at Yale University became the leading scientist in the field of probiotics. In 1921 Rettger demonstrated in his groundbreaking study *The Transformation of the Intestinal Flora, with Special References to the Implantation of Bacillus acidophilus*[5] that *Bacillus bulgaricus* is unable to live and develop in the intestines of humans and animals but that the probiotic influence in the body was the result of the increased growth of *Bacillus acidophilus*, which is an organism native to the intestines and that its growth is fostered by the lactose in milk. This is the same Rettger who is the author, along with Walter L. Kulp, of the 1924 article *Comparative Study of Lactobacillus acidophilus and Lactobacillus bulgaricus* published in the *Journal of Bacteriology* that documents the research of Dr. Kindraczuk on *Bacillus carpathicus* in *huslanka* and *Bacillus bulgaricus* in yogurt. In their article Kulp and Rettger

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[1] S. Grigoroff, *Etude sur un lait fermenté comestible. Le 'Kissélo mléko' de Bulgarie* in: *Revue Médicale de la Suisse Romande* 25, 1905, pp. 714–720.

[2] E. Moro, *Ueber den Bacillus acidophilus n. sp.* in: *Jahrbuch für Kinderheilkunde und Physische Erziehung* 52, 1900, pp. 38–55.

[3] H. Tissier, *Recherches sur la flore intestinale normale et pathologique du nourrisson* in: *Annales de l'Institut Pasteur* 19, 1900, pp. 109–123.

[4] See E. Metchnikoff, *The Prolongation of Life*, transl. P. C. Mitchell, New York 1908.

[5] L. F. Rettger & H. A. Cheplin, *The Transformation of the Intestinal Flora, with Special Reference to the Implantation of Bacillus acidophilus*, New Haven 1921.

explain that the *Bacillus acidophilus* species and *Bacillus bulgaricus* species, which are members of the genus *Lactobacillus*, were reclassified as *Lactobacillus acidophilus* and *Lactobacillus bulgaricus* in accordance with the classification adopted in 1920 by the Society of American Bacteriologists Committee on Classification[1]. Since 1984, *Lactobacillus bulgaricus* has been called *Lactobacillus delbrückii* subsp. *bulgaricus*[2].

Kulp and Rettger's 1924 historical review of the early investigations of the *Lactobacillus* genus, specifically *Lactobacillus bulgaricus* and *Lactobacillus acidophilus*, used in the preparation of fermented milk for therapeutic purposes includes Kindraczuk (1913), in addition to Moro (1900), Grigoroff (1905), Tissier (1905), and others such as Weigmann, Gruber and Huss (1907)[3] and Rettger (1914)[4]. Dr. Kindraczuk's research on the comparison of *Bacillus carpathicus* in *huslanka* and *Bacillus bulgaricus* in yogurt is mentioned in the same paragraph as Weigmann, Gruber and Huss's research on Armenian sour milk and the *Bacterium mazun*[5]. This 1924 *Journal of Bacteriology* has recently been scanned and made available on the Internet. That is how Dr. Kindraczuk's discovery of the *Bacillus carpathicus* bacterium and his 1912 article in *Oesterreichische Molkerei–Zeitung* were brought to light.

Dr. Kindraczuk's discovery of the milk bacterium *Bacillus carpathicus* in *huslanka* was quickly recognized by the scientific community within the Austrian Empire and internationally in Germany, France, and the United States. There are at least ten references in scientific journals documenting Dr. Kindraczuk's research and chemical analysis of *huslanka* and his discovery of *Bacillus carpathicus*. These are primarily found in Berlin–based German scientific journals, but are also found in French, English, and Italian journals and books. They have been located in rare book collections of university libraries in Austria, Germany, the United States, and Canada. Some of these have been digitized.

German, French and Italian scientific journals and books that provide either an abstract, summary, or reference to Dr. Kindraczuk and his 1912 publication on *Bacillus carpathicus* in *huslanka* include the following:

(i) the 1913 volume 37 of *Centralblatt für Bakteriologie, Parasitenkunde und Infektionskrankheiten* [*Central Journal of Bacteriology, Parasitology and*

[1] W. L. Kulp & L. F. Rettger, *Comparative Study of* Lactobacillus acidophilus *and* Lactobacillus bulgaricus in: *Journal of Bacteriology* 9, 1924, p. 359 & p. 392.

[2] N. Weiss, U. Schillinger & O. Kandler, *Validation List № 14* in: *International Journal of Systematic Bacteriology* 34, 1984, pp. 270–271.

[3] H. Weigmann, Th. Gruber & H. Huss, *Ueber Armenisches Mazun* in: *Centralblatt für Bakteriologie, Parasitenkunde und Infektionskrankheiten* 11, (19) 1907, pp. 70–78.

[4] L. F. Rettger & G. D. Horton, *A Comparative Study of the Intestinal Flora of White Rats Kept on Experimental and Ordinary Mixed Diets* in: *Centralblatt für Bakteriologie, Parasitenkunde und Infektionskrankheiten* 73, 1914, pp. 362–372.

[5] W. L. Kulp & L. F. Rettger, *Comparative Study of* Lactobacillus acidophilus ... , p. 359.

Infectious Diseases], which was the authoritative 56–volume journal of bacteriology published in Jena, Germany from 1896–1923[1],

(ii) the 1914 Berlin–based journal *Jahresbericht über die Fortschritte auf dem Gesamtgebiete der Agrikultur–Chemie, 1913* [*Annual Report on Advancements in the Field of Agricultural Chemistry, 1913*][2],

(iii) the 1914 journal *Jahresbericht über die Fortschritte der Tier–Chemie, oder der physiologischen, pathologischen und Immuno–Chemie und der Pharmakologie über das Jahr 1913* [*Annual Report on Advancements in Animal Chemistry, Physiology, Pathology, Immunology and Pharmacology for 1913*] published in Wiesbaden from 1871 to 1922 in 49 volumes[3],

(iv) the 1914 Berlin–based journal *Chemie der Zelle und Gewebe; Zeitschrift für die Probleme der Gärung, Atmung und Vitaminforschung* [*The Chemistry of Cells and Tissues; Journal for Problems of Fermentation, Respiration and Vitamin Research*], volume 4[4],

(v) volume 40 (1912) of *Just's Botanischer Jahresbericht: Systematisch geordnetes Repertorium der Botanischen Literatur aller Länder* [*Just's Botanical Annual Report: The systematic Ordering of the Works of Botanical Literature of all Countries*] published in Berlin in 1919[5],

(vi) the textbook *Lehrbuch der Milchwirtschaft* [*Textbook of the Milk Industry*] by W. Fleischmann & H. Weigmann (professor at the University of Kiel), published in Berlin in 1932[6],

(vii) the section on *Utilisation du lait* in Edmond Kayser's *Microbiologie agricole* [*Agricultural Microbiology*] published in Paris in 1914[7],

(viii) Edmond Kayser's book *Microbiologie appliquée à la transformation des produits agricoles* [*Applied Microbiology in the Transformation of Agricultural Products*] published in Paris in 1931[8]; and

(ix) the journal *Annali della Facoltà di Scienze Agrarie della Università degli Studi di Napoli, Portici* [*Annals of the Faculty of Agrarian Science of the University of Naples, Portici*], volume 22–24, 1956–59[9].

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[1] W. Kindraczuk, *Huslanka und Yoghurt und die Vergleichung der Säuerungserreger der beiden Sauermilchsorten* in: *Centralblatt für Bakteriologie, Parasitenkunde und Infektionskrankheiten*, Zweite Abteilung, Bd. 37, nr. 4/6 (März 13, 1913), pp. 96–97 & p. 158.

[2] W. Kindraczuk, *Huslanka und Yoghurt und die Vergleichung der Säuerungserreger der beiden Sauermilchsorten* in: *Jahresbericht über die Fortschritte auf dem Gesamtgebiete der Agrikultur–Chemie*, Dritte Folge, 16, 1913, p. 357.

[3] *Jahresbericht über die Fortschritte der Tier–Chemie, oder der physiologischen, pathologischen une Immuno–Chemie und der Pharmakologie über das Jahr 1913*, 43, Wiesbaden 1914, p. 239 & p. 1673.

[4] W. Kindraczuk, *Huslanka und Yoghurt und die Vergleichung der Säuerungserreger der beiden Sauermilchsorten* in: *Chemie der Zelle und Gewebe. Zeitschrift für die Probleme der Gärung, Atmung und Vitaminforschung* 4, 1914, p. 170.

[5] W. Kindraczuk, *Huslanka und Yoghurt und die Vergleichung der Säuerungserreger der beiden Sauermilchsorten* in: *Morphologie und Systematik der Bakterien. Just's Botanischer Jahresbericht: Systematisch geordnetes Repertorium der Botanischen Literatur aller Länder* 40, 1912 [1919], p. 441.

[6] W. Fleischmann & H. Weigmann, *Lehrbuch der Milchwirtschaft*, Berlin 1932, p. 370.

[7] E. Kayser, *Utilisation du lait* in: *Microbiologie agricole*, [3ème éd.] Paris 1914, p. 544.

[8] E. Kayser, *Microbiologie appliquée à la transformation des produits agricoles*, Paris 1931, p. 449.

[9] *Annali della Facoltà di Scienze Agrarie della Università degli Studi di Napoli, Portici*, 22–24, 1956–

Highly significant is the inclusion of Dr. Kindraczuk and *Bacillus carpathicus* in the 1966 English–language index of bacteria classification, *Index Bergeyana: An Annotated Alphabetic Listing of Names of the Taxa of the Bacteria, a Companion Volume to Bergey's Manual of Determinative Bacteriology*, edited by Robert E. Buchanan, Professor of Bacteriology at Iowa State University. He acknowledges Dr. Kindraczuk as the discoverer of *Bacillus carpathicus* – which he calls *B. carpathiens*, a typographical mistake of the Latin *carpathicus* – in the following entry on page 135:

B. carpathiens *Kindraczuk 1912, 257*
Sp. Sch., Val. Pub., Leg.
Source: Sour milk of the Carpathian region

Sp. Sch. is an abbreviation for *species of Schizomycetes*, a type of bacterium, and *Val. Pub.* is an abbreviation for *validly published*. *Leg.* is an abbreviation for *legitimate name*, a name that is in accordance with the rules of nomenclature. 257 is the page no. in the Sept. 1912 issue of *Oesterreichische Molkerei–Zeitung* where the article on *Bacillus carpathicus* in *huslanka* first appeared. That *carpathiens* is a typographical error is evident from the fact that the reference given in the Bibliography of the names of the discoverers is *Kindraczuk, W. (1912)* followed by the title of his article on *Huslanka and Yogurt* ... that was published in the Austrian journal where he named the bacterium in *huslanka* as *Bacillus carpathicus*[1].

Since the 1966 *Index Bergeyana* there appears to have been no taxonomic revision and the bacterium appears as *Bacillus carpathiens*, Kindraczuk, 1912 in the new *Global Name Index* data base, an index of scientific names[2], which appears to be more complete than the *Web of Science* ISI data base which lists neither *Bacillus carpathicus* nor Kindraczuk[3].

Dr. Kindraczuk was the first scientist to do a microbiological analysis of Hutsul *huslanka*, and to identify the *Lactobacillus* bacterium in it, and to name this bacterium *Bacillus carpathicus* as a distinct species and different from *Bacillus bulgaricus*. He published his research on September 1, 1912 in Vienna in the Austrian journal *Oesterreichische Molkerei–Zeitung*. Yet twenty–five years later in 1937, Polish scientists Jadwiga Supińska (Jakubowska) and Eugeniusz Pijanowski at the Institute of Fermentation Industry and Agricultural Microbiology of the Museum of Industry and Agriculture in Warsaw completely ignored Kindraczuk's discovery and publications and presented themselves as the first scientists to analyze *huslanka*. In their article *Charakterystyka huculskiej huślanki pod względem chemicznym i mikrobio-*

1959, p. 26 & p. 53.

[1] R. E. Buchanan (ed.), *Index Bergeyana: An Annotated Alphabetic Listing of Names of the Taxa of the Bacteria, a Companion Volume to Bergey's Manual of Determinative Bacteriology*, Baltimore 1966, p. 135 & p. 1333.

[2] Global Name Index, http://gni.globalnames.org/.

[3] Web of Science, http://thomsonreuters.com/thomson-reuters-web-of-science/.

logicznym [*The Chemical and Microbiological Characteristics of Hutsul Huslanka*] published in the *Roczniki nauk rolniczych i lesnych* [*The Polish Agricultural and Forestry Annual*], which was an organ of the Society for the Support of Polish Science of Farming and Forestry based in Warsaw, they wrote: [...] *in dairy literature we did not find any data on the quality or composition of huslanka. In the description of various beverages, obtained through the natural fermentation of milk in different countries, Fleischmann and Weigmann limit themselves to a brief comment, that huslanka is a kind of long lasting sour milk produced by the Hutsuls in the Carpathians* [...][1].

However their statement is incorrect for in this textbook, *Lehrbuch der Milchwirtschaft* [*The Textbook of Dairy Science*] (1932) that Supińska and Pijanowski cite for research on *huslanka*, the authors, Wilhelm Fleischmann and Hermann Weigmann, also provide a footnote and references. On the same page 370 where they describe *huslanka* they provide in the second footnote two references for *huslanka* in the Vienna–based journal *Oesterreichische Molkerei–Zeitung*: 1) from 1911 (vol. 18, no. 4, p. 55), and 2) Dr. Kindraczuk's 1912 article *Huslanka und Yoghurt und die Vergleichung der Säuerungserreger beiden Sauermilchsorten* on the analysis of *huslanka*[2].

Clearly, Fleischmann and Weigmann, the latter who was the head of the Dairy Research Institute at the University of Kiel, the university where Dr. Kindraczuk had come to do research in 1913, acknowledged the 1912 research of Kindraczuk by referencing his publication in the *Oesterreichische Molkerei–Zeitung*. Unfortunately, Fleischmann and Weigmann did not include either the name of the author of the article, Dr. Kindraczuk, or the name of the article, and only indicated the journal title and first page number of the Kindraczuk article. Nevertheless, Supińska and Pijanowski completely ignored this second reference, which would have led them to the Kindraczuk research and discovery.

Supińska and Pijanowski also ignored existing German, French and American scientific research and sources where Kindraczuk's discovery and analysis were documented. Most critically, Supińska and Pijanowski did not mention the English–language article by Yale scientists Kulp and Rettger, who were the leading researchers of *Lactobacillus* at that time. The title of Kulp and Rettger's article is *Comparative Study of* Lactobacillus acidophilus *and* Lactobacillus bulgaricus, published in the *Journal of Bacteriology* in 1924 in the United States. It documented Kindraczuk's discovery and analysis of *Bacillus carpathicus* in *huslanka*. About Kindraczuk's research, Kulp and Rettger wrote the following: *Kindraczuk (1913) gave the name* Bacillus carpa-

[1] J. Supińska & E. Pijanowski, *Charakterystyka huculskiej huślanki pod względem chemicznym i mikrobiologicznym* in: *Roczniki nauk rolniczych i lesnych. Towarzystwo Popierania Polskiej Nauki Rolnictwa i Leśnictwa* 38, 1937, p. 209: *w literaturze mleczarskiej nie spotkaliśmy żadnych danych co do jakości czy składu huslanki. W opisie różnych napojów, otrzymywanych na drodze naturalnej fermentacji mleka w różnych krajach, Fleischmann – Weigmann ograniczają się do krótkiej wzmianki, że húslanka jest rodzajem trwałego kwaśnego mleka wyrabianego w Karpatach przez Hucułów*.

[2] W. Fleischmann & H. Weigmann, *Lehrbuch der Milchwirtschaft*, Berlin 1932, p. 370.

thicus *to an organism similar to* Lactobacillus bulgaricus, *which he isolated from* huslanka *a fermented milk of Bukowina and the East Carpathians.*[1]

Supińska and Pijanowski conclude their analysis by stating that the three strains of *Lactobacillus* bacteria in the *huslanka* that they analysed (which they obtained in 1936 by mail from a secondary source, an instructor at the Chamber of Agriculture in Lviv) have a close resemblance to *Thermobacterium jugurt* and *Thermobacterium bulgaricum* (or *Lactobacillus bulgaricus*)[2]. Since they didn't refute the results of Kindraczuk's earlier analysis, discovery and naming of a separate species of bacterium (*Bacillus carpathicus*) in *huslanka* as distinct from *Bacillus bulgaricus* in yogurt, the results of the analysis of Supińska and Pijanowski must be considered incomplete.

Unfortunately, the 1992 *Encyclopedia of Fermented Fresh Milk Products: An International Inventory of Fermented Milk, Cream, Buttermilk, Whey, and Related Products* by Joseph A. Kurmann, Jeremija Lj. Rašić & Manfred Kroger used Supińska and Pijanowski as their source for *huslanka*, thereby perpetuating the same omission. They also assumed that *huslanka* is the same as yogurt and not distinct. Kurmann states: *The microflora, according to Supińska and Pijanowski (1937) is composed of* Lactobacillus delbrückii subsp. bulgaricus, *streptococcus cells and lactose fermenting yeasts.*[3] As the Kurmann Encyclopedia, like the Supińska and Pijanowski article, did not reference Kindraczuk and did not refute the results of his research that isolated the bacterium *Bacillus carpathicus* (1912) in *huslanka* as a separate species from *Lactobacillus bulgaricus*, their statement that the bacteria in *huslanka* consists of *Lactobacillus delbrückii* subsp. *bulgaricus* must be called into question. Since there has been no taxonomic revision of the bacterium *Bacillus carpathicus*, the subject of the microbiological composition of *huslanka* requires further research.

One can only wonder why Supińska and Pijanowski did not acknowledge the research conducted 25 years earlier by their fellow citizen of Poland who was the pharmacist of the Łańcut pharmacy at that time in 1937. Was this omission accidental or intentional? Perhaps the omission had something to do with patents and the commercial production of Hutsul *huslanka*? Or perhaps the omission had something to do with the pre–World War I Partitions of Poland (Prussia, Russia, Austria–Hungary) and the changing of borders following World War I? Or a lack of knowledge of German and English or lack of access to German and American scientific journals? Perhaps it was poor and incomplete scientific research; or perhaps the omission was due to politics? Historian Norman Davies describes the challenges of integration faced by the Second Polish Republic that was established after World War I:

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[1] W. L. Kulp & L. F. Rettger, *Comparative Study of* Lactobacillus acidophilus ... , p. 359.

[2] J. Supińska & E. Pijanowski, *Charakterystyka huculskiej huślanki pod względem chemicznym: mikrobiologicznym*, p. 222.

[3] J. A. Kurmann, J. Lj. Rašić & M. Kroger (eds.), *Encyclopedia of Fermented Fresh Milk Products. An International Inventory of Fermented Milk, Cream, Buttermilk, Whey and Related Products*, New York 1992, p. 144.

> *The population, institutions, and traditions of the three Partitions had to be welded into one new entity. At first, six currencies were in circulation, five regions – Posnania, Silisea, Cieszyn, East Galicia, and Central Lithuania (Wilno) – maintained separate administrations; there were four languages of command in the army; three legal codes; and two different railway gauges, eighteen registered political parties competed for power.*[1]

Dr. Kindraczuk made his discovery in 1912, before World War I and the collapse of the Austro–Hungarian Empire in 1918, and before the establishment of the Second Polish Republic. When war broke out in 1914, Dr. Kindraczuk was forced to leave the University of Kiel, where he was continuing his dairy research thanks to a scholarship given to him by a Galician dairy cooperative, and was forced to return to Lviv where he began work as a pharmacist. He soon left Lviv and in 1915 began to work as a pharmacist in Łańcut, in the pharmacy of Marcin Szulc de Szulcer, the *Apteka pod Matką Boską* [*The Pharmacy beneath the Statue of the Mother of God*]. This is confirmed by Tadeusz Estreicher, professor of chemistry at the Jagellonian University from 1919 and founder of the Towarzystwo Popierania Nauk Farmaceutycznych [Society for the Advancement of Pharmaceutical Sciences]. In his book *Jan Zeh: Zapomniany pionier przemysłu naftowego* [*Jan Zeh: Forgotten pioneer of the petroleum industry*, 1935] Estreicher, writing about Zeh, a pharmacist born in Łańcut, states that the owner of the pharmacy in Łańcut was Antoni Swoboda from 1849 *until 1876; then the ownership passed to Szulc and then to Magister Wróblewski, who finally sold it in 1915 to the current owner Dr. Kindraczuk*[2]. Dr. Kindraczuk worked as a pharmacist in this Łańcut pharmacy for 30 years, from 1915 until his escape to the West in 1944.

It was there, in Łańcut that Dr. Kindraczuk met pharmacy technician Maria Antonina Kubaty from Kraków who came to work in this same pharmacy in 1916[3]. She was a 7th–generation *krakowianka* who had attended the Jagellonian University[4] and was the daughter of a Kraków court official. They were married in Łańcut in 1918. They raised a family of three children,

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[1] N. Davies, *God's Playground: A History of Poland in Two Volumes*, Vol. 2: *1795 to the Present*, New York 2005 [revised edition], p. 298.

[2] T. Estreicher, *Jan Zeh – Zapomiany pionier przemysłu naftowego*, Warszawa 1935, p. 10: *który ją prowadzi do r. 1876; wtedy nabywa ją Szulc, a od niego mag. Wróblewski, który ją wreszcie sprzedaje w r. 1915 obecnemu właścicielowi dr. Kindraczukowi*.

[3] *Księga uczniów Gremium Aptekarzy Galicji Zachodniej 1893–1931*, Archiwum Muzeum Farmacji Collegium Medicum Uniwersytetu Jagiellońskiego w Krakowie & *Protokoł egzaminacyjnyj aspirantów*, Archiwum Muzeum Farmacji Collegium Medicum Uniwersytetu Jagiellońskiego w Krakowie.

[4] *Corpus studiosorum Universitatis Iagellonicae in saeculis XVIII–XX, Tomus III: K–L*, Z prac Uniwersytetu Jagiellońskiego Seria C, Tom 3, (ed.) K. Stopka, Kraków 2009, p. 695.

who were born and lived in Łańcut. The children attended the State Gimnazjum im. Henryka Sienkiewicza in Łańcut. They were all citizens of Poland. Dr. Kindraczuk owned a house in Łańcut, which still stands today on a street named ulica Mościckiego in an area called Weselówka. Dr. Kindraczuk became the sole proprietor of the pharmacy *Apteka pod Matką Boską* on July 15, 1925[1]. In 1936, Dr. Włodzimierz Kindraczuk and his family were accepted by the Łańcut town council as citizens of the Łańcut *gmina* (township). The whole family was registered into the *Księgi przynależności* [*Registry of Citizens*] of the Łańcut *gmina*. The document was signed by the mayor of Łańcut, Fr. Czarnecki[2].

There are at least eight references to Dr. Kindraczuk and his pharmacy in Łańcut in various medical and business directories in the years before the occupation of Poland by Nazi Germany. These are located in the rare book section of the Jagellonian University in Kraków and in the Museum of Pharmacy in Kraków:

(i) there is a reference in the *Księga Adresowa Polski 1928* [*Polish Business Directory 1928*][3],

(ii) in the *Księga Adresowa Polski 1929* [*Polish Business Directory 1929*][4],

(iii) in the *Kalendarz Farmaceutyczny na rok 1930* [*Polish Pharmacy Calendar 1930*] edited by Franciszek Herod, which lists Dr. Włodzimierz Kindraczuk under Łańcut[5],

(iv) the name, Dr. Włodzimierz Kindraczuk, is also listed under Łańcut in the 1931 *Urzędowy spis lekarzy uprawnionych do wykonywania praktyki lekarskiej, lekarzy–dentystów, dyplomowanych farmaceutów oraz aptek w Rzeczypospolitej Polskiej* [*The Government Register of Doctors, Dentists and Pharmacists Licensed to Practise in Poland*][6],

(v) the *Kalendarz Farmaceutyczny na rok 1936* [*Polish Pharmacy Calendar for 1936*] also lists Dr. Kindraczuk Włodzimierz[7],

(vi) the *Rocznik Lekarski Rzeczypospolitej Polskiej na rok 1936* [*Polish Medical Yearbook 1936*] lists under Łańcut – *Farmaceuci: dypl. Kindraczuk Włodzimierz, właściciel apt.* [*Pharmacists: Kindraczuk Włodzimierz, owner of*

[1] See Dokument *Koncesyjny or Koncesja* [*Concession document*] (Nov. 1925). Urząd wojewódzki lwowski. The document grants sole concession rights for the pharmacy to Dr. W.S. Kindraczuk [original document in Bahry/Kindraczuk personal archive].

[2] *Księgi przynależności*, Łańcut gmina, Dr. Kindraczuk (1936) [original document in Bahry/Kindraczuk personal archive].

[3] *Księga Adresowa Polski (wraz z w. m. Gdańskiem) dla Handlu, Przemysłu, Rzemiosł i Rolnictwa 1928, Annuaire de la Pologne*, Warszawa 1928, p. 748.

[4] *Księga Adresowa Polski (wraz z w. m. Gdańskiem) dla Handlu, Przemysłu, Rzemiosł i Rolnictwa 1929, Annuaire de la Pologne*, Warszawa 1929, p. 732.

[5] *Kalendarz Farmaceutyczny na rok 1930*, część 11, (ed.) F. Herod, Warszawa 1930, p. 487.

[6] *Urzędowy spis lekarzy uprawnionych do wykonywania praktyki lekarskiej, lekarzy–dentystów, dyplomowanych farmaceutów oraz w Rzeczypospolitej Polskiej*, Warszawa 1931, p. 25.

[7] *Kalendarz Farmaceutyczny na rok 1936*, (ed.) F. Herod, Warszawa 1936, p. 478.

the pharmacy], and under *Apteki* [*Pharmacies*] – *Dr. Kindraczuk Włodzimierz*[1],

(vii) he is listed alphabetically under *Farmaceuci* [*Pharmacists*] in the *Ministerstwo Opieki Społecznej: Urzędowy Spis* [*The Ministry of Social Welfare: Government Register*] published in Warsaw 1939, where his full name is given Kindraczuk Włodzimierz Sylwester, his date of birth as 1882, the year in which he obtained his Master of Pharmacy degree as 1909, and Łańcut as the place of his pharmacy[2]; and

(viii) the Ph.D. dissertation of Mirosława Stachoń, *Dzieje powstania i rozwoju aptek na obszarach działań bylego Gremium Aptekarzy Krakowskich w latach 1802–1939* [*History of the origin and development of pharmacies of the Kraków Association of Pharmacists in the years 1802–1939*], which is located in the Museum of Pharmacy at the Jagellonian University of Kraków, lists Dr. Kindraczuk as the pharmacist of the pharmacy *Apteka pod Matką Boską* in Łańcut from 1918 and as sole proprietor from 1925[3].

During the Nazi occupation of Poland a directory of pharmacists was issued as well. It is called *Apotheker–Verzeichnis des Generalgouvernements: Spis Aptekarzy Generalnego Gubernatorstwa* [*Pharmacy Directory of the General Government, Kraków, 1942*]. Dr. Włodzimierz Kindraczuk is listed here as the pharmacist in Łańcut and the year given when he became the owner is 1925. His wife, Maria Kindraczuk, is listed here as well as a pharmacy assistant for the same pharmacy[4].

In spite of all these sources documenting Dr. Kindraczuk's 30 years as owner and pharmacist in Łańcut, Józef Świeboda, writing about Kindraczuk in the book *Historia farmacji w Polsce południowo–wschodniej od 1375 do 2006 roku* [*History of Pharmacy in South Eastern Poland from 1375 to 2006*], states that Dr. Kindraczuk obtained the pharmacy at the time of the Nazi occupation in 1939[5]. Clearly this is incorrect. Again one wonders, why this disinformation persists even today?

On September 5, 1939, as a result of war, the town authorities ordered Dr. Kindraczuk's pharmacy *Apteka pod Matką Boską* at No. 8 Rzeźnicza to be moved to another building on the same street, No. 2 Rzeźnicza, the corner building of the town square where it is located to this day[6]. Unfortunately, all the historical artifacts and furniture have been removed and the statue of the Virgin Mary has disappeared from its niche in the original building. In July

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[1] *Rocznik Lekarski Rzeczypospolitej Polskiej na rok 1936*, (ed.) S. Konopka, Warszawa 1936, p. 603.

[2] *Ministerstwo Opieki Społecznej urzędowy spis: lekarzy, lekarzy–dentystów farmaceutów*, Warszawa 1939, p. 35.

[3] M. Stachoń, *Dzieje powstania i rozwoju aptek na obszarach działań byłego Gremium Aptekarzy Krakowskich w latach 1802–1939*, IKS nr. 7183, Kraków 1978, p. 255.

[4] *Apotheker–Verzeichnis des Generalgouvernements, Spis Aptekarzy Generalnego Gubernatorstwa*, Krakau 1942, p. 76.

[5] J. Swieboda, *Apteki i farmaceuci w Polsce południowo–wschodniej od 1375 do 1951 roku* in: *Historia farmacji w Polsce południowo–wschodniej od 1375 do 2006 roku*, (ed.) L. Czyż, Rzeszów 2006, p. 160.

[6] See Protokół spisany w dniu 5 września 1939 r. w sprawie przeniesienia apteki własności Dr. Włodzimierza Kindraczuka do nowego lokalu [Bahry/Kindraczuk personal archive].

1944, after a violent home invasion by unidentified attackers during which they were beaten, shot at, and left for dead, Dr. Kindraczuk and his wife, Maria Kindraczuk, escaped from Nazi–occupied Poland by train just before the arrival of the Soviet Russian Red Army in Łańcut and arrived in Nazi–occupied Austria, where their children had come earlier[1]. Their daughter Mirosława had been living in Vienna since 1938 where she was studying business at the university, their daughter Anna was studying pharmacy at the University of Graz and their son Ihor had joined his sisters and was studying at a business school in Vienna. Before his departure Dr. Kindraczuk handed over the pharmacy to his pharmacy assistant Mgr. Jerzy Kwiatek[2], however the pharmacy was nationalised soon after. In 1951 Dr. Kindraczuk and his wife emigrated from Austria to Hamilton, Ontario, Canada to join their daughter Mirosława, son–in–law Jaroslaw Bahrij, and granddaughter Romana. Dr. Kindraczuk became a citizen of Canada in 1960 and died there January 30, 1969. The Polish language *Dziennik Polski* [*Polish Daily*] based in London, England where Dr. Kindraczuk's brother–in–law Stanisław Turek, a native of Łańcut, had been living after World War II, after being freed from a Nazi prisoner–of–war camp for Polish officers in Murnau, published the following obituary about Dr. Kindraczuk:

> *Dr. Włodzimierz Kindraczuk, the longtime owner of the pharmacy in Łańcut died on January 29, 1969 in Canada where he was buried. This sad announcement was made by his grieving wife, children and grandchildren in Canada, and relatives in England and Poland.*[3]

The reasons for the disinformation about Dr. Kindraczuk's three–decade career as pharmacist in Łańcut appear to be political. They seem to be based on Polish nationalism and the growing ethnic tension in Poland that marked the period before World War II and the ethnic cleansing policies of the post–World War 11 communist regime. Although Dr. Kindraczuk was a citizen of Poland, an owner of the pharmacy *Apteka pod Matką Boską* in Łańcut, and his wife, Maria Antonina Kubaty Kindraczuk, was Polish, he himself was of mixed ethnicity (Polish mother, Ukrainian father, German grandmother). In this context Historian Norman Davies writes that

> [t]*he fires of Polish nationalism were fuelled by the fact that the ethnic minorities were so large. According to the linguistic criteria of the 1931 census, the Poles formed only 68.9 per cent of the total*

[1] Letter of Dr. W. Kindraczuk to his daughter, Mirosława, December 6, 1948 [Bahry/Kindraczuk personal archive]. Archiwum Panstwowego w Rzeszowie (Nr. Zespolu 36, sygnatura 1744, kolejny 21) contains a document dated July 23, 1945 stating that the owner of the pharmacy *Apteka pod Matką Boską* in Łańcut is absent.

[2] Contract between Dr. Włodzimierz Kindraczuk, owner of the pharmacy *pod Matką Boską* in Łańcut and Mgr. Jerzy Kwiatek, July 21, 1944 [document in Bahry/Kindraczuk personal archive].

[3] Obituary, *Dziennik Polski*, London 1969: *Dr. Włodzimierz Kindraczuk długoletni właściciel apteki w Łańcucie, zmarł 29 stycznia 1969 w Kanadzie i tam zostal pochowany. O tym smutnym wypadku zawiadamiają pogrążeni w żałobie żona z dziećmi i wnukami w Kanadzie. Krewni w Anglii i w Kraju.* The date of death in the obituary is incorrect. It is Jan 30, 1969.

> *population. The Ukrainians with 13.9 percent, the Yiddish–speaking Jews with 8.7 per cent, the Byelorussians with 3.1 percent, and the Germans with 2.3 per cent, made up nearly one–third of the whole. In some areas they constituted a dominant majority* [...] *five million Ukrainians formed the largest single minority.*[1]

Davies states that there was *rising hostility of the Polish community at large against separatism. Bit by bit, conciliatory politics gave way to terrorism.*[2] The OUN (Organization of Ukrainian Nationalists) resorted to violence. Davies continues,

> [t]*he assassination in 1931 of Tadeusz Hotowko (1889–1931), a prominent socialist theoretician and associate of Piłsudski, and in 1934 of the Minister of the Interior, Col. Bronisław Pieracki (1895–1934), provoked the Sanacja regime into vicious reprisals. Minor partisan campaigns in 1932–3 in Volhynia, Polesie, and in the Lesko area, were answered by the advance of the Polish army and police in strength, and by the razing of villages suspected of harbouring the rebels. The internment camp at Bereza Kartuzka was first constructed in 1934 to accommodate the prisoners of this emergency. Many Ukrainian schools were closed; Ukrainian peasants unable to read or write in Polish were struck from the electoral register by over–zealous officials. Polish military colonists were settled in frontier areas.*[3]

At first the south–eastern, former Galician, part of Poland, which had belonged to the Austrian partition, appeared to be relatively free from ethnic conflict. In spite of World War I and the Polish–Ukrainian War of 1919 during which Galician Ukrainians unsuccessfully tried to establish a West Ukrainian People's Republic in East Galicia, these events had no effect on personal relationships in the Przemyśl area and mixed marriages between Ukrainians and Poles were a mass phenomenon in the years 1918–1939 where one out of five marriages in the Roman Catholic Cathedral was mixed rite[4].

That there was little or no ethnic conflict in this part of Poland before World War II is testified by the fact that Dr. Kindraczuk and Maria Kubaty were married in the Latin–rite Catholic Church in Łańcut, Kościół św. Stanisława Biskupa i Męczennika. One of the witnesses was the other

[1] N. Davies, *God's Playground: A History of Poland in Two Volumes*, Vol. 2, pp. 299–300.

[2] N. Davies, *God's Playground: A History of Poland in Two Volumes*, Vol. 2, pp. 299–300.

[3] N. Davies, *God's Playground: A History of Poland in Two Volumes*, Vol. 2, pp. 301–302.

[4] A. Krochmal, *Konflikt czy współpraca? Relacje miédzy duchowienstwem łacinskim i grecokatolickim w diecezji przemyskiej w latach 1918–1939*, Lublin 2001, pp. 76–80.

pharmacist of the Łańcut pharmacy, Józef Wróblewski[1]. In fact Dr. Kindraczuk was highly respected by the community in Łańcut for his service to society and this is indicated by acknowledgement of his philanthropy in Polish sources. His service to society is mentioned in the following sources.

In 1921, the Warsaw newspaper *Ilustrowany Kuryer Codzienny* [*Illustrated Daily Courrier*] no. 307, Friday, 11 November, lists Dr. Włodzimierz Kindraczuk under the heading *Ogłoszenie wyboru bez głosowania do Rady Powiatowej kasy chorych w Łańcucie* [*Announcement of Election by Acclamation to the Łańcut District Council Fund for the Sick*][2]. The *Sprawozdanie Dyrekcji Państwowego gimnazjum im. Henryka Sienkiewicza w Łańcucie za rok szkolny 1934/35* [*Report of the Board of Directors of the Henryk Sienkiewicz State High School in Łańcut for the Year 1934/35*] states in the section on *pomoc lekarska* [*Medical Assistance*]: *Dyrekcja zakłada składa serdeczne "Bóg zapłać" JWPP... p. Drowi W. Kindraczukowi za wydawanie lekarstw ubogim uczniom po cenie zniżonej* [*The Board of Directors of the Institute thanks Dr. W. Kindraczuk for providing medicine to needy children at reduced prices*][3]. The *Sprawozdanie Dyrekcji Państwowego Liceum i Gimnazjum Koedukacyjnego im. Henryka Sienkiewicza w Łańcucie za rok 1937/38* [*Report of the Board of Directors of the Henryk Sienkiewicz State Coeducational High School in Łańcut for the Year 1937/38*] states: *Dyrekcja zakładu składa serdeczne "Bóg zapłać" w imieniu zakładu... P. Drowi Kindraczukowi za wydawanie lekarstw ubogim uczniom po cenie ulgowej* [*The Board of Directors of the Institute thanks Dr. W. Kindraczuk for providing medicine to needy children at reduced prices*][4].

Another example of Dr. Kindraczuk's philanthropy was the funding of a monument to commemorate the victims of the Spanish Flu (Influenza) in Łańcut after World War I. As the victims were Ukrainians, this monument was seen as a support for Ukrainian separatism and for an independent Ukraine. The Spanish Flu came to Łańcut in 1919, to the military internment camp for Ukrainian soldiers, which also happened to be the Ukrainian headquarters for the organization of a joint Polish–Ukrainian assault against the Bolsheviks to be led by Chief of State of the Second Republic of Poland, Józef Piłsudski with the assistance of the Ukrainian military commander Symon Petliura, head of the Ukrainian People's Republic and Chief of Military Forces[5]. During the time of the Łańcut internment camp's existence,

[1] Latin language Church Marriage Record of Vladimirus Silvester Kindraczuk and Maria Antonina Kubaty, Oct. 8, 1918, Łańcut, Roman Catholic Diocese of Przemyśl [original document in Bahry/Kindraczuk personal archive] and Parish Records, Kościół św. Stanisława Biskupa i Męczennika, Łańcut.

[2] *Ilustrowany kuryer codzienny* Nr. 307, Friday, 11 Nov. 1921.

[3] *Sprawozdanie Dyrekcji Państwowego gimnazjum im. Henryka Sienkiewicza w Łańcucie za rok szkolny 1935/36*, Łańcut 1936, p. 23.

[4] *Sprawozdanie Dyrekcji Państwowego Liceum i Gimnazjum Koedukacyjnego w Łańcucie za rok szkolny 1937/38*, Łańcut 1938, p. 31.

[5] See A. Kolańczuk, *Umarli aby zmartwychwstała Ukraina: Miejsca pamięci Ukraińców–uczestników walk niepodległościowych w latach 1917–1921 w Polsce*, Przemyśl 2007, pp. 58–62, A. Kolańczuk, *Nekropolie i groby uczestników ukraińskich walk niepodległościowych w latach 1917–1921*, Przemyśl 2003, pp. 81–91, A. Szymanek, *Obóz jeńców i internowanych żołnierzy ukraińskich atamana Petlury w Łańcucie* in: *Łańcut: Studia i*

1918–1921, Dr. Kindraczuk in his professional capacity as the pharmacist of Łańcut tried to help those Ukrainian soldiers in the camp that where afflicted with the Spanish Flu. There was little that could be done as antibiotics did not yet exist and the disease claimed the lives of more than 2000 Ukrainian soldiers[1]. They were buried in the Łańcut cemetery.

The Spanish Flu pandemic lasted from June 1918 to December 1920 and *destroyed millions of Europeans, possibly 40 million worldwide. This pandemic killed more humans in a couple of months than any scourge in History*.[2] Another historian, John M. Barry writes:

> *Epidemiologists today estimate that influenza likely caused at least fifty million deaths worldwide, and possibly as many as one hundred million* [...] *Influenza killed more people in a year than the Black Death of the Middle Ages killed in a century*.[3]

Barry states that unlike most flus, the Spanish Flu targeted healthy young people between 20 and 40 years old, and with strong immune systems. Death came extremely quickly. This disease caused massive haemorrhaging and led to bacterial pneumonia[4]. The symptoms of this influenza were so unusual that it was often mistakenly diagnosed as cholera or typhoid and books on this event in Łańcut usually describe it as a typhoid epidemic. Dr. Kindraczuk also referred to it as typhoid. The only historian to write about the Spanish influenza in Poland is Norman Davies, who writes the following about the situation in the Austrian part of Poland after the signing of the Treaty of Brest–Litovsk in March 1918:

> *The main civilian concerns were now for epidemic diseases and for refugees. Typhoid broke out followed by the worldwide epidemic of Spanish influenza. Well over a million Galician civilians had been displaced, their sufferings inspiring appeals for international aid*.[5]

The monument to the Ukrainian soldiers, victims of the Spanish influenza in the Łańcut cemetery was dedicated on February 20, 1921[6]. Dr. Kindraczuk not only funded this monument but he looked after its maintenance after the closure of the military camp in Lancut in 1921. He also funded its restoration in 1938 by the original designer and renowned Ukrainian sculptor Serhii Lytvynenko (also the sculptor of the Ivan Franko monument in the Lychakivsky Cemetery in Lviv)[7]. This monument was destroyed after World War II by

szkice z dziejów miasta, (ed.) W. Bonusiak, Rzeszów 1997, pp. 227–235.

[1] See A. Kolańczuk, *Nekropolie i groby uczestników ukraińskich ...* , p. 10.

[2] N. Davies, *Europe: A History*, London 1997, p. 777.

[3] J. M. Barry, *The Great Influenza: The Story of the Deadliest Pandemic in History*, New York 2009, pp. 4–5.

[4] See J. M. Barry, *The Great Influenza ...* , pp. 231–252.

[5] N. Davies, *Vanished Kingdoms: The History of Half–Forgotten Europe*, London 2012, p. 475.

[6] See A. Kolańczuk, *Nekropolie i groby uczestników ukraińskich ...* , p. 88.

[7] See A. Kolańczuk, *Umarli aby zmartwychwstała Ukraina* ..., p. 62.

the communist regime. It was not until November 2012 that a new monument was erected in memory of the Ukrainian soldiers in the same place[1].

Ethnic conflict increased during World War II, especially after eastern Poland was occupied by Soviet Russia in 1939 and particularly after the formation of the UPA, the anti–communist Ukrainian partisan army of OUN–Bandera[2]. After World War II, ethnic cleansing in Poland during 1945–1947, most notably Operation *Vistula*, was carried out by the communist regime in Poland, but it was planned by Soviet Russia and *co–ordinated with Moscow*[3]. Timothy Snyder writes the following:

> *By the time the Red Army reached the remains of Warsaw in January 1945, Stalin knew what sort of Poland he wished to build. He knew where its borders would run, who would be forced to live within them, who would be forced to go. Poland would be a communist state, and an ethnically homogeneous country. Although Stalin would undertake no policies of mass killing in the east European empire he foresaw, Poland was to be the center of a zone of ethnic purity. Germany would be for Germans, Poland for Poles, and the western part of the Soviet Ukraine for Ukrainians. He expected Polish communists, including those who personally represented a national minority, to cleanse their country of national minorities. Stalin had revived a Polish communist party, and chosen its leaders, and sent them to Poland.*[4]

It appears then that after Dr. Kindraczuk fled from the approaching Red Army during World War II, he became the target of anti–western propaganda of the post–World War II communist regime due to his ethnic background and because of his support of and funding of the monument to the Ukrainian soldiers who died in Łańcut from the Spanish influenza and who had fought against the Bolsheviks in 1920.

In Ukraine, the reasons for the lack of acknowledgement of Dr. Kindraczuk's discovery of the probiotic bacterium *Bacillus carpathicus* in Hutsul *huslanka* are similar to those in Poland. In Ukraine, however, there is also no information about Kindraczuk as a pharmacist in Łańcut or about his years at the University of Lviv. Furthermore, in Ukraine the Communist regime repressed all materials pertaining to the period of Austrian Galicia and Polish Galicia. In fact, in Ukraine, Dr. Włodzimierz Kindraczuk is not even mentioned.

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[1] Interview by author with: Jarosław Giemza, Kierownik Działu Sztuki Cerkiewnej, Muzeum–Zamek w Łańcucie, July 25, 2013, in Lancut. The author visited the Łańcut cemetery and saw the new monument on July 26, 2013.

[2] T. Snyder, *Bloodlands: Europe between Hitler and Stalin*, New York 2012, p. 326.

[3] T. Snyder, *Bloodlands: Europe between Hitler and Stalin*, p. 328.

[4] T. Snyder, *Bloodlands: Europe between Hitler and Stalin*, p. 313.

Thus, as a result of the historical events of the 20th century – two World Wars, the collapse of the Austro–Hungarian Empire in 1918, the disappearance of Galicia, changing political borders, the formation of new states, ethnic cleansing, mass upheavals of populations, forced emigration during World War II, repressive Communist regimes – Dr. Kindraczuk's scientific discovery of *Bacillus carpathicus* in Hutsul *huslanka* was ignored and only now, 100 years later, has come to light.

Bacillus Coagulans: The â€œBulldogâ€ of Beneficial Bacteria. With all this in mind, â€œdelicateâ€ is probably the best adjective one could use to describe the general nature of probiotic bacteria. They donâ€™t tend to like heat, pressure, or digestive juices.Â Though itâ€™s perhaps less researched than some of the more well-known probiotic strains, B. coagulans (which is sometimes classified as Lactobacillus sporogenes in the scientific literature) is replete with its own fair share of scientific backing. Again, itâ€™s an exceptionally hardy strain thatâ€™s a real trooper when it comes to persisting amidst adverse environmental conditions.Â Please scroll up and click on the Sources and References link right below the article summary. Iâ€™ve just clicked on the link myself to make sure it works. Discovery of Bacteria and Other Achievements. Antony Leeuwenhoek was the first person to see bacteria. Through the late 1670s, he sent comprehensive data and detailed drawings of his sightings of bacteria and algae to the Royal Society in London. Throughout his lifetime Leeuwenhoek remained devoted to the scientific research and made several vital discoveries. A brief account of his chief discoveries is presented below. 1674. The Infusoria - (Protist class in modern Zoology). 1676. The Bacteria (Genus Selenomonas - crescent shaped bacteria from human mouth). 1677. The Spermatozoa.