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Hermann Mooser, Typhus, Warsaw 1941

Jean Lindenmann

Summary

Hermann Mooser (1891–1971), a Swiss rickettsiologist, sent his friend Peyton Rous (1879–1970) of the Rockefeller Institute (New York) a telegram on November 3, 1941, asking for financial help for the manufacture of typhus vaccine in Zurich for the Warsaw Ghetto. His explanatory letter from November 4 reached Rous too late to have any influence on the negative decision (by the Rockefeller Foundation and the American Red Cross) in this matter. Contrary to Weindling's affirmation Mooser was neither in Warsaw in 1941, nor was he a member of the Swiss Sanitary Missions to the eastern front.

Zusammenfassung

Hermann Mooser (1891–1971) schickte am 3. November 1941 aus Zürich seinem Freund Peyton Rous (1879–1970) vom Rockefeller-Institut in New York ein Telegramm, worin er um finanzielle Hilfe bei der Herstellung von Fleckfieber-Impfstoff für das Warschauer Getto bat. Der am 4. November nachgesandte erklärende Brief erreichte Rous zu spät, um den negativen Entscheid des Rockefeller-Instituts und des Amerikanischen Roten Kreuzes zu beeinflussen. Im Gegensatz zu Behauptungen Weindlings weilte Mooser weder 1941 in Warschau noch war er ein Mitglied der Schweizerischen Ärztemissionen an der Ostfront.

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Introduction

Paul J. Weindling, who has made penetrating studies of what he sees as affinities between public health measures and genocide during World War II, has repeatedly alluded to the role Hermann Mooser, a well-known Swiss rickettsiologist, might have played in Warsaw in 1941. Thus, in 1993, Weindling writes:

The Swiss researcher Hermann Mooser was working on typhus in Warsaw – apparently in association with the German Red Cross, while also maintaining US contacts; remarkably Mooser requested typhus vaccine from the Rockefeller [Institute] in 1941.¹

He also mentions this in a paper of 1995². More recently, in 2000, his book *Epidemics and Genocide* gives the following account:

Just at this time efforts were made to obtain the US Cox vaccine for comparison with the German counterpart. Hermann Mooser [...] now professor of hygiene in Zürich, [...] joined the Swiss Red Cross relief teams assisting the German army in Poland and Russia. Mooser caused consternation when he telegraphed from Warsaw to the Rockefeller Foundation in New York a request for the US Cox vaccine. The Rockefeller Foundation felt that given the Swiss politics of cooperating with the highly suspect German Red Cross³, the situation was ‘delicate and difficult’. The request was referred to the American Red Cross and US government, and turned down in November 1941 because of fears that the Germans would appropriate the consignment [...]. The question arises whether Mooser was attempting to aid the ghetto, or whether he supported the Swiss medical detachments which were active on the eastern front, providing covert support to the Germans.⁴

Indeed, “the question arises”, and it is the purpose of the present paper to answer it.

Hermann Mooser and his attitude towards Germany

Hermann Mooser (1891–1971)⁵ was a largely self-taught rickettsiologist who had clearly demonstrated biological differences between classical, louse-borne typhus as seen in Russia and Poland in the wake of the First World War, and murine typhus as seen in Mexico⁶. He was elected to the chair of Hygiene

1 Weindling 1993, 458.

2 Weindling 1995, 86.

3 The German Red Cross (DRK), recreated after the First World War in 1921, was under the jurisdiction of the Ministry of the Interior. In 1943 Heinrich Himmler became minister of the interior. Thus, from that time on the DRK practically belonged to the SS (Taugourdeau 1997).

4 Weindling 2000, 343f.

5 For biographical notes on Mooser, Marti 1978.

6 Mooser 1928a; Mooser 1928b.

at the University of Zurich in 1936⁷. Hans Zinsser, in his recollections *As I Remember Him*, writes the following on Mooser:

This lively, kindhearted Swiss was, and is, one of the best scientific observers with whom it has ever been my good luck to cooperate. Without him, we should probably have failed. He is a little, sturdy bombshell of energy whose brutal honesty has made him many enemies among all but equally honest people.⁸

On behalf of the League of Nations Mooser worked in China in 1938. In Auden and Isherwood's book *Journey to a War* he is described as follows:

Dr. Mooser himself was a stocky figure, eagle-eyed, with a bitter mouth and a smashed, rugged face. [...] With his colleagues he spoke Swiss dialect, or English – boycotting High German, the language of the Nazis.⁹

In a letter to Peyton Rous¹⁰ dated August 9, 1941, Mooser writes:

[...] no German Jew is permitted to do any research or to publish in Germany. That's why we have founded a new Journal¹¹, in order to give space to the exiled Jews. When Dörr¹² of Basle asked me to contribute to his *Handbuch der Virusforschung*¹³ I flatly refused, in spite of the fact that four peoples [sic], like Shope and Stanley eagerly seized the opportunity to publish for Julius Springer, since 1934 a full-fledged Nazi firm. Dörr told to my associate¹⁴: “Die Reichsschrifttumskammer hat's mir hoch angerechnet, dass es mir gelungen ist, bedeutende ausländische Forscher für mein Buch zu gewinnen.” From this quotation you will see that publishing in Germany means publishing for Goebbels^{15,16}

7 Mörgeli 2001.

8 Zinsser 1940, 344.

9 Auden/Isherwood 1973, 126–127.

10 The friendship between Mooser and Rous is best documented by a letter in which, upon receiving the Nobel Prize, Rous writes to Mooser: “Our friendship has been one of the greatest joys of my life” (Koelbing 1970).

11 The *Schweizerische Zeitschrift für allgemeine Pathologie und Bakteriologie*, editors A. v. Albertini, A. Grumbach (Arthur Grumbach [1895–1975] was a Jew) and H. Mooser, publisher S. Karger, Basel (a Jewish firm forced to leave Berlin in 1934).

12 The correct spelling is Doerr.

13 The first half of the first volume of the *Handbuch für Virusforschung*, editors R. Doerr (Basel) and C. Hallauer (Berne), was published in 1938. Contributions in English are by W. J. Elford, London; G. M. Findlay, London; F. M. Burnet, Melbourne; and W. M. Stanley, Princeton. The second half of volume 1, published in 1939, includes chapters by G. M. Finlay, London; Oluf Thomsen, Copenhagen; James Craigie, Toronto; Kenneth M. Smith, Cambridge. The next volume, called “erster Ergänzungsband”, published in 1944, has a contribution by L. O. Kunkel, Princeton. After the war, the “Handbuch” continued with 2 more volumes in the same international spirit (2. Ergänzungsband, editors R. Doerr [Basel] and C. Hallauer [Berne], 1950; 3. Ergänzungsband, editors C. Hallauer [Berne] and K. F. Meyer [San Francisco], 1958). Thus, it seems that not all non-German scientists shared Mooser's reservations. Some probably felt that Doerr's attempts at keeping science international in spite of irreconcilable ideological rifts was laudable. The paper Mooser alludes to is Stanley 1938. There is no paper by Shope.

14 Probably Arthur Grumbach.

15 A more self-critical Goebbels might have realised that the quantity and quality of foreign contributions signalled a decline of German science.

16 Mooser 1941a.

At the height of German military triumphs, in 1942, a complaint was filed with the Zurich government concerning anti-German utterances Mooser had made while sitting with former student colleagues in a restaurant, when tempers had been so excited that blows were exchanged. The University rector, confronted with this affair, somehow managed to resolve it¹⁷.

The threat of typhus

With the outbreak of war in Europe, Mooser must soon have realised that typhus, a dreaded disease which had always accompanied the breakdown of civil order¹⁸, posed a major threat, which health authorities and military medical services were ill-prepared to meet. Although cases of typhus did occur in Poland in 1940, the situation seemed more or less under control. A report from one of the delegates of the International Committee of the Red Cross (ICRC) dated November 5, 1941, states:

*D'une façon générale, nous n'avons pas observé pour l'instant de cas de maladies contagieuses graves: typhus exanthématique par exemple (qui se trouve dans la population civile de Pologne).*¹⁹

This, however, changed rapidly: on November 11, another delegate reports:

*P.S. – L'OKW²⁰ me signale, à titre confidentiel, que des cas de typhus exanthématique sont signalés dans tous les Wehrkreis tout spécialement parmi les prisonniers.*²¹

Typhus served as a pretext for sealing off the Warsaw Ghetto, although this was a measure certain to create the very conditions it was supposed to prevent²².

To control the epidemic, two approaches seemed promising: the elimination of the lice which transmit the infection, and the reduction of the susceptibility of potential victims by vaccination. Efficient de-lousing procedures had to await the recognition that DDT (introduced into the Swiss army upon recommendation by Mooser in 1942, and deployed on a large scale by the Allied forces, but later and less enthusiastically by the Germans) was by far superior to traditional procedures such as dry heat, steam, fumigation and toxic gases, which all required special equipment²³.

17 Marti 1978, 49; Mörgeli 2001.

18 See, for instance, Zinsser 1985.

19 Descœudres 1941.

20 OKW = Oberkommando der Wehrmacht, German High Command of all military forces.

21 Marti 1941a.

22 Roland 1992; Balinska 1999.

23 Mooser 1944. Mooser mentions the difficulties he had encountered with traditional de-lousing procedures in his 1938 mission in Sian (China).

As to vaccination, by 1939 only two procedures had been applied on a large scale under field conditions: the vaccine developed by Rudolf Weigl (1883–1957) in Poland²⁴, which used killed *Rickettsiae* obtained from the gut of infected lice, and the live, supposedly attenuated French vaccine which had been used in northern Africa and Chile²⁵. The disadvantage of the Weigl vaccine was that it required the farming of millions of lice which could only be fed on human beings. This was relatively unproblematic as long as the lice were uninfected²⁶, but after rectal inoculation with highly virulent *Rickettsiae* feeding required volunteers who had recovered from typhus and were immune. The live vaccine, on the other hand, still carried a lethality of around 1%²⁷.

Obviously, there was a need for better types of vaccine. Egg inoculation techniques were unsatisfactory as long as the infection of the chorionic membrane was attempted. A breakthrough occurred when Cox devised the yolk sac technique in 1938²⁸, although it was realised in 1942 that the vaccine produced by Cox's method up to that date "lacked immunizing potency"²⁹. Other attempts were based on the fact that mice, rats, rabbits, and dogs allowed replication of typhus *Rickettsiae* in their lungs, a method largely developed at the Pasteur Institutes in Tunis and Paris³⁰.

Mooser's intervention

In spite of the secrecy surrounding German operations in Poland, word leaked out that the sanitary situation in Warsaw was deteriorating rapidly. Mooser early became aware of this. He therefore sent a telegram, a "night letter" as it was called, to his trusted friend Peyton Rous at the Rockefeller Institute, in the evening of November 3, 1941³¹ (see fig. 1). The telegram, as can be clearly seen, was sent from Zurich.

The telegram was duly received on November 4 and communicated to Rous, who immediately reported to Dr. W. A. Sawyer, head of the Interna-

24 Eyer 1958.

25 Mooser 1941b, 13.

26 For instance, Hilda Sikora (1889–1978) constantly fed between 300 and 500 lice on herself for 4 years (Sikora 1944). Mooser and his technician Arnold Leemann also fed lice, but on a more modest scale.

27 Mooser 1941b, 19.

28 Cox 1981.

29 Bayne-Jones 1964, 289. Fortunately, the American forces did not encounter typhus before 1943.

30 Giroud/Panthier 1942.

31 Mooser 1941c.



RECEIVED AT 64 BROAD STREET, NEW YORK. AT YK 219 STANDARD TIME 7:45
 HERT SZ 5079 NOV 3 1941 Typing
 ZUERICH 59 3RD 1829 700 RF45 13-1 Mooser
 NLT DOCTOR PEYTON ROUS ROCKEFELLER INSTITUTE NEWYORK-
 SEVERE TYPHUS EPIDEMIC AMONG INDIGENT PEOPLES VARSAW STOP
 AM ORGANIZING DELOUSING SERVICE AND VACCINE PRODUCTION AN
 COMBINATION WITH INTERNATIONAL COMMITTEE OF RED CROSS STOP
 COULD INTERNATIONAL BOARD OF HEALTH OF THE FOUNDATION
 CONTRIBUTE TO OUR PLAN STOP AM PREPARING VACCINE FROM MICE
 BECAUSE EGGS NOW VERY SCARCE IN SWITZERLAND.
 300 3 AM TO 29 NOV 1941 3:44 TELETYPE UNIT CALL NUMBER 4-1-1 MOOSER HYGIENE INSTITUT

Telephone: HAnover 2-1811 To secure prompt action on inquiries, this original RADIOGRAM should be presented at the office of R.C.A. COMMUNICATIONS, Inc. In telephone inquiries quote the number preceding the place of origin.
 Form 115 TA-158B

Fig. 1. Facsimile of the telegram (“night letter”) sent by Mooser from Zurich on the evening of November 3, 1941, to Peyton Rous in New York (reproduced with kind permission of the American Philosophical Society, Philadelphia).

tional Health Division of the Rockefeller Foundation³². On November 14, Sawyer telegraphed to Mooser³³. The entire text reads:

YOUR RADIOGRAM TO ROUS WAS REFERRED INTERNATIONAL HEALTH DIVISION ROCKEFELLER FOUNDATION STOP REGRET FOUNDATION UNABLE CONTRIBUTE FUNDS YOUR WARSAW TYPHUS SERVICE STOP HAVE REFERRED YOUR INQUIRY AMERICAN RED CROSS.

On November 25, the Americans definitively turned down the request³⁴.

Mooser’s original telegram (fig. 1) was somewhat cryptically worded; it is understandable that the Americans were not entirely clear about Mooser’s exact intentions, although “consternation”, as interpreted by Weindling (see

32 Rous 1941.
 33 Sawyer 1941a.
 34 Sawyer 1941b.

above), seems an exaggeration. This is how the diary entry of WAS (Wilbur A. Sawyers) of November 25 reads:

Mr. Mitchell brought up some other matter. He had communicated with the Red Cross Representative in Switzerland³⁵ and had received word that it was understood that any typhus activities in Warsaw by the Mooser group would be in cooperation with the German Red Cross. The cable from Switzerland stated that a request for typhus vaccine had been made to the R. F. It was agreed that the situation was delicate and difficult. The ARC will continue to explore the situation to see if there is any need for assistance or any possibility.³⁶

Probably because he felt that his request could be misunderstood, Mooser, immediately after having sent off his telegram, wrote a long explanatory letter on November 4, 1941³⁷. In contrast to his habit of writing longhand, this letter is typed. It is an interesting document, although its efficacy was nil, because it reached Peyton Rous only on December 8³⁸, long after the decision not to act had been made, and at a time when the USA were faced with infinitely more urgent problems than those of typhus in Warsaw³⁹. The letter begins: "Dear Doctor Rous, I confirm herewith the cable which I have sent you last night." Then comes the wording of the cable as shown on figure 1. Mooser continues:

I was not able to express myself clearly in the night letter because even in Switzerland telegrams have to go through the censor. Unfavourable news about Germany are suppressed. The German and Polish Jews, in fact all Jews in occupied territory are treated beyond description. They are concentrated in Poland into Ghettos, and there it seems they are doomed to die from disease⁴⁰. Every day I am receiving letters from relatives of Jews who live in Switzerland, asking me to provide antityphus vaccine. I do my utmost working at night and on Sundays for the production of this vaccine but since I am director of a government institution I am not supposed to deliver this vaccine free of charge. Although the Institute is not making any business with the misery of mankind, I have to charge at least the actual expence [sic] of the manufacture of the vaccine which is distributed outside of Zurich.

It should be noted at this point that a black market for typhus vaccine was flourishing in Warsaw⁴¹. One source of the vaccine was Weigl's institute in Lwow. Wacław Szybalski, one of the louse feeders employed there, helped

35 This must refer to the International Committee of the Red Cross (ICRC). In principle, and to this day, the ICRC can only act with the agreement of the governments concerned, which in this case meant collaborating with the German Red Cross DRK. The ICRC should not be confused with the various national Red Cross organisations.

36 Sawyer 1941b.

37 Mooser 1941d.

38 Rous 1941.

39 Japanese attack on Pearl Harbor, December 7, 1941.

40 In fact, starvation proved to be far more deadly than typhus, both in the Ghetto (Roland 1992) and in prisoner of war camps (Streit 1978).

41 Roland 1992, 148.

smuggle vaccine into Warsaw⁴². Another source was Switzerland, from where some medical supplies seem to have reached Warsaw with the aid of the German Red Cross⁴³, an otherwise thoroughly nazified and, according to Weindling, “highly suspect”⁴⁴ institution.

In his letter from November 4, Mooser goes on:

Yesterday a representative of the International Committee of the Red Cross in Geneva called on me and asked me to push the production of vaccine to the utmost and he told me further that the Red Cross Committee would be willing to take charge of the distribution of the vaccine among the peoples [sic] in Warsaw [sic] and Lodz. The Committee has received a telegram from the States to the effect that 10 000 \$ are available for such help. Vaccination in my opinion is a very complicated method of preventing typhus since it is difficult to produce in large quantities. I knew that last year [,] when I made vaccine for Spain [,] considerable quantities of vaccine manufactured in the United States had been transported to Spain. – I wonder whether it will be possible to arrange a combination between the International Board of Health of the Rockefeller Foundation and my Institute for the production of vaccine. Furthermore I should like to know whether vaccine produced in the States could be shipped by Clipper to the Committee in Geneva. The yolk sack [sic] method devised by Cox which is excellent in respect to quantity of vaccine, is out of question for me since we don't even get eggs any more for our food^{45, 46}.

Whereas it is clear from the above that Mooser expected some financial help for the manufacture of his vaccine in Zurich, the other prophylactic measure, de-lousing, obviously had to be carried out locally in Warsaw. This issue is also addressed by Mooser:

The best thing of course would be to provide for delousing facilities in the large Ghettos, which the Germans have created in Poland. I myself would be very willing to do my utmost to organize the anti-delousing [sic] service but it is very unlikely that the Germans will allow Me [sic] to go to Warsaw [sic].

What sort of de-lousing facility Mooser envisaged is difficult to say; it might simply have consisted in sending sufficient amounts of DDT (manufactured under the trade name of Neocid powder by the Geigy company) to Warsaw.

Upon receipt on December 8, Mooser's November 4 letter was shown to W. A. Sawyer, who immediately reacted with a letter dated December 9 to Rous with copy to Mooser:

42 Szybalski 1999, 172. It has been reported that Hermann Eyer, the German chief of the “Fleckfieber- und Virusforschungsinstitut des Oberkommandos des Heeres” in Cracow and Lwow, to which Weigl's outfit belonged, tolerated these transfers (Gilsohn 1965, 40).

43 Roland 1992, 72.

44 Cf. footnote 4 above.

45 The Swiss rationing system provided one egg per person per month. Cox at the same time was using 12 000 eggs per day, six days per week, for the preparation of his vaccine (Cox 1981). Gildemeister in Germany was boasting 2000 eggs per month for his version of the Cox vaccine (Gildemeister/Haagen 1942).

46 Mooser 1941d.

The kind of assistance which he [Mooser] requests would be impossible for us during existing conditions [...]. At the present time the demands for typhus vaccine for over-seas' use are far beyond the capacity of the American commercial laboratories. [...] I note from Dr. Mooser's letter that he will not be permitted himself to supervise the work in Warsaw and it would certainly be impossible for us to cooperate indirectly with the German Red Cross and to send materials into Germany.⁴⁷

Rous felt obliged to explain to Mooser that all conceivable efforts had been made to help. In a letter dated December 10, with a brief addition on December 11, Rous wrote:

At once on receiving your cable I talked with Dr. W. A. Sawyer [...]. Dr. Sawyer promised to communicate directly with you as soon as possible. [...] As you know, our government now has put drastic restrictions on the sending out of funds. Two days ago came your letter of November 4, which I at once forwarded to Dr. Sawyer, in the hope that the situation might have become more favorable to your project. Almost as I write we have had in New York an air raid warning, the third in 24 hours, and some of us expect that Hitler will declare war on the United States and that he may attempt to bomb New York with special long distance bombers, for what one may term its immoral effect. [...] I tell you these things because they mean that you will probably have some difficulty in turning the mind of the American Red Cross immediately to the misery in Warsaw. [...] I am purposely writing an impersonal letter, since it may fall into unfriendly hands.⁴⁸

This letter is typed, with a handwritten addition on December 11: "P.S. – Hitler's declaration came this morning. Shopkeepers are beginning to tape their windows. The U.S. will do more than that."

Other links in the Swiss-Polish connection

At the same time as Mooser's attempts to help Warsaw were aborted, other efforts, private and official, were made, not all with the same purpose. The Swiss Jewish community, besides contacting Mooser, also tried to enlist the help of the American Jewish Joint Distribution Committee, as evidenced by a letter from Elias Sternbuch of St. Gallen to Mr. Rosenheim, President, Agudas Israel World Organization, New York, from November 7, 1941:

Dried eggs have become a rare article in Switzerland and the mice do not get enough oats. The Red Cross has therefore cabled to the Rockefeller Institute and expects to receive from them the necessary animal preparations.⁴⁹

The reference to "dried eggs" is of course a misunderstanding; Cox' typhus vaccine required live chick embryos for its manufacture.

47 Sawyer 1941c.

48 Rous 1941.

49 Roland 1992, 149.

The International Committee of the Red Cross ICRC, whose primary responsibility was towards prisoners of war (POWs) according to the Geneva Convention of 1929, received the following alarming report, dated November 3 and 4, 1941:

2) Les prisonniers russes. Estimés à environ 4 millions, dont plus de 300 000 en Allemagne. Les prisonniers arrivent en Allemagne dans un état proprement épouvantable, cadavériques, crevant littéralement de faim. Il en meurt chaque jour des centaines, et il est même observé des cas d'anthropophagie.⁵⁰

The ICRC proposed to the German and Soviet governments that a supply of food, clothing and typhus vaccine from American sources could be sent for the prisoners. The Germans, initially not disinclined to accept the offer, turned it down in December 1941 after the matter had been brought before Hitler⁵¹. The Soviets, who were not signatories of the Geneva Convention, did not answer. By that time, there were more than 2 million Soviet POWs in German hands, of which a high proportion had already died, and less than 200 000 German POWs, also miserably treated, in Soviet custody.

In addition to these efforts, there was a further undertaking, which one of its later critics has called “incredible”⁵²: the Swiss Sanitary Missions to the Eastern Front⁵³. These must be seen in the light of the situation of Switzerland after the capitulation of France in June 1940. The Germans could, without even a military intervention, have starved its population and strangled its economy simply by closing the frontiers. In retrospect it seems likely that the advantages of keeping Switzerland neutral and independent outweighed the advantages Germany might have acquired by occupying its territory. This presupposes that German policy was governed by rationality, in view of Hitler’s character, an unwarranted assumption. What irked the Germans most was the largely critical Swiss press. The German embassy repeatedly intervened against the unfriendly attitude of Swiss newspapers. Several influential Swiss personalities thought that some gesture of good will ought to be made in order to mollify the Germans. It seems that the idea of organising a sanitary mission similar to the one that had been sent to Finland in 1940 was first conceived in the summer of 1941 by Hans Frölicher⁵⁴, Swiss ambassador in

50 Marti 1941b.

51 Streit 1978, 179; CICR 1948, 56.

52 Bourgeois 1991.

53 A full historical account of these missions is still lacking, but there is a large body of accessible printed material. See particularly Wengen 1942; Bircher 1944; Naegeli 1944; Blättler 1945; Eichenberger 1945; Puoz 1952; Bucher 1967; Lang 1968; Remund 1968; Gerber 1970; Longchamp 1983; Heller 1988; Bourgeois 1991; Gautschi 1994; Schild 1994.

54 Not Fröhlicher as printed in the name index of even the second edition of Heller’s book (Heller 1988).

Berlin⁵⁵. The idea was immediately taken up by Eugen Bircher, a surgeon, division commander, military historian and politician⁵⁶. Since the Swiss Red Cross, which was incorporated into the Swiss army, could not directly organise this mission, an ad hoc committee was formed, which worked under the “sponsorship” (“Patronat”) of the Swiss Red Cross. With remarkable speed a first voluntary mission, consisting of 30 MDs, mostly military surgeons, 30 female and 2 male nurses, one lab technician, a few drivers, interpreters and secretaries⁵⁷, all clad in fancy blue uniforms, left for the Eastern Front via Berlin on October 15, 1941. The Beresina was crossed on October 22, a memorable occasion for the Swiss: it was here that in 1812 their ancestors had suffered heavy losses covering Napoleon’s retreat. The mission was put to work in various field hospitals around Smolensk and returned home on January 29, 1942. A second mission, stationed in Warsaw, lasted from January 8 to April 14, 1942, the third, in Riga, from June 18 to September 29, 1942, and the fourth and last lasted from November 24, 1942, until March 9, 1943, and worked in the region Charkow-Stalino⁵⁸.

Weindling⁵⁹, without any evidence⁶⁰, surmises that Mooser was a member of one of these missions. From the date he gives, November 1941, this could only have been the first mission, but this was never active near Warsaw. It was the second mission which was located in Warsaw, but not before January

55 Bonjour 1970, 450.

56 The personality of Eugen Bircher (1882–1956) has remained controversial to this day (Heller 1988). He was not a full-fledged Nazi, but an admirer of Germany and its military establishment, and a militant anti-communist.

57 As in all such undertakings, the voluntary participants had mixed motives, ranging from pure idealism in a humanitarian spirit to very egoistic hopes regarding the role they might play in a new European order under German rule.

58 Ironically, the net propagandistic result of the missions was not to the Germans’ advantage: members of the missions witnessed the German defeat before Moscow in the winter 1941/42, the atrocities in Warsaw in early 1942, and the decisive German defeat before Stalingrad in the winter 1942/43. In addition, Eugen Bircher unwittingly confided his observations to a member of the Soviet spy network “Dora” operating from Switzerland so that this arch-antibolshevik in effect helped the Soviet war effort (Rado 1971, 175). One participant to the first mission, the blood transfusion specialist Rudolf Bucher, upon his return from the front, gave many conferences, against which the military attaché to the German embassy intervened (Ilsemann 1944). The book in which Bucher openly attacked Bircher (after the latter’s death) appeared in 1967 (Bucher 1967).

59 Weindling 2000, 343.

60 Weindling gives the following references: the booklet by Franz Blättler (Blättler 1945), which refers to the second Swiss Sanitary Mission, the book of Rudolf Bucher (Bucher 1967), which refers to the first Mission and was written 25 years after the events it describes, the article of Bourgeois on the missions in general (Bourgeois 1991); none of these references even mentions the name of Mooser. Finally, Weindling quotes the biography of Mooser by Marti (Marti 1978), in which there is no hint that Mooser might have been in Warsaw in 1941 (Weindling 2000, 343, footnote 96).

1942⁶¹. Had Mooser participated in one of these missions, he would have been by far the most prominent member, and traces of his presence should be easy to come by. The lists of members of all four missions, although somewhat chaotic, do not include his name⁶². It is highly unlikely that he would have joined forces with the notoriously pro-German Bircher.

Mooser's typhus vaccine production

Production of typhus vaccine by Cox' method in fertilised hens' eggs was, as mentioned above, impossible. The French live vaccine was too dangerous. The vertebrate lung method seemed adaptable to Mooser's laboratory in Zurich. The method consisted in inoculating laboratory mice by the intranasal route with *Rickettsiae* of the murine strain with which Mooser had great experience, harvesting and homogenising the lungs at the height of rickettsial replication and inactivating the microorganisms⁶³.

Work must have started in earnest in March 1941. On March 13, Arnold Leemann, Mooser's trusted technician⁶⁴, fell ill; on March 20, Mooser's post-doc; on March 27, Mooser's animal technician; on March 28, Mooser's associate Grumbach; on March 29, a female technician; on April 7, another female technician (who had been vaccinated). Mooser himself, having contracted the disease 14 years before, suffered only a very slight passing malaise. All 6 clinical cases were diagnosed as typhus. They ranged in severity from very mild in the vaccinated female technician to very severe. Fortunately, there was no death⁶⁵.

After their recovery, these 6 persons, who now could be considered fully immune, formed the crew on which Mooser could rely for manufacturing his vaccine. Given the facilities and funds at his disposal, he could not possibly hope to produce more than a few hundred doses of vaccine, even working at

61 The eyewitness report of the ambulance driver Franz Blättler is a most remarkable document. It could only be published after the war, and some tried to dismiss it as a fraud. The document is authentic, one of the first accounts by an outside observer of the Warsaw Ghetto tragedy. The author's real name was Franz Max Mawick (Longchamp 1983, 226–235). The photographs (photographing was strictly prohibited) it contains were made by another driver, Hans Wildbolz, then a lieutenant of the Swiss Mechanised Troops, who was later to become Ausbildungschef of the Swiss Army (Busch 2001).

62 Anonymous 1941–1943.

63 Work with these *Rickettsiae* carries an extremely high risk of laboratory infection, and intranasal inoculation of mice is particularly dangerous.

64 After the war, in 1954, Leemann noticed that normal lice which he was feeding on his leg suddenly died. He very shrewdly suspected a connection between the rheumatism treatment he was undergoing and the death of the lice (Mooser/Lindenmann/Weyer 1956).

65 Löffler/Mooser 1942.

night and on Sundays, as he had mentioned to Rous. How he envisaged to send these to Warsaw remains his secret – yet some Swiss vaccine did reach the Ghetto⁶⁶.

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66 Roland 1992, 149. A possible contact person could have been Ludwik Hirszfeld (Grumbach 1954) who had worked in Zurich, knew Grumbach, had been financed by the Rockefeller Foundation, and worked in an improvised laboratory in the Warsaw Ghetto. I have been unable to substantiate this hypothesis.

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