



## The Spanish Flu – Part II: the second and third wave

### Španska groznica – II deo: drugi i treći talas

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#### Key words:

influenza, human; world war I; disease outbreaks;  
history, 20th century; serbia.

#### Ključne reči:

grip, humani; prvi svetski rat; epidemije; istorija, 20-ti  
vek; srbija.

#### The second wave

The second wave of influenza pandemic of 1918 represents a period in which the Spanish Flu showed its full deadly potential. It is usually said that this wave struck in autumn 1918, although the disease had spread even before this time.

A U.S. naval intelligence officer received a telegram on August 3, 1918 which he immediately stamped as a secret and classified document. While indicating that his source was reliable, he reported to the competent authorities:

„I am confidentially advised ...that the disease now epidemic throughout Switzerland is what is commonly known as the black plague, although it is designated as Spanish sickness and grip“<sup>4</sup>.

The comparison of the Spanish Flu with plague was not a rarity already at the beginning of the second wave of the pandemic<sup>\*</sup>. Doctors reached this conclusion, that it was a question of plague, based on the appearance of the lungs in autopsy. Until then, flu did not leave this kind of a picture, thus many believed that it was a question of either a new disease or lung plague. An increase in the frequency of the ill-stricken with flu occurred in some places with mutual distances of thousands of kilometers in August 1918, but this time with a large number of severe cases. An epidemiological study, written in the States, relatively shortly after the pandemic, indicated that a progressive increase in the number of flu cases was observed in the American military bases in the week ending August 4, 1918, whereas pneumonia cases started appearing in the week ending August 18, 1918<sup>4</sup>.

The very day when the British command proclaimed the end of the epidemic on August 10, there were so many ill soldiers in the French port Brest, that the overcrowded naval hospital was forced to stop admitting the newly ill-stricken. The increased death rate in Brest caused by flu, was observed already in July among the American troops, which had arrived from the military base in Arkansas<sup>4</sup>.

Severe forms of the disease appeared on the African continent also in mid August 1918. Military ships would get their coal supplies in Freetown, today's capital of the Republic of Sierra Leone, on the Atlantic coast. On August 27, 1918 the crew of the British military ship „HMS Africa“ was forced to load coal by itself, as the majority of African workers from the coal supply company were ill. Within a couple of weeks, 51 crew members of that ship died of the Spanish Flu, which was 7% of the manpower. They got the disease from those African workers who were still not affected with the disease and with whom they were working, but who were already in the incubation period<sup>4</sup>.

A practically prophetic heading appeared in „The Serbian Newspaper“ on August 16/29, 1918:

„INFLUENZA, FLU – It seems that the world is going to be overwhelmed again by this infection this year“. The following was also included under this heading, signed by Dr. Sima Petrović: „We have already had this serial spread in one unit here on Corfu a few months ago, where in just a few days everyone fell ill, however they also all recovered easily and happily in a couple of days. Further spread of the infection among us was terminated by energetic isolation. However, it seems now that it is present among the civilians of the town and that it will thus be easily brought in to us from there and from other sides. According to newspaper writings, it seems that this year's spread has been more severe and dangerous in Spain, Switzerland and Germany, which have already been overwhelmed by the disease. However, here in

\* During the syphilis pandemic also, at the end of the XV and in the XVI century, when the second stadium of the disease was violent and deadly, many believed that it was a question of – the plague!

the south, at least until now, the infection has had a light form."<sup>16</sup>

It is possible to conclude from the text above that there had not been any victims of the first pandemic wave among the Serbian soldiers on Corfu. However, considering other sources, this should not be taken for granted. The same writing, on the other hand, testifies to the probable presence of the disease on the island at the end of August.

The end of August and beginning of September marked the beginning of mass deaths throughout the world caused by the Spanish Flu. Millions were to die of this disease in the last months of World War I.

The dying itself of the Spanish Flu was terrible, so terrible that the need of humankind to forget this pandemic, is practically understandable. Before presenting the picture of the flourishing pandemic in this text, a description will be given of the knowledge about the flu at the beginning and in the course of the duration of the pandemic, and then of the severe form of the disease, the form of it that claimed so many lives.

Dr. Aleksa Savić wrote at the time when the disease had already widely spread:

„The influenza is caused by contagious germs, found in the nose, throat and lungs of the diseased. There are various views about the cause of the influenza and that issue remains unresolved in the discussion. While the German school maintained always, that the influenza was caused by a minute, motionless, short and very tiny bacillus, found by Pfeiffer in 1890, French authors kept claiming that this bacillus was not the cause of the disease. The truth is, according to the reports from all countries and observations made on this front in the central bacteriological laboratory of the Eastern Army, that this bacillus was only found in a certain minor number of cases. It is particularly interesting to note that this bacillus was never found in the severe influenza cases, in which there are bronchopneumonic processes.“<sup>8</sup>

Richard Friedrich Johannes Pfeiffer (1858–1945) believed in 1892 that he had discovered the cause of influenza. His authority did not leave much room for doubt; a great majority of scientists of that time believed that Pfeiffer's bacillus – *Bacillus influenzae*, today known as *Hemophilus influenzae*, was quite certainly the cause of the flu. However, the text written by Dr. Aleksa Savić indicated doubt about Pfeiffer's bacillus being the cause of influenza, which was the stand of a minor number of doctors at that time.

Dr. Aleksa Savić concludes in his description of the experiments made by French scientists:

„Thus, according to this latest belief, the cause of the influenza would be an invisible microorganism, the so-called 'Virus filtrant', as it is the cause of, for example, varicella (chickenpox) and variola (smallpox), scarlet fever and measles.“<sup>8</sup>

It turned out that Dr. Aleksa Savić was wrong in the previous sentence in speaking about scarlet fever, but that he was absolutely right about the influenza. More than decade after the Spanish Flu pandemic in 1931 Dr. Jovan St. Kujačić wrote that: „the bacillus Pfeifferi s. b. *Influenzae* is still for the time being the most important biological cause of influ-

enza“. He also pointed out the possibility of the disease being caused by a virus<sup>17</sup>. It was in this year that the influenza virus was isolated from swine, and two years later, so was the human virus.

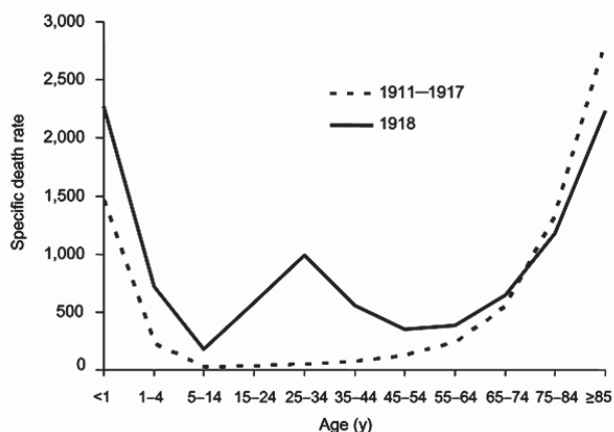
A clinical picture of the Spanish Flu was well depicted by Dr. Dimitrije Antić on a poster printed in Kragujevac in October 1918 (according to the Julian calendar):

„There is almost no one who cannot be infected by the Spanish Flu, if just exposed to the danger of being infected. Maybe the spared ones are those who already had the same disease in 1889 and 1890, which had also spread throughout the world at that time. Thus, the old and the young, men and women fell ill equally. What are the symptoms of the Spanish Flu? It takes usually 2–3 days from the moment of entry of the contagious germ into the body till the manifestations of the Spanish Flu. The first signs of the disease are: feeling cold, sometimes strong shivering, later fever, general weakness, headache, loin and joint pain, nausea sometimes with vomiting, appetite loss, cold, cough, bloodshot eyes and sometimes throat pain; the patient is usually constipated, having rarely diarrhea; his nose bleeds sometimes, the tongue is lined, dry, the patient frequently becomes deaf later on. It is understood that all of the indicated signs may not appear in all patients and that some may not manifest. The fever and the other signs of the disease last 3–5–7 days, after which the fever starts decreasing and disappears completely in 2–3 days, and with it the other signs of the disease. If the fever is not very high, many of the patients do not become bedridden, but drag around and do their work. But many get a very high temperature, reaching as much as 39–40 or more degrees and they feel so bad, that they have to go to bed, the inflammation which had started in the throat and trachea, lowers down to the larger, and then tinier bronchial branches, and very often also into the lung alveoles, causing thus pneumonia. Sometimes the influenza begins immediately with pneumonia, whereas it follows only after a few days of illness in most cases. It is not rare that patients get rid of the high temperature first and feel quite well for 3–5 days and in some cases, even get out of bed; when all of a sudden, the fever gets back again with a high temperature, which are an introduction to severe pneumonia. Pneumonia is very dangerous in case of influenza and ends after 3–5–10 days, very frequently in death.“<sup>18</sup>

The Spanish Flu claimed many human lives through primary viral and secondary bacterial pneumonia. People died more frequently of secondary bacterial infections, which were the result of bacterial invasion on the tissues already damaged by virus. Death caused by primary viral pneumonia is still what makes the Spanish Flu special, what caused people to believe that it was a question of a new disease, even – plague. The diseased would die quickly, most frequently after two to three days from the manifestation of the first symptoms, and the deadly outcome followed terrible suffering of the diseased. The manner of dying was extremely striking for the people in the vicinity of the diseased, even more so since this was the way in which mostly young and strong people died, the ones who were believed to be the most resistant ones. There is a well-known description of the

Spanish Flu to be found in the letter written by Dr. Roy Grist, in the American military base Camp Devens on September 29, 1918:

„These men start with what appears to be an ordinary attack of LaGrippe or Influenza, and when brought to the Hosp. they very rapidly develop the most vicious type of Pneumonia that has ever been seen. Two hours after admission they have the Mahogany spots over the cheek bones, and a few hours later you can begin to see the Cyanosis extending from their ears and spreading all over the face, until it is hard to distinguish the coloured men from the white. It is only a matter of a few hours then until death comes... It is horrible.”<sup>19</sup> (Figure 1). The appearance of cyanosis on the cheeks and ears was an evil premonition. The body would not get enough oxygen through lungs. It was really very difficult to understand how it was possible for lungs to become useless in such a short time. It is believed today that the young, strong people, the very ones who had had perfect health until then, developed an extremely intensive inflammatory response to the antigenically new influenza virus. The occurrence of this strong inflammatory reaction in lung tissues, was the main obstacle to their normal functioning. Doctors who did autopsies, noticed that these young people had actually suffocated in their own blood. It is believed today that they suffocated in the products of an intensive inflammatory reaction, which is called „cytokine storm“.



**Fig. 1 – The above graphic presentation shows the difference in the age specific death rate for influenza and pneumonia per 100,000 persons in each age group, USA, in the interpandemic years (the dashed line – the so-called “U curve”) and in the pandemic year (solid line – the so-called “W curve”) <sup>6</sup>**

At the beginning of September 1918 the Spanish Flu was present in many countries. The disease appeared in each country in certain places, and took its toll. One gets the impression that it spread in a mysterious and unstoppable way. It appeared on broader and broader terrain, reaching every place, every family. By rule, the disease would still appear firstly in military bases and barracks, to be brought to the civil population, as a result of contacts with the members of the army. Embraces of spouses, who had not seen each other for months, kisses of fathers, who had just come back from

the front, were ways in which the deadly virus spread. Practically by rule, the disease could be found firstly among soldiers, before it spread into local environments.

Camp Devens, a military base from which Dr. Roy Grist wrote the already mentioned letter, has an important role in the United States. This base near Boston had around 45,000 soldiers on September 6, 1918. Like other military bases in the country, it was overcrowded with people, considering that it was planned for some 10,000 soldiers less. Starting from August there is an increase in the number of those suffering from pneumonia in the base. The soldiers kept falling ill, but this did not prevent normal operation at the beginning. Intensive transport of people among bases and between America and Europe, was favourable for the spread of the virus. What happened in Camp Devens was to follow practically everywhere. Around September 20, the Spanish Flu almost caused havoc in this military base. Around 20% of soldiers fell ill on September 22. Cases of pneumonia and deadly outcomes became increasingly numerous. A total of 342 soldiers were diagnosed with pneumonia, just on September 24. The medical staff, who had also begun to fall ill and die of the same disease, were so overburdened, that a decision was made on September 26, about not admitting any new cases into the hospital! Dr. Roy Grist indicated in his letter from this base, that a large number of doctors and medical nurses had already succumbed to the Spanish Flu. A shortage of coffins also occurred, and as for the long lines of stacked corpses, Dr. Roy Grist pointed out that such picture was more striking than any other, that could be seen in France, after the worst battle. Excruciating scenes were described by other doctors, who visited this camp at that time. An immense number of soldiers were lying in hospital. In its premises hard coughing echoed, the foul smell of feces and urine penetrated the area, many patients had the ominous indicator – bluish face colour, many cough up blood... One of the most esteemed American doctors of the time, Dr. William Henry Welch (1850–1934) upon visiting the influenza stricken Camp Devens said: „This must be some new kind of infection or plague“<sup>4</sup>.

The Spanish Flu appeared at the beginning of September in its severest form throughout America. The disease appeared in the States in every town, taking its toll everywhere. The number of the dead of the Spanish Flu in this country has been estimated to 675,000<sup>7</sup>.

The town Philadelphia was highlighted as an example of the conflict between public health and war propaganda interests. The Big Parade, the purpose of which was collection of money from the citizens (the so-called Liberty Loan Parade), was supposed to be organized in Philadelphia on September 28, 1918, although the Spanish Flu was already present in the town since the beginning of September. The flu was brought by sailors from Boston. The disease had already claimed many lives, just before the parade. Doctors tried to prevent the parade from taking place, but the state war logic differed and persistently incited the city authorities to organize the parade. The parade was thus held. It was afterwards described as „magnificent“, but its effect on health condition of the population was catastrophic. Just three days

after it, every patient bed was occupied in thirty-one city hospitals. Hundreds of residents of this town died daily, already at the beginning of October. Terrible scenes could be seen. Corpses stayed in homes with the survivors, due to the shortage of coffins and paralysis of the mortuary services<sup>4</sup>.

The Philadelphia case during the Spanish Flu pandemic is highlighted even today as an example of disastrously bad public health measures. Efficient preventive measures entailed, primarily, quarantine isolation, with a series of rigorous regulations, which it was not possible to implement in the largest part of the planet. Philadelphia was repeating throughout the world.

The United States represented the crucial factor which gave the Allies the decisive advantage over the Central Powers. The Central Powers had almost won the war during the first wave of the flu pandemic in 1918. However, the situation changed in September 1918. The great German offensive did not succeed, and hundreds of thousands of American soldiers were arriving each month to Europe.

„The Serbian Newspaper” wrote about this on September 8/21, 1918: „Reports from London say that 313,000 soldiers have been transported from the States to Europe in the course of August.”<sup>20</sup> There were already around two million American soldiers in Europe in September. The entire United States were fully dedicated to the victory of the Allies, and the country functioned as an enormous war machinery. Democracy and human rights were suppressed onto the second level. Rigorous laws were in force for prosecuting and penalizing those who dared criticize the authorities. Every citizen had to contribute to the victory of the Allies.

The situation was similar in Europe, in which 2,640,000 people died of the Spanish Flu, which was 1.1% of the European population of the time<sup>21</sup>. The number of deaths was particularly high in October and November 1918. The war was still going on, thus censorship of information among the European nations was of the same intensity as it was in the States. There are even claims that it was not rare that French doctors diagnosed incorrectly, on purpose, the Spanish Flu, calling it cholera or dysentery, in the aim of covering up the actual situation<sup>4</sup>. Still, the authorities closed down the schools in Paris, fearing that everything else could reduce war efforts. There were thousands of deaths.

The mayor of Cologne of that time, Konrad Hermann Joseph Adenauer, (1876–1967), the future chancellor of the Federal Republic of Germany, said that the Spanish Flu was exhausting so much thousands of sick people, that it made them incapable of hatred<sup>4</sup>. Life was strongly disrupted in the neutral Spain during the pandemic. The death rate caused by the influenza amounted to 3.8% in the course of October 1918. The death rate was significantly higher in some places. The death rate amounted to 10.1% in Zamora, a town in the west of Spain in October. The mayor of Barcelona asked for help from military forces for transport and burial of the dead, as the available mortuary services had become insufficient. The first 4–5 pages of the Spanish papers consisted of obituaries, during the peak of the pandemic<sup>1</sup>. The disease took its toll in every European country. The European allies ignored the disease as much as they could in the last months of the

war. The Central Powers were being given the final blow and there was no room for drastic prophylactic and hygienic measures, which would stop or at least slow down the spread of the pandemic. The war logic was also against health interests in the countries faced with a foreboding of defeat.

Absolute chaos resulted following the defeat of the Central Powers, out which nothing good could have resulted in respect of public health either. While the ever present masks dominated on the American photos of the period, which were by the way useless, even that could not be seen in Europe: the flu was ignored to the greatest possible extent. In the photo of London celebration on November 11, 1918 on the occasion of the signature of armistice, there was not any mask, but only happy people everywhere.

Mass gatherings of this kind helped to spread the virus in the same manner as had already happened in Philadelphia, end of September.

It is also not possible to see anything in the photos of the Serbian soldiers, after the penetration of the Thessaloniki front, which would indicate any protection against the Spanish Flu.

The disease was particularly cruel in isolated human communities, which is explained by the absence of contact of the people from these environments with earlier forms of the influenza virus, thus the Spanish Flu virus was absolutely new for them in antigenic respect. Some Eskimo settlements were almost completely devastated. The death rate in many Eskimo communities was even above 70%. Out of 80 people 72 died in Brevig Mission, a settlement in which search was to be made, many decades after, for preserved lung tissues of the dead, for the purpose of getting the virus genetic material. Out of 300 people 176 died in another Eskimo settlement. The disease paralysed many Eskimo settlements. Many died because no one could take care of them in their illness, give them food and light the fire. A hard fate befell also many tribes in Africa, then the indigenous tribes in South America, as well as the population of the Pacific islands. The actual data will never be known.

A total of 8% of Europeans died of the Spanish Flu in Gambia, and a British man noted down the situation he found in the Gambian countryside:

„I found whole villages of 300 to 400 families completely wiped out, the houses having fallen in on the unburied dead, and the jungle having crept in within two months, obliterating whole settlements“.

A total of 4% of the population died of the influenza in Cape Town. The virus killed almost 5% of the indigenous population on the Pacific island Guam, 14% of the population died on the Fiji islands just between November 25 and December 10 in 1918. 22% in Samoa.

The case of American Samoa was, however, an exception in the course of the Spanish Flu pandemic. Considering extremely strict quarantine, no death cases were recorded in this country! Evasion of the catastrophe by implementation of an extremely strict quarantine was also noted down in several minor American environments.

A total of 10% of the entire population died of the Spanish Flu in the Mexican state of Chiapas. The pandemic

took many lives in Russia, China, India... The real number will never be known. Recent sources point out several millions of victims in India<sup>4</sup>, while 390,000 people died of this disease in Japan<sup>22</sup>.

Reliable statistical data can only be found in rare environments, whereas it is possible to conclude about the Spanish Flu pandemic in the greatest part of the world just based on incomplete data, memories, memoir writings, newspaper articles and graves.

Medical science was already significantly developed at the time of the appearance of the Spanish Flu. It was known that microorganisms cause different diseases, and it was also known that there are also even smaller infectious particles than the bacteria visible through a microscope. Vaccines and serums for prevention and treatment of infectious diseases were already being made. Antibiotics were still not invented. The ways in which diseases were transmitted were known for a significant number of infectious diseases, and one of these diseases was also influenza. Thus, although some scientists believed already then, that a virus could be the cause of influenza, it was Pfeiffer's bacillus, which was still considered as the scientifically proven etiological factor.

While writing in Kragujevac at the peak of the Spanish Flu, Dr. Dimitrije Antić, listed the following preventive measures:

1. Do not visit patients nor those who have already died;
2. Isolate the patient immediately preferably into a separate room and prevent any kind of contact between the healthy and the ill as well as with the infected objects from his room;
3. Make the patient spit only into the spittoon, and by no means on the floor or walls, as is the custom of our people in the country. Put lime wash into spittoons and empty them either into lavatories or into dug out and filled up holes in the yard.;
4. Put immediately patients' scarfs, towels, dirty clothes and bed linen into a container with lye, and only afterwards boil and wash them;
5. No one should stay for quite some time in the rooms in which patients had stayed and then recovered or died, the walls of such rooms should be whitewashed, the floors scoured with hot lye and windows left open for several days;
6. Restaurants and inns should not be visited as long as the disease is spreading and people falling ill, gatherings in general in closed premises should be avoided and schools should be closed down. Those who have the Spanish flu or have just recovered from it, should not mix with people for quite some time, unless they absolutely must;
7. The dead should be buried without the usual burial ceremony (it is of course understood, that all contacts with the dead are absolutely out of the question). The usual memorial servings of food and drinks should also be left out;
8. The drunk and the exhausted get ill more easily and recover with more difficulty.<sup>18</sup>

Dr. Aleksa Savić pointed out that particular attention should be given to mouth, nostril and throat care. He stressed the necessity of rinsing the nose every morning and evening with a mild disinfectant device, brushing teeth several times a day, and added that the „doctors and nurses should use small face masks, besides capes.“<sup>8</sup>

The use of masks is ever-present in the American photos from this period. They were really widely used in the States. Yet, it is believed that their impact on the spread of the disease was very low or nonexistent. Masks were also used in other environments with developed public health systems, for example in Australia in 1919, the country which the pandemic circumvented in 1918 due to the efficient quarantine isolation of passengers. Schools, somewhere also cinemas and theatres, were closed throughout the world, mass gatherings were forbidden. Spitting, coughing, sneezing were particularly forbidden in the States, somewhere also hand shaking or entry into public transportation means without masks (Figure 2). In an analysis which made a comparison of the impact of the early introduction of public health measures and mortality caused by the Spanish Flu in 23 American towns, it was found that such measures did have a significant impact on the reduction of the number of deaths. The mortality was significantly lower in Saint Louis thanks to the early and consistent implementation of preventive measures than in the previously mentioned Philadelphia<sup>23</sup>.



**Fig. 2 – A tram conductor in Seattle not allowing the man without a mask to get on the tram, because of the ongoing Spanish Flu pandemic**

According to the instructions given by Dr. Antić, the treatment of the Spanish Flu should follow these steps:

- „1. As soon as you feel any one of the above mentioned signs of the Spanish Flu, go to bed straight away;
2. The patient's room should be clean with only the most essential

things in it, whereas all unnecessary furniture should be removed and taken to other rooms; windows in the room should be opened as frequently as possible, so that the patient can get as much fresh air as possible; the room should be moderately warm and not overheated; 3. It is advisable for the patient to sweat all the time, he should therefore be tucked in well and given every 2 hours warm linden flower tea or the chamomile tea or warm milk or sugared water for children; 4. The patient should frequently rinse his mouth with lukewarm chamomile tea or lukewarm salt water; 5. The food should include: milk, yogurt, chicken soup with egg or beef soup, cooked fruit (apples, pears, plums). The patient is allowed to drink water and when he gets pneumonia it is good to give adult patients a glass or two of old wine or 3 small glasses of strong brandy per day; 6. When the coughing is strong and when pneumonia begins, then compresses should be placed around the chest and crosswise over each shoulder using stale water from the room mixed with vinegar. Compresses with brandy also have a good effect. Dry cloths should be placed over the wet ones and this should be changed every 2 hours. Similar compresses on the head and around the neck are also good for the patient. If the fever is too high, then it is possible to wipe the whole body with a thick towel dipped in vinegar and water, repeatedly every 2 hours; 7. during the illness, also in case of pneumonia it is good to give the patient as a good refreshment, nutrient and strengthener the following drink: cook a little cinnamon with a glass of water, filtrate it, stir into the filtrated water 2 egg yolks, pour in 3 spoons of cognac or strong brandy and add sugar until you get a drink with a pleasant taste. A spoon of this should be given every hour; 8. It is not advisable to bathe adults, children can take baths, depending on the fever 2–3 times per day; 9. Upon recovery from the Spanish Flu, one should take care for quite some time and avoid any kind of body exertion, because due to a weakened heart, sudden death may result even after the recovery.<sup>18</sup>

The following have also been used in the treatment of the Spanish Flu: digitalis, aspirin, kinin, venesection... People used alcohol compresses, garlic and everything else which was believed to possibly have certain medicinal properties. All this was in vain, there was no medicament against the Spanish Flu. The chances for a patient to recover increased if he went to bed, had good care, stayed in bed long enough even after the relief of the symptoms and signs of the disease.

A lot of effort was made to find and get a vaccine and serum during the pandemic. People, volunteers, above all among prisoners were also used in the experiments, conducted in search for the cause<sup>24</sup>. This enormous effort was doomed to fail because of the wrong idea about the etiologic agent. Even if the cause had been experimentally proven then, medicine was not able at its level of development of the time, to produce an efficient vaccine against flu. Newspapers of the time reported frequently about proofs of the successfulness of new vaccines, but the purpose of such news was just to maintain an optimistic spirit in that terrible period (Figure 3).



Fig. 3 – A postman in New York on Oct. 16, 1918

### The second wave in Serbia

Serbia was an occupied country at the time of the second wave Spanish Flu appearance. The disease was present on both sides of the Thessaloniki front on the day of the beginning of its penetration. In the memoir writing of a Serbian woman, the following is said about the presence of flu in the occupied Serbia:

„The Spanish Flu flourished that autumn, making all my children ill, the younger ones caught a milder form, whereas the elder had a more severe and dangerous form of it. Thus, my eldest daughter caught the Spanish Flu with complications, she was ill for a long time, and to her great regret, was not able to welcome our army upon liberation. My mother got also ill and died, just two days before the end of the war at the age of sixty-two“<sup>25</sup>.

The Serbian army began the liberation of the fatherland on September 15, 1918 (according to the Gregorian calendar). The enemy was not able to withstand anymore the onrush of the Serbian troops, thus Serbian soldiers were successfully liberating foot by foot their exhausted country.

In summing up the military medical corps experiences of those days Dr. Aleksandar Nedok pointed out that the appearance of flu burdened extremely the medical corps units of the advancing Serbian army. „The flu epidemic, which was spreading in these regions from Albania through the population and moving troops, became a rage in a short time, causing significant difficulties in the work of the French and Serbian medical corps units, which was worsened by the lack

of background reinforcement...“ The organized field surgical hospitals did not succeed in following the shifting front due to inadequate transportability, and the presence of the Spanish Flu paralysed additionally the Serbian military medical corps. Thus, for example, the field hospital of the Timok Division with a large number of flu patients was left in Veles a few weeks, only to catch up later with the division in Kraljevo<sup>26</sup>. Serbian soldiers performed, thus, their liberation mission during the very peak of the pandemic.

Many Serbian soldiers were to face their tragic fate in the just liberated fatherland. A significant number of those who had survived hard battles, typhus, the „Albanian Golgotha“, hunger, malaria, became victims of the pandemic flu virus. Dr. Aleksandar Radosavljević noted down:

„Following the penetration of the Thessaloniki front, I went with my medical corps unit all the way to Sarajevo. We saw some sudden diseases appearing among our soldiers on our way from Thessaloniki *via* Skoplje, but we did not know that these diseases would become big epidemics. Only upon arrival in Raška, I saw that the local hospital was full of diseased citizens and soldiers, and that signs of „influenza“ had appeared, as this disease was called at the time. I felt the severity and deadliness of this epidemic particularly when I came to Kraljevo. I remember one of my good war friends, an active lieutenant, a serene and joyful man, born in Kraljevo. Everybody called him 'Tića the God' because of his joyful and serene nature. He had also passed through Albania with the Timok division of the first call-up from his native Kraljevo and reached the Thessaloniki front alive and healthy and following the penetration of this front, he arrived with us back to his native Kraljevo, glad to see his mother. He saw his mother, however having caught the Spanish Flu, he died two days later.“<sup>11</sup>.

A widespread view occurred among the people that the enemy had poisoned the wells and the food while retreating, and that this was the cause of the disease. However, Serbian doctors knew that it was a question of a microorganism which had been present among the soldiers even before the penetration of the Thessaloniki front, but the war excluded the possibility of an active fight against the infection. Military victories had priority. Anyway, that was the rule in all armies in those crucial, final months of the war. There were probably some protection measures among the Serbian soldiers who were not involved in war actions. „The Serbian Newspaper“ published in the same issue in which it reported that Belgrade had been liberated, a text under the heading „Flu“, and from the witty content of this text, it is possible to conclude, that prophylactic measures had been implemented at least among the remaining Serbian soldiers on Corfu. It is possible to read in this paper, which was still being published on Corfu, in the issue dated October 23/November 5 as follows:

„At this time, when the greatest kindness is needed among people, a furious unkindness is recommended. Instead of gathering in theaters, concert halls, cinemas – the favourite amusement places of the world of both genders and both national costumes – you are forced to avoid each other, you must look for lonely places, preferably forests. The time

has come for people to become highland rebels. As soon as someone sneezes in your company, you are taken over by a deadly fear, soaked in cold sweat“<sup>5</sup>. Anyhow, this kind of writing could not have been written on liberated Serbian soil, as the reality was far too cruel.

Dr. Dimitrije Antić wrote in Kragujevac about the disease which „has taken over in a short time the entire Europe, thus also our fatherland, so that people are catching it in turns in all regions, with a large number of victims on a daily basis, most of them being in their best years“<sup>18</sup>.

Only military rule governed Serbian towns and villages immediately after the liberation, whereas the other elements of the state were waiting to be established. It was not possible to properly keep statistic data, thus it was not possible to easily get data on the dead.

The hospital staff in just liberated Vranje consisted mainly of women doctors and medical nurses from Australia and New Zealand. These brave women represented the personnel of the third field surgical hospital, which was the only one which managed to efficiently follow the liberation army<sup>26</sup>. It is possible to see from their memoir writings what the Spanish Flu did in this just liberated town.

A great majority of hospitals on the territory of Serbia of that time were found in absolutely devastated, the worst possible condition\*. Thus, the hospital in Vranje had partly been organized in the premises of the military barracks, some time before the arrival of the Australians. The second bandage facility of the Drina division was already working there with its staff and doctors. The sanitary hygienic condition was still terrible, to say the least.

According to the records kept by the above mentioned women doctors and medical nurses, 87 patients suffering from the Spanish Flu were admitted and treated in the Vranje hospital in October, 114 in November, and 62 in December. There is also evidence for the same period of those suffering from „pneumonia, bronchitis and tuberculosis“, malaria, typhus... In total 334 suffering from the Spanish Flu, and 500 suffering from „pneumonia, bronchitis and tuberculosis“ were treated from October to April. However, these data do not speak of the total number of the diseased on the territory of the municipality of Vranje, who quite certainly constituted a significantly greater number<sup>28</sup>.

Many Serbian soldiers from this region came home to tragic scenes, their dearest ones had died just a day or two before their return. „Laments and cries were heard almost everywhere, instead of laughter and joy“<sup>28</sup>.

It is possible to conclude from the memoir writings of Živadin T. Čokić (1894–1988) that the number of the dead was also very high in Belgrade: „A disease named the Spanish Flu has started to strike ... There are not enough doctors and even less medical material. Those who fall ill go to the (Main) Military Hospital on Vračar, however few come out of it...“ Živadin had himself had the flu: „I felt myself a high temperature one morning. I did not go to the doctors, because

\* Mihailo Mika Petrović, the father of Serbian war surgery, wrote in his diary: „8.11.1918. According to Subotić, everything has been taken away, everything demolished in the Belgrade and Niš hospital.“<sup>27</sup>

I knew where they would send me...“ He decided to report to the commander and ask him to let him go home as he was ill, which the commander agreed to. His countryman Dika, also ill, came along with him. Both of them were, quite obviously, spreading the disease. „Dika started to slow down, already in Belgrade and finally sat down. I saw him turning red in the face... He put his arms on his knees, leaned his head on his arms and started crying. *Bon Voyage, Živadin*. When you come back from your home, you will not find me among the living“. Živadin got well, and looked for Dika's body on the New Cemetery in Belgrade: „... a grave-digger pointed out a shed where all those who had died in the past six days were still located... They were lying naked... I could not believe that so many had died... There were thousands thrown into the shed on a heap, just like pumpkins. When we arrived, the civilians had started to take them out and throw them into a big hole“<sup>29</sup>.

Dr. Aleksandar Radosavljević, who had collected memories about the Spanish Flu in Belgrade, writes:

„...the old Belgrade residents remember seeing burial processions passing every day, particularly through the street 27. marta, at that time Ratarska street. Besides dead residents, dead officers and soldiers were very often taken to the Belgrade cemetery, and military music with burial marches caused great mourning amongst the Belgrade residents“<sup>11</sup>.

Serbs fell ill and died of the Spanish Flu even far away from their fatherland. It seems that „The Serbian Newspaper“ published more freely obituaries for those people who died far away from the Serbian government and army. The August 16/29 issue announced about the death of a Serbian student in Switzerland, who died on August 9/22 „following a short and severe flu at the age of 28, and is temporarily buried in the chapel of Saint George's cemetery in Geneva, from where he will be taken to Jagodina, upon the liberation of our beautiful fatherland and buried in the family tomb“<sup>30</sup>. There is an obituary in the issue dated October 9/22 dedicated to a Serbian woman „who was not destined to see the Serbian sun after great suffering, instead of which she died of flu in three days at the age of 43 in Ajaccio on Corsica, between September 14 and 15 of the current year“<sup>31</sup>. The same issue reported that the Serbian prime minister, Nikola Pašić, had fallen ill with flu in Paris.

The tasks of the Serbian army did not end with the liberation of the fatherland. Following the orders given by Louis Franchet d'Esperey, (1856–1942), the supreme commander of the Eastern Army, units of the Serbian army were supposed to go pass onto the territory of Austria-Hungary and occupy certain regions on behalf of the Entente. This order dated October 30, 1918 was in agreement with the war goals of the Kingdom of Serbia from 1914 which entailed liberation of the Southern Slavs and establishment of a common state<sup>26,32</sup>.

At the beginning of November, the Serbian army took over part by part of the Austro-Hungarian territories of the time. However, the Spanish Flu was already largely present in these regions. Schools were closed down in Zagreb on October 10, 1918, considerably before the entry of Serbian troops and a day later in Osijek and Sarajevo<sup>14</sup>. Schools were closed down throughout Austria-Hungary and also in

those regions which are part of the present day Serbia. Schools were closed down in the village Tovariševo in Bačka on October 23<sup>33</sup>. 300 death cases were registered in Zemun in October 1918, whereas that number reached 408 in Stara Pazova. A Croatian newspaper of that time wrote mid October, that doctors in Split hardly manage to visit all patients, that there are 8 to 10 funerals per day. The Croatian paper „Obzor“ reported on October 13, 1918 that almost half the newspaper boys had fallen ill with flu, so that subscribers are kindly asked to come and get their copy of the newspaper at the newspaper office. The same paper reported on October 19, that the state railway was forced, due to the illness of the employees, to reduce the number of train lines. Zagreb horse cab drivers refused to transport Zagreb doctors, for fear of the disease, which was the cause for the intervention of the municipal administration. It is possible to see in the preserved documentation of the military administration of Bosnia and Herzegovina, that around 40,000 people fell ill in October and that around 4,000 died, and that this disease became more frequent by the end of October<sup>14</sup>. Of course, all these data should be taken as the lower figure of the ill and dead cases, because the Spanish Flu could certainly not be registered in less accessible regions.

Serbian soldiers thus performed their liberation mission in the period of greatest mortality caused by the pandemic. The disease was present among the soldiers before the beginning of the liberation actions, they came back to find the disease in the liberated fatherland, and the Spanish Flu was also largely present on other territories of the future new state. Serbian soldiers were thus dying of the Spanish Flu also on these new territories. On the other hand, the state interest imposed that no attention be paid to the pandemic, as this would slow down the victorious advancement and would endanger the long desired goal. Austria-Hungary capitulated on November 3, 1918.

A photo of the entry of Serbian soldiers into Novi Sad on November 9, 1918 shows a multitude of soldiers and civilians, densely crowded, which illustrates excellent conditions for the spread of the disease. The disappearance of the old state and the establishment of a new one, created a public health vacuum, even chaos. People unavoidably came in contact with the army, gathered on various demonstrations, conditions for preventive measures disappeared. Even more expressed mortality occurs in Zagreb in the second half of November and the first half of December, which is certainly related to the termination of all kinds of public health activities, more intensive contacts among people. Croatian sources indicate that a significant number of Serbian soldiers died of the Spanish Flu in this city. „Obzor“ dated November 9, reported that entire houses were left empty in Bosnia<sup>14</sup>.

Dr. Aleksandar Radosavljević remembers his arrival in Sarajevo:

„When we arrived in Sarajevo with our medical corps unit of the Timok Division of the first call-up, we started immediately working in the Sarajevo hospital. Only there were we able to see that the Spanish Flu epidemic had spread largely. There were many ill soldiers and civilians in the Sarajevo hospital. I even saw, among the ill, my acquaint-



tance, Dr. Jefto Dedijer, a university assistant professor, who was on his way back to his family from Switzerland. Dr. Jefto Dedijer, the father of Vladimir Dedijer, was hurrying home, but fell ill in Sarajevo. I talked to him, thinking that I would see him again the next day, but unfortunately, he died that very day<sup>11</sup>.

It is not easy to get the precise data about the number of the dead in the different environments. Documents were not kept with great precision, the demographic picture of the different environments changed significantly in the war period. Still, it is possible to say with great certainty, based on the existing data, that people died everywhere of the Spanish Flu in large numbers, that it was really a matter of a „terrible epidemic“.

A new cemetery was opened in the village Tovariševo in Bačka in the course of the pandemic. A total of 55 people of Orthodox religion mainly very young, died in the village from September 15, 1918 until November 28, 1918. The village had a population of a little over 2,500 Orthodox followers in this period, however the number of soldiers from the village who succumbed to the flu, is not known. Dr. Živojin Gavrilović, who studied the consequences of the Spanish Flu pandemic in 15 villages in south-eastern Bačka, found that 369 people died of it in them<sup>34</sup>.

It is possible to find information that 775 people died of the Spanish Flu in the Zlatibor canton and that some houses were completely devastated<sup>35</sup>.

There were many Serbian victims of the Spanish Flu, one should also bear in mind that the Serbian population was also densely settled outside of Serbia at that time, on the very territories which were to be united with Serbia. The Spanish Flu took thousands of Serbian lives. The pandemic was ignored during its course, because of war goals, thus it has remained a mysterious, forgotten disease to date. To die of it, meant practically to get killed in the war. That is probably the reason why it was neglected. However, the disease could certainly not have been ignored in that war time by families who lost their dearest ones. The Spanish Flu took young men and girls, children and adults at the peak of their vitality, leaving orphans everywhere, dooming children to a miserable childhood, without one or both parents, bringing pain to elderly people, bringing them suffering for the rest of their life.

A text appeared in „The Serbian Newspaper“ dated November 10/23, 1918, about lung auscultation, as a protest because of the concealing of the tragic consequences of the pandemic:

„It is not sad when you listen to lungs, and nothing is heard in them. It is sad when even desperate consciousness is not heard, which is screaming, imploring, begging us to get rid of magician and secret moves and significantly wrinkled eyebrows and meaningless expectoration of the many „hm!“ and continuous annoying positioning of pince-nez, which is not slipping anywhere and pretences to ourselves and to the world. Medicine is not acting“<sup>36</sup>.

This bitterness related to doctors, of whom there were not many anyway, is not strange. Little were they able to do anyway, despite everything.

Finally, it is possible to say, that Serbian doctors noticed after the pandemic, in many people, who had survived the Spanish Flu, neurological and psychiatric consequences. While speaking of the patients with the Spanish Flu sequelae, Dr. Aleksandar Radosavljević, indicates:

„Almost all the beds were occupied in the Neurological Department at the Belgrade hospital, by the diseased with indicated severe symptoms. These patients left a very sad and dismal impression and fast death was often the consequence of this disease. These patients were coming to the Belgrade hospital until the end of 1927. We do not know how many diseased there were, how many came and how many did not come to the hospital“<sup>11</sup>.

There were also other consequences. The Spanish Flu „transformed“ into tuberculosis in the never determined, but certainly not small number of cases. Following the recovery from the Spanish Flu, the impaired lungs by virus, were probably not efficient in fighting against the tuberculosis bacillus.

### The third wave

The third wave of the Spanish Flu appeared in January 1919. Although the war had already ended, there was not much data even about this last pandemic incursion. One gets the impression that the disease did not appear everywhere in the third wave, but that it was present only in some places, and that it took fewer lives in comparison with its second wave. However, people were still dying of the Spanish disease.

The third pandemic wave lasted in Spain from January to June 1919. It was found that the disease appeared mostly in the parts of the country which were struck by the first wave of the disease, whereas the parts which had suffered from the second wave, were mainly spared. The number of the dead of the flu in Spain reached about 147,000 in 1918, whereas the number of the dead in 1919 was a little over 21,000<sup>1</sup>.

The third wave was also present on the territory of the present Serbia. Unfortunately, the data are scarce. Dr. Živojin Gavrilović indicated a total of 12 death cases in the villages Kać and Gospodinci for 1919<sup>34</sup>. Two people died of the Spanish Flu in the village Tovariševo at the beginning of 1919. Influenza cases were registered in the hospital in Vranje in the first four months of 1919<sup>28</sup>.

The disease reached also Australia at the beginning of 1919. However, it is not possible to talk about the third pandemic wave in this case, as its second wave was not present at all on this continent, due to the strict quarantine. The influenza pandemic virus was significantly less deadly at the beginning of 1919 than in the autumn of 1918, probably due to certain genetic, i.e. antigenic changes of the virus. Still, the disease took also thousands of lives in Australia<sup>4</sup>.

Over 2,600 people died of influenza and pneumonia in Paris in February 1919.<sup>4</sup> This information is particularly significant, if we know that a peace conference was open in Paris on January 18, 1919 for signing of the peace treaty between the Allies and the defeated Central Powers. Maybe

it was here that influenza had, for the second time, an impact on the outcome and consequences of World War I. In the first case, it is said that it is possible that the Spanish Flu slowed down the strong German offensive at the crucial moment, preventing thus the Central Powers to win the war. In the second case, influenza disabled, probably the most important figure of the peace conference, the American president Thomas Woodrow Wilson, (1856–1924), at the very important moment of the peace negotiations. Wilson fell ill on April 3, and the cough paroxysms appeared so suddenly that Wilson's personal doctor thought that it was a question of an assassination attempt by poisoning. The first signs of recovery appeared on the fourth day, following a very severe course of the disease<sup>4</sup>.

Before the beginning of the disease, Wilson had insisted on the peace treaty being acceptable for both sides. He was so persistent in this, that he even threatened to leave the peace conference, unless his principles were respected. Very soon after his disease, Wilson continued negotiations, but the people close to him noticed a change in his conduct. The American president had become forgetful, he concentrated with difficulty. His personality had somehow changed, and this was manifested in his refraining from the political principles, he had advocated before his disease. Then Wilson accepted easily the requests made by the French prime minister, Georges Benjamin Clemenceau, (1841–1929) which entailed extremely humiliating terms for the defeated Germany. Before influenza, Wilson threatened to abort negotiations because of the same requests made by Georges Clemenceau. Finally, the humiliating peace terms were imposed on Germany, in which many historians see the causes of the next world war. It is possible that the neurological complications of the Spanish Flu caused the change in Wilson's conduct<sup>4</sup>.

Many authors indicate 1920 instead of 1919, as the final year of the Spanish Flu pandemic. The disease appeared also after the first half of 1919, but sporadically. The renowned Canadian doctor, Sir William Osler, (1849–1919) fell ill with the Spanish Flu on September 29, 1919. He was working at the Oxford University in England at that time. Influenza was present in that part of England to such an extent, that considerations were made about postponing the beginning of the lectures at Oxford. Following a short recovery, Dr. William Osler got pneumonia, of which he died on December 29, 1919, despite long, intensive treatment<sup>4</sup>.

There is an indication of numerous death cases caused by influenza and its consequences in New York and Chicago at the beginning of 1920<sup>4</sup>.

There were also death cases in Serbia in 1920. Dr. Gavrilović indicated a total of 8 in Kač, Budisava and Gospodinci<sup>34</sup>.

Many who had recovered from the Spanish Flu, felt the consequences for long. Cases similar to the ones which were treated in the Neurological Department of the Belgrade Hospital following the Spanish Flu pandemic, were reported throughout the world for years after the Spanish Flu. Dr. Aleksandar Radosavljević described the appearance of these patients:

„... one of the main symptoms was a lethargic condition, with a numb facial expression, so that the face of the diseased had the expression of a statue – or a mask“<sup>11</sup>. This disease, which was believed to be the consequence of the Spanish Flu, was called „encephalitis lethargica“.

### Conclusion

The Spanish Flu is a disease which claimed millions of lives in 1918 and 1919. It appeared at the end of the bloody World War I, thus it is perceived in some way as an inevitable part of the war reality. Namely, it is a known fact throughout history that war happenings are, by rule, followed by a significant number of victims of infectious diseases. Yet, the disease took in this case five times as many lives as the whole World War I. That speaks enough about its significance.

The Spanish Flu was a disease which caused an enormous number of family tragedies, we could say that an ocean of tears has been shed because of this disease. Numerous young lives, millions of them, became victims of the pandemic. Those who could have offered most, those from whom most was expected, the strongest ones, those were the ones who ended their lives in terrible agony, cyanotic, fighting for air. Their dearest ones, who survived, were left with suffering for life. The significance of the Spanish Flu is exactly in this and this is the very reason why we should not allow it to be forgotten. Millions of those who died of the Spanish Flu oblige us to remember this and to strive by means of our knowledge of this pandemic to prevent any similar future mass tragedy.

### Acknowledgement

I wish to thank Prof. Dr. Brana Dimitrijević, who had dedicated a lot of time and effort in analyzing this work, helping me with his suggestions to give it its final form.

I also wish to thank MSc Nataša Radusin-Bardić for her suggestions and technical assistance in giving the work its form.

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Received on April 22, 2010.

Revised on June 8, 2010.

Accepted on June 22, 2010.

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