

PRELIMINARY REPORT OF RICHARD P. STRONG, M.D.  
DIRECTOR OF SANITARY COMMISSION TO SERBIA  
OF THE AMERICAN RED CROSS

October 25, 1915

Mr. Ernest P. Bicknell, National Director of the American Red Cross, whose services had been given to the Rockefeller Foundation for the War Relief Commission's work in Europe, cabled to the Foundation on March 4, 1915 that the typhus fever epidemic overshadowed all other needs in Serbia. Upon receipt of this cable the Foundation inquired of the American Red Cross if it would consent to send a commission to Serbia to undertake the suppression of the epidemic. The American Red Cross accepted the proposal and agreed to make an original appropriation of \$25,000. towards the support of the work. Later, when Montenegro was included in the jurisdiction of the American Red Cross Sanitary Commission, an additional appropriation of \$5,000. was made. The Rockefeller Foundation made an initial appropriation of \$25,000. and other appropriations amounting to \$120,000. for this work. Dr. Richard P. Strong, who some years ago did most effective work for the American Red Cross in aiding in the suppression of the Pneumonic Plague in Manchuria, was secured to serve as Director of the Sanitary Commission, and with him were associated a number of laboratory, clinical and bacteriological experts; also skilled sanitarians, some of whom had worked under Surgeon General Gorgas in the Canal Zone. There were forty-three of these

men in all. Dr. Strong sailed on March 17. On April 3 nine physicians and sanitary officers joined him, headed by Dr. Thomas W. Jackson. The others followed from time to time as Dr. Strong cabled for further assistance. After the completion of Dr. Strong's service in Serbia he returned to this country, arriving on October 4.

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The epidemic of typhus fever which recently raged in Serbia was the most severe one of this disease which has occurred in modern times. A few cases of typhus had occurred in Serbia in October, 1914, but the disease did not make its appearance in epidemic form until January, 1915, and then in the northwestern part of the country among the Austrian prisoners who were greatly crowded together and who necessarily were compelled to live under very unsanitary conditions. The disease quickly spread from them to other individuals, and as the infected patients and the districts in which they were situated were not quarantined and the Austrian prisoners and infected individuals were sent or allowed to go to various parts of the country, Serbia was soon afflicted with a terrible and widespread epidemic.

Epidemic Raged At Will.

The country, weakened by wars, was not prepared for an epidemic, and for a time one might say that the disease raged almost at will. The majority of the small number of Serbian doctors sooner or later became afflicted with the disease. Those who remained well were occupied with treating the sick and also the wounded from the battlefields, and methods for

prevention were impracticable or were not undertaken.

Wounded soldiers or those afflicted with minor diseases or with relapsing fever wandered into the hospitals at will and entered the wards filled with cases of typhus, sometimes occupying the same beds, for it was not unusual for two or even three patients to be found lying in the same bed, and the available floor space was also filled with patients, usually with no beds.

The epidemic increased through January, rose more rapidly in February and March, and reached its height in April, when the number of cases was in the neighborhood of 9,000 per day. These figures are only approximate, for when I reached Serbia, in April, there were no available statistics of the number of cases or deaths in the various cities of Serbia, and only the approximate number of cases present in the military hospitals was known.

The American Red Cross, in addition to the hospital units it had already sent for Serbian relief work, decided to organize and send a sanitary commission for the purpose of combating the disease. The Rockefeller Foundation from the first was interested in this commission, and generously supported it in conjunction with our Red Cross.

Great Britain, France and Russia also recognized the extreme gravity of the epidemic and the frightful ravages caused by it and quickly organized, equipped and sent expeditions for checking it.



Owing to the ravages which the epidemic had made, almost complete demoralization had resulted in many parts of Serbia. So many efficient officials had succumbed that a number of the remaining ones had become discouraged and at times they remained gloomily at home rather than go to their offices.

#### Central Authority Is Necessary.

One of the first and most immediate problems which confronted me after my arrival in Serbia was that of central organization, with control and absolute authority in sanitary matters throughout Serbia. This I was able to secure through the establishment, with the consent and aid of the Government, of an international sanitary commission, whose resolutions were immediately enforced through the ministers of interior and of war. I was assisted in the work of organization by Sir Ralph Paget, who had formerly been British Minister to Serbia, and had been placed in charge of all the medical units sent by Great Britain to Serbia, and by Dr. Nikolitch, the chief civil sanitary officer of Serbia. The international commission in question consisted of the chief Serbian civil sanitary officer, the chief Serbian military sanitary officer, a representative from the Serbian Parliament, and the chiefs of the British, French, Russian and American relief expeditions.

The country for sanitary purposes was divided into

fourteen districts. To seven of these districts the French, British and Russian physicians were assigned stations and to the remaining seven the American physicians and sanitarians. A system for securing information regarding the occurrence of cases of typhus and other infectious diseases in each city and village throughout Serbia was established.

House to house inspection for the finding of cases of typhus in the cities, with the removal of the patients to hospitals and wards devoted to the care of typhus cases, disinfection of such individuals, disinfection of the other inmates of such houses in which cases of typhus had been discovered, as well as of their clothes, and finally disinfection of the houses themselves, was also systematically begun. Quarantine of individuals who had been in contact with typhus cases was undertaken after disinfection of their persons and clothing. In a number of such instances these were cared for in tents sent by our Red Cross where houses were not available as detention camps. In some instances the districts were so badly infected that it was necessary to evacuate them en masse and to destroy, by partially tearing down and by fire, the majority of the dwellings. Dispensaries were established in the different cities where the people were treated free of charge. These proved a great aid in the finding of cases of infectious diseases.

### Sanitary Trains Are Operated.

As typhus is conveyed from man to man commonly by vermin (the bite of the body louse) the bathing and disinfection of very large numbers of people and immediate disinfection of their clothing in a short period of time was an important problem in combating the disease. For this purpose sanitary trains consisting each of three converted railroad cars were fitted up. One car contained a huge boiler which supplied the steam for disinfection of the clothing. In a second car fifteen shower baths were constructed. A third car was converted into a huge autoclave (disinfector), into which steam could be turned under atmospheric pressure. In this manner the vermin were immediately destroyed and the clothes thoroughly disinfected.

Large tents were erected beside the railroad sidings on which the cars were placed. The people were marched by the thousands to these tents, their hair was clipped, and a limited number undressed themselves, carried their clothes to the disinfecting car and then passed to the car containing the shower baths. After a thorough scrubbing with soap and water they were sprayed with petroleum as an extra precaution for destroying the vermin. They then received their disinfected clothing. In many instances in which the clothing was very badly soiled fresh clothing was supplied. Many of these people stated that they had not bathed for ten months or longer. Their faces in some instances betrayed surprise and in others



fear when the water touched their bodies.

In the larger cities and in those situated away from the railway, disinfecting and bathing plants were established or constructed, and separate hours were arranged for bathing women and men in large numbers.

In many towns the clothes were disinfected by baking them in ovens, either specially constructed for this purpose or those which had been built previously for the baking of bricks, or other purposes. As all the hospitals were infected it was necessary to systematically disinfect these and the inmates.

#### The Cleaning-up Process.

The patients were first removed from a ward, which was then thoroughly disinfected. They were then given a thorough bath by being scrubbed with soap and water and disinfectants. They were given clean clothing and placed in the disinfected ward. Their old clothing was usually boiled. The wards were first disinfected by sulphur fumigation to kill the vermin. Beds were then removed and disinfected, mattresses, sheets, etc., being disinfected with steam or by boiling. Walls, ceilings and floors were then scrubbed with solutions of bichloride of mercury or carbolic solutions. In many instances the interiors of hospitals were thoroughly whitewashed. Every precaution was taken to prevent infection among the personnel of the Commission. A campaign of education of the people by

the issuing of popular circulars describing the disease, its methods of transmission and prevention, was undertaken.

As cholera had occurred in places along the border between Serbia and Austria it was deemed advisable to perform vaccination against this disease, and so vaccination trains and parties were also established which went about the country with the doctors and assistants, who inoculated thousands of people daily. Vaccination against cholera and typhoid fever was made compulsory in Serbia. At first my own method of vaccination against cholera was employed, as it has the advantage of only requiring a single inoculation. Later on, typhoid and paratyphoid fever became prevalent and a combined vaccine against all three of these diseases was manufactured in our laboratories in Serbia and sent throughout the country for use. Dr. Castellani was placed in charge of the preparation of the vaccine.

On one occasion one of our vaccinating parties under Dr. Mendelssbhn was fired upon while they were vaccinating along the Bulgarian border.

#### Cholera Prevented In Serbia.

So far, no cases of cholera have occurred in Serbia this year.

The water supply of many of the towns was also greatly improved and artesian wells were bored in a number of instances where the water in the vicinity had been condemned as un-

safe after it had been examined systematically in our laboratories. In fact, a systematic bacteriological examination of local water supplies was one of the tasks which was undertaken by our laboratories.

An important problem in the reduction of the amount of typhoid fever and the prevention of cholera was the disposal of human excreta, and a large number of sanitary and flyproof latrines were constructed throughout the country, particularly about barracks, hospitals, etc. In many cases the cess-pools became filled to overflowing and there was not a sufficient number of hydraulic pumps in Serbia to empty a quarter of them. Our Red Cross immediately supplied, upon my request, a larger number of these pumps. The construction of filter beds for purification of sewage was also undertaken in a number of places, and the sanitary condition of some of the cemeteries, where from twenty to thirty people had been buried in numerous shallow pits and insufficiently covered with earth, was improved. The destruction of the breeding places of flies, in connection particularly with the spread of typhoid and cholera, and of mosquitoes, in connection with the spread of malaria in southern Serbia, was also undertaken.

#### Praise For The Personnel.

The American Red Cross and Rockefeller Foundation have supported the American Red Cross Sanitary Commission in every way and have supplied it with all the necessary equipment and

personnel. Every request which I made was granted. I can not speak too highly of the personnel of the American commission, and I do not believe that a finer and more competent group of sanitarians and physicians were ever gotten together. Much of the success of the work in Serbia was due to their efforts.

In this brief statement it is impossible to do justice to all, but the names of Dr. Jackson, chief sanitary inspector, whom I left in charge after my departure; Dr. Zinsser, bacteriologist; Dr. Grinnell, sanitary inspector; Dr. Shattuck, clinician; Dr. Sellards, who had charge of the clinical laboratory work; Dr. Caldwell, hospital administrator; and Dr. Castellani, consultant in bacteriology, are deserving of the highest mention. All of these gentlemen, with the exception of Dr. Castellani, who joined shortly afterwards, went to Serbia as members of the first commission. The name of Mr. Stuart, the sanitary engineer of the commission, also calls for special mention. His advice and work in connection with the many important sanitary problems in Serbia have been invaluable.

Among the second group of men attached to the commission, Colonel Gale, Drs. Mendelssohn and Gruver, Mr. Brink, and others, and among the still later arrivals Dr. Harry Forbes, all held responsible positions in the Serbian work.



### The Offer Of General Gorgas.

At the time of the organization of the commission last March, Major General Gorgas, Surgeon General of the United States Army, most generously gave me his advice in relation to the equipment and personnel of this commission, and I am glad to have this opportunity of expressing again my gratitude for this most valuable assistance. Later he generously offered to give up his position as head of the Medical Corps of the United States Army, if necessary, and come to Serbia if the epidemic could not be controlled. Fortunately for the army this sacrifice on his part did not become necessary. General Rupert Blue and Colonels Fisher and Noble also made valuable recommendations, and Miss Boardman was untiring in her efforts of organization.

Yale University, particularly through the offices of Professor Beebe, Mrs. Slavko Grouitch and others, and Harvard University, particularly through Dr. F. C. Shattuck and others, sent special funds for the work, and Mrs. William H. Forbes, of Boston, Mrs. McMullen of New Rochelle, and Mr. W. H. Converse of Philadelphia have also generously given me financial assistance for relief work in Serbia.

Through the International Sanitary Commission at Nish, the most complete and cordial co-operation was secured between the French, British, Russian and American sanitarians working in Serbia. I also can not speak too highly of the work of many of my foreign colleagues. Among the British



relief workers in Serbia the work of Lady Paget and of her husband, Sir Ralph, and of Sir Thomas Lipton, must be specifically mentioned. Lady Paget's hospital, which she directed herself until she became a victim of typhus, and of which she again assumed the directorship as soon as she was convalescent, is equipped with over five hundred beds and has done most admirable work. Our own commission has rendered it much assistance. It is only equalled in efficiency by one other hospital in Serbia. Sir Ralph Paget has worked untiringly and faithfully in the discharge of his duties, as has his wife. Sir Thomas Lipton, apart from the financial support he has given and secured for Serbia, has encouraged and supported the medical and sanitary work in Serbia in many ways and has rendered innumerable kindnesses and supplied countless comforts for Red Cross workers in Serbia.

#### Our Hospital In Belgrade.

The best equipped and managed hospital in Serbia is the American Hospital in Belgrade, of which Dr. Ryan is the director and Miss Gladwin the chief nurse. Here patients receive the same efficient care and comfort which they do in many of our best hospitals in the United States. Dr. Ryan, during the height of the epidemic, worn out with overwork, was stricken with typhus. He kept at work, however, until he became delirious, when he was taken charge of and treated by Dr. Kirby-Smith. As soon as his fever subsided, he resumed charge of

his hospital. I could not do justice to the great work Dr. Ryan has done in Serbia in a few words, and Miss Gladwin's work also merits the highest praise.

Colonel Hunter and Major Stammers of the British Sanitary Unit, also were of much assistance in the suppression of the epidemic, the former being in charge of the sanitary work of the army about Kraguevatz and the latter in charge of one of the sanitary vaccinating trains for a part of the time. These gentlemen unfortunately were recalled to render aid to the British wounded in the Dardanelles. The French physicians under the able leadership of Colonel Jaubert and the Russian staff, under Dr. Solfatero, also rendered most important assistance.

#### Toll Of Lives Is Terrific.

Largely through the combined efforts of these workers, and with the co-operation of the Serbian physicians and officials, the epidemic rapidly declined and for the last three weeks before my departure from Serbia we could not find a fresh case of typhus. The sanitary condition of the army and of the people was then excellent. I trust that the sanitary demonstrations in the prevention of typhus, which have been given the Serbian people, and the construction of the various permanent disinfecting plants throughout the country will prevent the occurrence of another epidemic of typhus such as we have just witnessed and which destroyed between

135,000 and 150,000 people.

Serbia, however, is still in great need of medical men, and if fighting is resumed she will not have a sufficient number of physicians, surgeons and nurses to care properly for her wounded alone. As relapsing fever and typhus are endemic in the Balkan States, the situation must be watched, and any outbreak of these diseases will require prompt and efficient measures to prevent another epidemic. Therefore physicians will find plenty of relief work to do in Serbia this winter. Those going, however, should be aware of the fact that there are no comforts or luxuries in Serbia and should go with the missionary spirit.