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Witte, Wilfried

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Influenza Vaccination and Vaccine Policies in Germany, ca. 1930–1960

*Wilfried Witte**

Abstract: »Grippeimpfung und Impfpolitik in Deutschland, ca. 1930–1960«. The paper deals with the history of virological influenza vaccination before, during, and after the Third Reich. German microbiology got left behind in the 1930s because of its adherence to a bacteriological concept of influenza. It was not the London discovery of the influenza virus in 1933 that fundamentally changed this, but the fear of a new disastrous influenza pandemic that might develop in the context of World War II. Large-scale field trials beginning in 1942 in the United States prompted those in power in Germany to seek their own virological influenza vaccine. The plan was to vaccinate only groups of people important to the war effort. However, no influenza vaccination campaign took place during the Nazi era. This was not implemented until 1946/47 by the Allies, in Berlin. The West German public remained skeptical about influenza vaccination until the late 1950s. In East Germany, vaccination was seen as part of a socially hygienic health policy. The processes, theoretical backgrounds and personnel as well as institutional continuities are shown in the paper.

Keywords: Influenza, vaccination, bacteriology, virology, field trial, social hygiene.

1. Prologue

Protective vaccination has a key role in the prevention of flu (Uyeki 2017, 48). The practice of virological vaccination was tested soon after the introduction of influenza virology. Virology defines the modern history of influenza, but virology and its role in influenza control itself has a history. This history needs to be understood in relation to developments in medical bacteriology and its ability to resolve questions about the cause and control of influenza. This paper explores the history of influenza virology with regards to influenza

* Wilfried Witte, Universitätsklinik für Anästhesiologie, Intensiv-, Notfallmedizin, Transfusionsmedizin und Schmerztherapie; Evangelisches Klinikum Bethel; Universitätsklinikum OWL, Campus Bielefeld-Bethel, Germany; wilfried.witte@evkb.de. Many thanks for comments on different versions of the paper to Carol R. Byerly (Colorado, USA), Michael Bresalier (Swansea, Wales), Patrick Zylberman (Rennes, France).

vaccination as it developed in Germany before, during, and after the Third Reich.

In 1892, German bacteriologist Richard Pfeiffer (1858–1945) identified a bacterium that he called *Bacillus influenzae* and claimed it to be the specific cause of influenza (Pfeiffer 1892, 28; 1893, 357-86; 1922, 1-18). The germ was first given the name “*Hemophilus influenzae* (Pfeiffer)” (with “e” instead of “ae”) by the Society of American Bacteriologists in their 1917 Bacteria Classification (Winslow, Broadhurst, and Buchanan 1917, 505-66), which only became established in Germany in the late 1940s (then as “*Haemophilus influenzae*”; Witte 2009, 1-21).

Until 1918, many accepted Pfeiffer’s claim (Eyler 2010, 27-36; Leichtenstern 1912). The 1918 influenza pandemic challenged expectations of contemporary bacteriologists and medical professionals. Internationally, it was noted that there was a discrepancy between the prevalent scientific doctrine in influenza medicine and the microbiological pathology that professionals encountered (Porrás-Gallo 2009, 141-60; Bertucci 2014, 39-55). Pfeiffer himself, professor in Breslau, spent four years on the Western front during the war (Kolle 1928, 491-2) and was aware of the evidence for the primary role of his “Pfeiffer bacillus” as the cause of the puzzling flu. Doubts about its role gave rise to heated debates about the aetiology of influenza and theories that pointed to agents other than the Pfeiffer bacillus. Among the candidates was a so-called “filterable” virus, a new kind of pathogen that was not visible under light microscope (“ultra-visible”) and not retained by standard bacterial filters (Witte 2006, 61f.). While the virus theory gained some credibility in Britain and the United States (Bresalier 2011, 400-24; 2013, 87-128; Eyler 2006, 409-38), the German Reich favoured Richard Pfeiffer’s opinion and his agent. In September 1920, the 8th Conference of the Free Association for Microbiology in Jena accepted Pfeiffer’s claim that the 1918–1919 pandemic had been caused by his bacillus. Despite this decision, many German microbiologists questioned whether the pandemic could be reduced to a single agent and whether Pfeiffer’s bacillus played a decisive role.¹ These challenges were part of wider questioning of bacteriological orthodoxy, which stressed the idea that epidemics were complex phenomena (Mendelsohn 1998, 303-31). It also reflected a legitimacy crisis in German bacteriology (Berger 2009). The hope that advances in bacteriology would vanquish old and new plagues seemed very fragile against the backdrop of the Spanish influenza (Michels 2010, 1-33). There had been “protective vaccinations” against flu during the Spanish flu in Germany but not on a large scale or as a centrally controlled programme. Most common was the use of serum from “re-convalescents,” i.e., from those persons who had survived the flu. The efficacy was regarded as

¹ Bericht über die 8. Tagung der Freien Vereinigung für Mikrobiologie vom 8. bis 10. Sept. 1920 in Jena. In: Centralblatt für Bakteriologie, Parasitenkunde und Infektionskrankheiten, 1. Abteilung, Originale 85 (1921), Beiheft, *43-63.

low (Möllers 1923, 1-88). The most common drugs that were used against Spanish flu symptoms consisted of antipyretics (pyramindon, salizylates, quinine, derivatives of quinine such as “optochin” or “vuzin.” etc.) and cardiaca (adrenaline, strychnine, camphor, etc.). The respiratory failure based on pneumonia and/or pleural empyema was thought of as being secondary to circulatory failure (“Vasomotorenlähmung,” i.e., paralysis of the motoric function of the vessels; Witte 2006).

In the period between the wars, German flu microbiology lost the connection to the further development of the virus concept and virology, which made advances in Great Britain, especially in the context of military pathology (Bresalier 2011, 400-24; 2013, 87-128). Stubborn adherence in the German Empire to a modified version of Pfeiffer’s doctrine of an influenza bacillus in fact reduced the predominance of German microbiology in the field of influenza research (Witte 2006). The gradual shift from influenza bacteriology to influenza virology, culminating in the discovery of the influenza virus in 1933 (Smith, Andrewes, and Laidlaw 1933, 66-8; Andrewes, Laidlaw, and Smith 1934, 859-862; Bresalier 2008, 107-44), moved the international research focus toward the Anglo-Saxon countries. At the same time, the microbial virus conception in general only shifted little by little in the subsequent 20 years to a microbial virus definition of a biochemistry-oriented virology (van Helvoort 1993, 3-21; Brandt 2004).

2. Early Vaccination Research and the Insistence on Bacteriology in Germany

The question as to how the “Third Reich” dealt with the influenza question and what was going on in the post-war period will be examined in more detail below. Here it is clear that trying to connect to the international development of the flu microbiology only proceeded laboriously while the question as to who should benefit from a flu vaccination was answered differently from how it is answered today. Based on ideas of an ideal people’s community (*Volksgemeinschaft*) defined as excluding “pests of the people” (“*Volksschädlinge*”), a broad dissemination of vaccination was strived for with smallpox and diphtheria. Typhus vaccination on the other hand was confined so that there was a fight for allocation: the army, the SS, occupation authorities, business enterprises and civilians “were in a constant battle for their immunisation” (Thießen 2013, 35-64). With flu on the other hand, everything was back to the beginning. The vaccination policy of influenza in Germany began with the orientation towards vaccination of priority groups instead of mass vaccination. But as we shall see, the priority groups were not defined according to immunological aspects, but according to strategic purposes.

In the wake of the change of regime in the German Empire, the most innovative German influenza bacteriologist, Walter Levinthal, was forced to leave the Robert Koch-Institut in 1933 due to his Jewish background and had to look for a position abroad, which he assumed in 1935 (Fortner et al. 1964, 137-9; Hinz-Wessels 2008, 22-5). The next leading German influenza research facility was the Hygienisches Institut in Halle headed by Paul Schmidt. Schmidt had begun in 1920 to investigate inoculations to combat influenza and colds, employing filtrates of secretions (Schmidt 1920, 1181-2). His racist tendency had influenced him to claim that the drama of the Spanish flu 1918–1920 must be abetted by the “pigmented nations,” particularly the “highly susceptible African Negroes and natives of India,” who were alleged to react quickly to chills with catarrhs and pneumonia (Schmidt 1936, 5). This stance was perfectly in line with that of the new power structure and ideology of “race hygiene” in Germany.

Soon after the discovery of the influenza virus, several research teams around the world began to develop a virological vaccine for preventive programs. These experiments initially employed a British virus strain, named WS for Wilson Smith (Bresalier 2008, 107-44), and an American strain, which Thomas Francis, Jr. named PR 8 (Taylor 1949, 171-8) after its place of origin, Puerto Rico, in 1933. In England, the discoverers of the virus, Christopher Andrewes and Wilson Smith, tackled the task together with Charles Stuart-Harris (Bresalier 2008, 107-44). Simultaneously in New Jersey, a team led by Joseph Stokes, supported by the U.S. Bureau of Animal Industry, commenced experiments with an active vaccine (Stokes, McGuinness, and Langner 1937, 757-67; Eyler 2006, 409-38). Other leading virus investigators included people at the Rockefeller Institute for Medical Research in New York and Princeton (Francis and Magill 1936, 655-68; Shope 1936, 669-84; Francis and Magill 1937, 251-9). In the following years, the Rockefeller Foundation also funded vaccine research in Budapest focusing on microbiologist Miklós Dreguss (Taylor and Dreguss 1940 31-5; Dreguss 1943/47, 1-4; 1944, 35-48). In the Soviet Union, a group headed by Anatoli Smorodincev from Leningrad began in 1936 to test influenza vaccines.²

Due to nationalist and racist ideology and loyalty to the “Pfeiffer”-theory of *Haemophilus influenzae* being the causative agent, the German medical scientific community was not alert when virological vaccine research began to take shape. A look at strategies for order of events of the 1936 Olympic games emphasizes a characteristic kind of selective attention. Seventeen days in

² Smorodintseff, A.A., M.D. Tushinsky, A.I. Drobyshevskaya, et al. 1937. Investigation of Volunteers Infected with the Influenza Virus. *American Journal of the Medical Sciences* 194: 159-170.
Smorodintseff, A.A., A.I., Drobyshevskaya, and O.I. Shishkina. 1936. On the Aetiology of the 1936 Influenza Epidemic in Leningrad. *Lancet* 228: 1383-1385.
Smorodintseff, A.A., and O.I. Shishkina. 1941. The Mechanism of Acquired Immunity against Influenza, Teil 1 und 2. *Archiv für die gesamte Virusforschung* 2: 156-193.

August, and they were supposed to be staged perfectly and run without a hitch – that was the wish of the National Socialist leadership as preparations began for the Eleventh Olympic Games in Berlin in 1936. Germany ought to show a shiny surface without any hints about the ongoing discrimination of Jews or other mandated internal enemies. The world was to be shown the best conceivable image of Germany. All possible complications had to be considered, including the threat of an epidemic. As in the 1935/36 flu season, however, only guaranteeing the demand for isolation beds was ultimately taken into account. Two wards in Berlin's Westend Krankenhaus (hospital) were to be emptied to cover the requirement. An influenza epidemic did occur, however, only in winter 1936/37. Medicinal prevention for the population was not on the agenda at this juncture.³

The first medical expert to explore the new virological research field of influenza in Germany was Albrecht Kairies, associated with Schmidt's Hygiene-Institut in Halle. Like the British investigators, he used ferrets as subjects. This did not prevent him from insisting on the causal significance of the Pfeiffer bacterium. Kairies continued after many series of experiments to attribute the ferrets' influenza to a "bacillary" factor.⁴ Kairies's approach elicited immediate disapproval in German veterinary medicine (Waldmann and Köbe 1937, 153-63). In German human medicine, however, catching up with the international debate took longer. In this field, two aspiring researchers, Kurt Herzberg und Eugen Haagen, stood out. They were initially associated with the Robert Koch-Institut and Reichsgesundheitsamt (Imperial Health Office) and both came from Berlin.

3. Kurt Herzberg, Eugen Haagen, and the Beginning of Influenza Virology

In 1936, Herzberg, who after his stint in Berlin had worked at the Medizinische Akademie Düsseldorf, wanted to assume a full professorship in hygiene at the Universität Greifswald. He had already earned a reputation as a virus specialist, in particular thanks to the introduction in 1932 of Victoria blue virus staining. In November 1933, he joined, with a number of his

³ Landesarchiv Berlin A Rep. 003-03, No. 252; A Rep. 003-04-03, No. 116.

⁴ Kairies, Albrecht. 1935/36. Influenza diseases in ferrets and description of a Bacterium influenzae putiorum multiform. *Journal for Hygiene and Infectious Diseases* 117: 12-17.

Kairies, Albrecht. 1936. The Pasteurella influenza of the ferret as a model to explain the Haemophilus influenza in humans. In *Zentralblatt für Bakteriologie, Parasitenkunde und Infektionskrankheiten*. 1. Department/Originals 137, 9-45.

Schmidt, Paul and Albrecht Kairies. 1936. *New studies on the problem of influenza in humans and animals*. Stuttgart.

Kairies, Albrecht. 1938/39. Influenza Studies on mice under the point of view of infection and provocation. *Journal for Hygiene and Infectious Diseases* 121 (6) (July 1939): 749-770.

colleagues, the sanitation corps of the NSDAP paramilitary organization, the SA (Sturmabteilung). A member of the Düsseldorf SA and National Socialist colleagues at the medical academy denounced Sanitätsoberscharführer Herzberg three years later. He was accused of having socialized regularly with Jewish members of the Düsseldorf college of medicine even after joining the SA. His accusers maintained that he was suspicious on the basis of his obvious Jewish looks and that his social outlook, branded as individualistic and liberal, was an obstacle to his teaching at a German university. Herzberg, who presumably joined the SA mostly for opportunistic reasons, made an effort to refute the charges by emphasizing that he had “by no means engaged in a Jew-friendly social life.” Nevertheless, it took two years, until 1938, for his position to be changed from acting to fully tenured professor.⁵ Herzberg never joined the National Socialist Party.

From the very start of his time in Greifswald, Herzberg was also confronted with an article in a major Berlin daily: The headline was “Flu Germ Found!” The story claimed his staining method enabled him to find the “virus particle” (*Virus-Körperchen*), which was said to always act together pathogenically with the influenza germs, either symbiotically or by destroying the latter – in the manner of a bacteriophage (Reißmann 1936). Herzberg disavowed the newspaper article because of its “distinctly sensationalist presentation” and emphasized that such incorrect accounts “constituted no propaganda for German science.” Herzberg explained that in the “field of influenza virus research,” chiefly British and American authors were successful, while he himself “had never investigated a grippe or influenza virus.”⁶ However, after his bumpy 1936 start in public relations and in the hierarchy of German science, Herzberg ironed things out by becoming one of the top influenza virology specialists in Germany over the following decades until he retired as professor of hygiene in 1966 (Herzberg 1938, 93-106; Herzberg and Groß 1940, 129-39).

Beginning in 1928, Eugen Haagen had enhanced his skills in experimental cell research for several years at the Rockefeller Institute in New York. In 1933, he launched a career at the Robert Koch-Institut and, in 1937, he joined the National Socialist Party out of personal conviction and by reason of an interest in advancing his career. He became prominent thanks in part to his yellow fever research and further development of a typhus vaccine (Hinz-Wessels 2008, 294-326; Weindling 2009, 232-49). During the same period, he also tackled influenza research (Haagen 1937, 464-99; Haagen and Dscheng-Jsing 1939, 345-50). He was a frequent author of standard virological treatises in textbooks and manuals (Gildemeister, Haagen, and Waldmann 1939; Haagen 1941; Gundel 1944). When France was defeated by German forces and the elitist Reichsuniversität Straßburg was founded in Alsace in 1941, Haagen was

⁵ Universitätsarchiv Greifswald, Personalakte 632, volume 1 and 6.

⁶ Universitätsarchiv Greifswald, Personalakte 632, volume 1.

one of the candidates for a full professorship at the institution (Schmaltz 2005; 2006, 139-56). Nevertheless, a September 1941 memo of the Reichswissenschaftsministerium (Reich Ministry of Science) revealed enigmatically that his appointment met obstacles “for various reasons.” From November 1941 onwards, Haagen taught hygiene in Strasbourg. As late as 8 May 1943, with the procedure still pending, the Partei-Kanzlei composed a note stating that

Although his political reliability cannot be denied, his appointment as ordinary professor of hygiene at the Strasbourg university is rejected by all concerned bodies. Undoubtedly Haagen is one of our most successful virus researchers, recognized not only in Germany, but worldwide, as an expert. However, his research field is so narrowly specialized that he cannot be sufficiently versed in the general area of hygiene.

The note cited Kairies from Halle as an alternate candidate, although not the top choice. It took until January 1944 before Haagen was finally named to the hygiene chair in Strasbourg.⁷ Medical virus researchers still endured a troubled status in the National Socialist regime. There were also the beginnings of virus research in Germany. The leading research institutions in basic research were the Institutes of the Kaiser Wilhelm Society for the Promotion of Science (predecessor of today’s Max Planck Society). The Kaiser Wilhelm Institutes for Biochemistry and Biology coordinated their virus research from 1937 onwards, first in a Arbeitsgemeinschaft Virusforschung (Working Group for Virus Research) and from 1941 in the Arbeitsstätte für Virusforschung (Working Place for Virus Research). Although the zoologist Rolf Danneel, who was a member of the Arbeitsstätte, dealt with papilloma virus in connection with the development of cancer and received the research of the American virologist Richard E. Shope on this virus, he did not, as far as is known, deal with Shope’s influenza research. The virology of the flu was not yet on the agenda in basic research in Germany (Rheinberger 2006, 185-218).

Regardless of status issues, Eugen Haagen immediately got to work in Strasbourg on implementing his research projects in 1941. He espoused the “combination of radicalism and rationality” deriving from the brutalization of the World War I front generation (Bonah and Gradmann 2009, 258), which permitted him to undertake human experiments that characterized the barbarianism of the National Socialist regime. In fact, he unreservedly supported this barbarianism with his morally indifferent attitude. After subjecting psychiatric patients to human experiments in testing of a yellow fever vaccine (Hinz-Wessels 2008, 294-326), Haagen availed himself in 1940 of inmates of the Schirmeck “Sicherungslager” (security camp), opened in 1940, and the Natzweiler-Struthof concentration camp commissioned in Alsace in 1941. They provided subjects for vaccination experiments, involving typhus, yellow fever, and influenza. Today, it is known that this testing occurred from May 1943 to July 1944 (Dörner and Ebbinghaus 2000; Ebbinghaus and Dörner 2001,

⁷ Bundesarchiv Berlin R 4901, Nr. 13503.

169-70; Steegmann 2010, 435-9; Toledano 2010, 343-75). Haagen reported himself that he began observations in 1936 (Haagen 1944, 538) and that in 1939 he had isolated his own influenza virus strain (Haagen and Dscheng-Hsing 1939, 345-50). At that early stage, he knew that the protection offered by an influenza vaccination did not last very long (Haagen 1941, 44, 49). His vaccine research was funded by the Reich Research Council (Reichsforschungsrat) and the Luftwaffe, where he was an (Ober-) Stabsarzt (chief medical officer) and (from 1943) advisor in public health.⁸ Testing of the influenza vaccine was done on medical school staff and Schirmeck inmates. Whether he also tried out this vaccine in the Natzweiler concentration camp, as he did with spotted fever testing, cannot be stated (Toledano 2010, 343-75).

4. Field Trials in the US and Answers of the German Reich

Scientists in the German military-medical network, with participation of the Robert Koch-Institut in Berlin and the Paul-Ehrlich-Institut in Frankfurt am Main, which was responsible for serum standardization, were generally aware of the latest research findings in Anglo-Saxon countries. The Australian Frank Macfarlane Burnet had discovered in 1940 that the influenza virus can be cultivated in chick embryos (Burnet 1940, 147-53). The American George K. Hirst ascertained that one can detect these viruses by virtue of their ability to agglutinate red corpuscles (Hirst 1941, 22-3). To be prepared for a new disastrous influenza epidemic in the aftermath of the world war, the U.S. established a Commission on Influenza in 1941 led by Thomas Francis Jr. In late 1942, Jonas Salk and two other researchers who worked together with Thomas Francis inoculated about 8,000 psychiatric patients at Eloise Hospital for the Insane in Westland, Michigan, in “first sizeable field trials.” Informed consent was not on the agenda (Altenbaugh 2018, 180-3). After no epidemic materialized in 1942 (Davenport 1979, 78-86), the commission launched field vaccination tests a year later with inactivated vaccines by implementing a double-blind protocol using 15,000 army enlistees. Only two percent of the vaccinated group are said to have fallen ill “during that flu season” (Altenbaugh 2018, 180-3). Results of the field studies were not published until early in 1944 (Francis 1945, 1-11; Magill, Plummer, and Smillie 1945, 94-105).⁹ It was the very first major field study to test a virological influenza vaccine (Hirst 1949, 200-9). A “commercially produced vaccine could be given to all soldiers”

⁸ Bundesarchiv Berlin R 26/III, Nr. 6, Nr. 288, Nr. 382, Nr. 518, Nr. 722.

⁹ Members of the Commission on Influenza: A Clinical Evaluation of Vaccination against Influenza. In: *Journal of the American Medical Association* 124 (1944): 982-985.
The Commission on Acute Respiratory Diseases: Studies of the 1943 Epidemic of Influenza A. VIII: General Discussion and Summary. In: *American Journal of Hygiene* 48 (1948), 332-349.

in 1945 (Blume 2017, 70-2). The German military-medical network also got wind of the field studies and of the strategy to vaccinate the military (Bieling 2000).

The appropriate authorities in Germany learned of the influenza epidemic sweeping across the U.S. and Britain in the 1943/44 season. On 10 January 1944, the Heeres-Sanitätsinspektion (sanitary service of the army) in Berlin scheduled a conference “on influenza questions.” Minutes were taken by the managing director of the Robert Koch-Institut, Eugen Gildemeister. He wrote, “available intelligence indicates that influenza has been rather widespread in England for some time. The latest news suggests that a severe type of influenza is also epidemic in the territory occupied by Soviet forces.” In the light of these facts, the supreme authorities of health care signalled the end of purely bacteriological influenza pathology in the German Empire. “Influenza is caused by a virus. There can no longer be any doubt about that. Pfeiffer’s bacillus may have paved the way for the virus, but even that is still uncertain.” A specific prophylaxis, which could provide a “more or less durable” immunity, was thought to be achievable, as had been established in animal experiments. This was given as justification “to produce such vaccines for human application as well,” which was already happening, especially in the U.S., “on a modest scale.” (!)

Eugen Haagen and Kurt Herzberg testified as vaccine experts. At the time, Herzberg was also an advisor in public health for the Wehrmacht.¹⁰ Herzberg had produced his vaccine through adsorption of a virus harvested from mice lungs on aluminium hydroxide. Haagen reported on influenza strains, which he had reproduced intranasally in mice and on chicken egg chorion-allantois. Then he produced the vaccine in mice lungs and finally tested it on “over 100 people” and obtained minor but demonstrable “reactions.”

The panel agreed that preparations should be expedited so that the industry, with Wehrmacht support, could produce large supplies of the vaccine. However, Gildemeister wanted to reserve any protective vaccine for the nation’s elite, warning, “such a preventive vaccination can in no case achieve general application in the foreseeable future but will have to be initially confined to small groups (special forces, superior command staffs, nursing personnel).”¹¹

The conference had a sequel for Haagen. Authoritative decisions were made by a small circle of scientists and political operatives and were classified. On 28 January 1944, however, an instructor with the Reichsärztführung (Reich Physicians’ Leadership) tried to put a positive light on public influenza prevention. In the *Greifswalder Zeitung*, he attributed the fact that the flu had not been transmitted to Germany from enemy territory to a “success of our

¹⁰ Universitätsarchiv Greifswald Personalakte 632, volume 6.

¹¹ Gi(Ildemeister) to Reichsminister des Innern, Berlin, 12.01.1944 (Bundesarchiv Berlin R 86, Nr. 4163 fol. 1.).

preventive healthcare.” Professor Haagen from Straßburg “has succeeded in demonstrating a new German invention, having developed a preventive vaccine and a serum against influenza.” The article stated that they were not yet available on a large scale. “In severe cases,” the story said, they could make a difference.¹² Haagen, who learned about the article from Gildemeister, at once protested to the author in writing. Only one thing in the article disturbed Haagen, the assertion that he had invented a vaccine. Haagen wrote that the credit was due to the British and Americans and that he had only continued their tests. Denying this claim to fame was a matter of “honor.” In this case, ethics mattered.¹³ Regarding the typhus vaccine, Haagen’s 29 January 1944 letter to the Wehrmacht High Command stated that his staffing only permitted vaccine testing, not large-scale production.¹⁴ An intertwined cooperation of several high-ranking functionaries took place. The Behringwerke in Marburg had also conducted laboratory studies to produce an influenza vaccine under Richard Bieling (Bieling and Oelrichs 1938a, 20-27; 1938b, 47-51; 1938c, 52-55). In February 1944, Hans Schmidt, director of the Institut für experimentelle Therapie “Emil von Behring” in Marburg, sent the interior ministry communicable disease aide (*Seuchenreferent*), Walter Bieber, who had years earlier worked at Behringwerke (Werther 2004, 111), a statement on active preventive vaccination against influenza. Schmidt was convinced that this vaccination required a “specific virus,” which “might but might not vary from epidemic to epidemic.” He also discussed employing a “passive serum.” Schmidt stated that Behringwerke had several influenza virus strains at its disposal but required ferrets to produce a vaccine since the virus could not be directly transmitted to mice.¹⁵

In February 1944, the Wehrmacht High Command directed Herzberg and Haagen to elaborate a proposal for testing their vaccine “on humans.”¹⁶ However, since neither the Robert Koch-Institut nor Haagen or Herzberg was able to isolate “fresh influenza virus strains” by summer 1944, this venture could not be pursued.¹⁷

The NS-“Führerstaat” (Führer state) was characterized by a polycratic substructure. Concerning influenza vaccination, the scheme was taken up again when the Coordinator of Medical Science and Research, the Berlin surgeon Paul Rostock, convened a conference on influenza vaccine on 16 December. The attendees addressed several issues. One was the question of who should

¹² Schütz, Walter. 1944. Kommt die Grippe auch nach Deutschland? In *Greifswalder Zeitung*, 28.01.1944.

¹³ Bundesarchiv Berlin R 26/III, Nr. 723.

¹⁴ Bundesarchiv Berlin R 26/III, Nr. 722a.

¹⁵ Schmidt to Ministerialrat Bieber, Innenministerium, 03.02.1944 (Bundesarchiv Berlin R 86, Nr. 4163 fol. 1.).

¹⁶ Bundesarchiv Berlin R 26/III, Nr. 722.

¹⁷ Gi(Idemeister) to Reichsminister des Inneren, Berlin, 09.06.1944 (Bundesarchiv R 86, Nr. 4163 fol.1.).

be inoculated “if an epidemic arose in military and civilian populations”; the panel agreed that “no precise recipient group could be defined.” The interior ministry delegate insisted, however, “that influenza vaccination be administered to physicians and civilian medical personnel.” All companies with experience “in typhus vaccine fabrication” were to participate in production.¹⁸ There was a sense of urgency: the most important firms were sounded via “priority mail” the same day. The Robert Koch-Institut was designated as the central coordinating body. Kurt Herzberg estimated that his vaccine, about to be produced, would be safe for at least six months. He presented “instructions for use” of an influenza virus adsorption vaccine.¹⁹ He specified four weeks for pure breeding: “In the event of an epidemic the first wave cannot be combated by epidemic-based strains, but the second can, and that proved more lethal in 1918.”²⁰ The meeting took up the problem of the ferret supply, which remained an ongoing issue.

What followed boasted elements of an unintentional joke. On 30 December 1944, Rostock wrote a letter to Gildemeister saying that ferrets could hardly be obtained from zoos, that there might only be 10 specimens left in Germany. He suggested the possibility of substituting more-abundant minks. Gildemeister answered two weeks later that the literature provided no insight on substituting minks for ferrets. Since the former were so dear – 1,500 reichsmarks apiece – he wondered if hedgehogs might be better:

I am currently investigating whether and where hedgehogs can be obtained. As soon as I can get hedgehogs, which should present serious obstacles given the current season, I will start testing on them. The critical question is whether hedgehogs like ferrets are subject to spontaneous virus influenza infection. Granted, one must consider that hedgehogs are now hibernating and require special treatment to be suitable for experiments. I would be delighted if you would scout around for hedgehogs.

Afterwards, the operation fell dormant. In January 1945, the interior ministry again asked the Paul-Ehrlich-Institut in Frankfurt if it was prepared to handle the government testing of the virus influenza vaccine. The answer was positive, but nothing more became of the operation during the Third Reich. The endangered hedgehogs apparently escaped the looming threat.²¹

The adherence to the ideology of National socialism defined the further path of personal life of Haagen and Herzberg. Haagen was an exponent of brutal human experiments, Herzberg was not. Eugen Haagen became a focus of the Allied scientific intelligence (ALSOS) investigation and in subsequent

¹⁸ Behringwerke, Schering, Asid = Anhaltinisches Serum-Institut Dessau, Sächsisches Serumwerk; also: Tierseucheninstitut Landsberg an der Warthe, Hamburger Serumwerk.

¹⁹ Herzberg (Kurt): Herstellung des Influenzavirus-Phenol-Al (OH) 3 – Adsorbatimpfstoffes (Herzberg) Streng vertraulich! Nur für Wehrmachtzwecke, Greifswald, 06.11.1944 (Bundesarchiv Berlin R 86, Nr. 4163 fol. 1.).

²⁰ Report from 19.12.1944 and correspondence in: Bundesarchiv Berlin R 86, Nr. 4163 fol. 1.

²¹ Correspondence in: Bundesarchiv Berlin R 86, Nr. 4163, fol. 1.

years was variously tried, convicted, and incarcerated until released early in 1955 (Steedmann 2007, 23-47; Weindling 2009, 232-49; Neumann 2019, 284-5). On the other side, there was no evidence to indict Kurt Herzberg.

5. Berlin in the Aftermath of the Second World War

In the first months after the collapse of the National Socialist regime, influenza was no issue. That changed during the 1946/47 season. In 1946, Colonel Edward J. Dehné of the U.S. Office of Military Government (OMGUS) was informed by Richard Bieling in Marburg, who continued studying influenza (Bieling and Oelrichs 1948b, 535-44; 1948a, 545-57; Bieling 1948/49, 113-25), about the influenza investigations earlier coordinated by the Robert Koch-Institut in Berlin. Dehné oversaw health administration in the American occupation zone. He expressed great interest in the Berlin influenza research and urged that it be continued with utmost intensity. On 22 October 1946, Dehné, Georg Henneberg from the Robert Koch-Institut, and Kurt Marcuse of the Berlin State Health Office (Landesgesundheitsamt) conferred for 90 minutes in Berlin. Dehné made it known that he would be interested in influenza research, including vaccine development – for practical reasons in the event of an epidemic in Germany – but also on “purely scientific” grounds. The Robert Koch-Institut was seen as “the only appropriate institution” given its structure and facilities.²²

In November 1946, the Berlin pathologist, Robert Rössle, reported on two cases of influenza leading to pneumonia, whereby he had detected “the same characteristic pathological findings as in the 1918–1919 influenza pneumonias.” One case, however, was a cancer patient, the other a tuberculosis sufferer. Nevertheless, Rössle’s findings served as a trigger. The flu control agenda was decreed in a Berlin Allied Command order of 16 November 1946. Registration of cases of influenza infections and deaths was mandated. A *Grippebekämpfungsstelle* (centre of fighting the flu) was established at the Robert Koch-Institut.²³

The Deutsche Zentralverwaltung für das Gesundheitswesen (German central administration for health care) in the Soviet zone of occupation convened a panel of experts on influenza prophylaxis on 26 November 1946. Now the vaccination of the whole population was on the agenda as the challenge of the day. The panel included Kurt Herzberg from Greifswald and the deputy head of the Robert Koch-Institut, later to become its head, Georg Henneberg, who had begun to work on influenza (Henneberg, Marcuse, and Brandenburg

²² Protocol, 22.10.1946. In: Bundesarchiv Berlin R 86, Nr. 4163 fol. 1.

²³ Landesgesundheitsamt Berlin, Abteilung II A (Seuchen): Tätigkeitsbericht für den Monat November 1946, Berlin, 04.12.1946. In: Landesarchiv Berlin B Rep. 012, Nr. 27; Bundesarchiv Berlin R 86, Nr. 4163 fol. 1.

1948a, 529-40; 1948b, 540-9; Henneber 1948/49, 273-80). The reason for the meeting was the occurrence of influenza pneumonias confirmed by autopsies. Herzberg reported on the vaccine that he had developed between 1940 and 1944 and added that the production process could be launched on cue.

The Zentralverwaltung gave its go-ahead with doctors and nurses the first to be vaccinated. The goal was to produce enough vaccine by October 1947 to “vaccinate the entire population of Berlin and the Soviet zone.” The Robert Koch-Institut cited an allantois vaccine with a recipe supposed to be stored at the institute and in the Marburg Behringwerke.

“Vaccine could be produced by all production sites which have already handled production of spotted fever vaccine.” Finally, agreement was reached that “vaccinating the entire population” was out of the question. After medical personnel, next in line were to be workers in transportation, utilities (gas, water, electricity, etc.), food plants, and finally “those officials in agencies with extensive visitor contacts.” Thus, the concept of priority group immunization became the Soviet zones preferred strategy. The panel endorsed an adsorption vaccine derived either from an egg vaccine (following the U.S. example) or from infected mouse lungs (according to Herzberg’s recommendations).²⁴

After the meeting, vaccination began. The Robert Koch-Institut obtained 4,000 mice for its production. The staff of several Berlin hospitals was vaccinated.²⁵ To combat influenza, the state health office provided 8,000 reichsmarks for personnel costs, 20,000 for material, and 50,000 for vaccine production until mid-December 1946.²⁶

A quaint 10-page Deutsches Hygiene-Museum Dresden brochure was distributed. Its title was *Die 10 Gebote der Seuchenbekämpfung* (10 commandments of epidemic control). The 10th commandment was “protect yourself and benefit your neighbor at the same time!” It showed a disproportionately large injection needle overwhelming a ghost with the caption “to knock the plague all you need / Is get your shot, no daring deed” (“Der Seuche in den Weg sich stellen / heißt: Impfen gehen in allen Fällen”).²⁷ No grave epidemic, however, materialized in the 1946/47 season. Months later, on 26 November 1947, the Zentralverwaltung panel met again in Berlin. Herzberg und Henneberg attended. At the conference, the virologists were confronted with the question: “Which really certain factors, if any, support the usefulness of vaccination?”

²⁴ Protocol of the „Sitzung des Sachverständigen Beirats der Abt. VIII ZVGes. (Dienstag, 26.11.1946)“. In: Bundesarchiv Berlin R 86, Nr. 4163 fol. 1.

²⁵ Landesgesundheitsamt Berlin, Abteilung II A (Seuchen): Tätigkeitsbericht für den Monat November 1946, Berlin, 04.12.1946. In: Landesarchiv Berlin B Rep. 012, Nr. 27.

²⁶ Landesgesundheitsamtes to Robert-Koch-Institut, 18.12.1946. In: Bundesarchiv Berlin R 86, Nr. 4163 fol. 1.

²⁷ Deutsches Hygiene Museum (ed.): *Die 10 Gebote der Seuchenbekämpfung*. Eine ernste Mahnung an alle! Mit Versen von Susanne Blumenhein und Zeichnungen von Gerhardpaul Friedrich. Dresden 1946. In: Landesarchiv Berlin B Rep. 012, Nr. 53.

Henneberg and Herzberg hedged a bit. They said the question was “tricky” in that it was indeed not yet possible to cite any large bodies of data on humans. They claimed that the major vaccination experiment was still in a probationary period, but that research findings including animal experiments suggested the usefulness of vaccination.²⁸

Meanwhile, Herzberg, who remained one of the foremost German influenza virologists (Herzberg 1946, 697-8; 1947, 212-4; 1948/49, 125-38; 1949 3-20; Herzberg and Urbach 1950, 152-63) but since 1943 had little access to international publications, was trying to reconnect with the international medical virus research community. In July 1948, several American medical specialists visited Berlin for the purpose of facilitating exchange of findings with German scientists. They included influenza virologist George K. Hirst. Herzberg did not want to miss that opportunity. As a sign that the Cold War was brewing, his trip to the meeting in the American sector of Berlin yielded him a subsequent reprimand from the Mecklenburg Volksbildungsministerium (Ministry of Education), however. That happened after his denunciation by the Deutsche Zentralverwaltung für das Gesundheitswesen in the Soviet occupation zone.²⁹ When Richard Bieling left Marburg in 1951 for a full professorship in Vienna, Herzberg turned his back on Greifswald and East Germany and went west the same year to head the Marburg institute (Lauer 1995, 79; Munk 1995, 79).³⁰

In the 1946/47 season, Herzberg’s adsorbate vaccine was in competition with the egg vaccine according to the American model. It remained like this in the Federal Republic of Germany until the 1960s. As mentioned before, the 1943 egg vaccine was first tested in large-scale field trials in the U.S. (Witte 2013, 34-66).³¹ The egg vaccine, which in 1943/44 and 1944/45 had shown to be effective in the U.S., failed in 1946/47. The circumstance that as a rule a new vaccine would have to be produced for each season was not yet realised (Haas 1951, 205-8; Kilbourne, Smith, and Brett 2002, 10748-52). On the other hand, flu vaccination was not popular in the 1950s in the Federal Republic of Germany. During the time of the Asian flu in 1957/58, there was hardly any vaccination in the Federal Republic of Germany and in West Berlin. Politically, there was hardly anybody prepared to stand up for vaccination, there was hardly any vaccine available, and quinine and antibiotics were used as therapeutic agents: quinine as a long-standing well-proven agent against fever, antibiotics if a bacterial secondary infection was suspected or assumed in cases of pneumonia. On the other hand, Kurt Herzberg kept on insisting

²⁸ (Zentralverwaltung für Gesundheitswesen) Abt. VIII: Zusammengefasstes Protokoll über die Sitzung der Sachverständigen vom 26.11.1947. In: Landesarchiv Berlin B Rep. 012, Nr. 163.

²⁹ Correspondence in: Universitätsarchiv Greifswald, Personalakte 632, volume 6.

³⁰ Universitätsarchiv Greifswald; Personalakte 632, volume 7.

³¹ The Commission on Acute Respiratory Diseases: Studies of the 1943 Epidemic of Influenza A. VIII: General Discussion and Summary. In: American Journal of Hygiene 48 (1948), 332-349.

on the sense of a flu vaccination, so he said, for example, in April 1959, “we see an urgent indication, that we must continue with efforts to create an effective flu immunization even if the experience of the feasibility of such measures which have been sometimes disappointing with the German population’s negative attitude towards protective vaccination in contrast to the more open American and Eastern countries” (Herzberg 1959, 735-53). This referred to the antivaccination movement in Germany. It had been inspired in 1930 by the so-called “Lübecker Impfunglück” (Lübeck vaccination disaster). During a vaccination trial against tuberculosis in the year 1930, which was carried out by two doctors from Lübeck, 77 of 256 vaccinated children died and 131 children fell ill, some seriously. This scandal reverberated in the public discussion for a long time (Moses 1930; Hahn 1995, 61-79; Thießen 2017, 2021).

A vaccine against flu was only available on a larger scale in the case of the Hong Kong flu (1968-1970) in the year 1969 (Witte 2011, 2664-8). In the 1960s, influenza surveillance was established internationally by U.S. epidemiologist Alexander Langmuir (1910-1993) from the Center for Disease Control (CDC) and by the Czech epidemiologist Karel Raška (1909–1987) from the WHO Division of Communicable Disease Control. Fear of a new “1918” came up in the Federal Republic of Germany in a very moderate manifestation (mainly by experts of influenza) for the first time after World War II in 1976 (Witte 2012, 409-28). The topic of influenza vaccination did gain very poor publicity in the 1950s in Western Germany.

This differed from the conditions in the GDR (East Germany), where – originating from the time of the Weimar Republic (1918-1933) – social hygiene (social medicine) continued to be a leading discipline. Understood as the part of hygiene that dealt with “the influence of the social (cultural) environment on health conditions” (Fischer 1925, 3), social hygiene had advanced to become the leading discipline of public health after 1918. It was from one of its early representatives that the term “Gesundheitspolitik” (health policy) was first popularized (1913/14; Fischer 1914). Prevention by vaccination could be regarded as a central component of a social hygiene practice. The spectrum of representatives of social hygiene has been politically liberal or social democratic to socialist.

In the GDR, the value of vaccinations against flu was not an issue as a matter of principle. In accordance with approaches prevailing in the Soviet Union and in tradition of social hygiene already in 1951, the GDR Ministry for Health decided to vaccinate all employees of the Health Services against the flu virus. The production of the flu vaccine had started in 1948 in the vaccine works in Berlin Schöneweide. First produced were mice cultures (according to Herzberg), then egg cultures from 1949. The engineer Wolfgang Belian had installed the works in the barracks of a former Nazi forced labour camp. The capacity was limited, and this only changed in the 1970s (Witte 2013, 34-66).

The intranasal administration of living vaccines, proposed by Anatoli Smorodincev already in 1937, was practised in the Soviet Union since the 1950s (Zhdanov and Soloviev 1961, 178-87). Wolfgang Belian also began to use the intranasal vaccine in July 1957. However, the experts in the GDR did not accept the vaccine without question. From 1963 to 1966, the GDR had a living vaccine available for intranasal application (Belian, Neubert, and Rinka 1968, 1858-60).

In the German Democratic Republic, the Asian flu pandemic of 1957/58 hardly reminded anybody of the disastrous Spanish flu. But it was finally the GDR, based on experience of the following pandemic, the Hong Kong flu 1968–1970, that began to structure flu crisis management with the help of a “Führungsdokument” (guidance document) on “flu control.” It defined for the first time when an influenza epidemic existed, naming three levels: a basic level, a pre-epidemic level, and an epidemic level (Witte 2011, 2664-8; Rengeling 2017).³²

7. Summary

In summary, the following can be said. Conversion to a viral conception in researching and combating influenza was delayed in Germany, causing the preventive approach in medical virology to emerge belatedly. U.K. and U.S. researchers assumed opinion leadership that was not challenged by leading German medical virus investigators who considered that ethics demanded this lead be acknowledged. Development of an influenza vaccine and its testing on humans in the Third Reich received no publicity. Basically, human experimentation was not subject to any ethical restriction and virus researchers engaged in no resistance and exhibited no moral qualms. The political executive of health care in Nazi Germany only became committed to influenza vaccination in an hour of imminent danger, when a pandemic seemed to be knocking at the door. This 1944 emergency finally sounded the death knell for the bacteriological doctrine of influenza etiology in the German Empire. Unlike in the United States, the issue was treated by the Nazi regime as a top military secret. The rulers had no intention of revealing the possibility of vaccination to the population. Instead, only the medical-military personnel

³² Entwurf. Konzeption für ein einheitliches Führungsdokument “Grippebekämpfung”, Berlin (12.03.1970). Bundesarchiv Berlin, DQ 1, Nr. 3367.
Gesundheitsminister. Ministerrat der Deutschen Demokratischen Republik, Ministerium für Gesundheitswesen, Führungsdokument des Ministers für Gesundheitswesen zur Verhütung und Bekämpfung von Grippeepidemien (1970). Bundesarchiv Berlin, DQ 1, Nr. 1984.
Dittmann, S.: Verhütung und Bekämpfung der Influenza. Entwurf, Berlin (14.08.1974). Bundesarchiv Berlin DQ 1, Nr. 11532.

deemed strategically vital was to be protected by vaccination. There was no concept of mass vaccination or of priority groups regarding health hazards. Rather, the focus was on protecting through vaccine military and medical personnel as being systemically relevant. Soon after the war, this policy was virtually reversed in the Soviet occupation zone. Soviet health authorities were strictly in favour of practical flu prevention measures. Simultaneously the U. S. military administration was equally keen on obtaining intelligence on influenza research findings in Nazi Germany.

In the 1950s and with the onset of the Cold War, nothing essentially changed in the GDR from the social hygiene point of view in terms of the issue of flu vaccination. Whereas on the one hand the capacity of vaccine production was limited, it could not be said that the population was especially jumping for joy for protective flu vaccination. In the Federal Republic of Germany in the 1960s, Kurt Herzberg acted as an expert for questions of flu virology and the flu protective vaccination. Sometimes, in the 1950s, he was almost alone crying in the wilderness preaching about the sense of a vaccination against influenza. The test case of the Asian flu (1957/58) as the first flu pandemic after the Spanish flu did not lead to any decisive action in terms of flu vaccination, even though the basic thought that vaccination concerns everybody as a matter of principle and not just a small, privileged group in society was widespread. However, the pandemic did not spread anxiety or fear, there was no “emerging narrative” created. Flu vaccination was hardly established. The outcome was in the “delayed adaptation of flu virology,” which produced “a relativisation of the picture of the pandemic as a disastrous happening according to the model of the Spanish flu” (Witte 2013, 34-66). The fear of the re-occurrence of a disastrous flu epidemic was greater in the military leaders and experts under the Nazis than in the German population, who, in the 1950s, began to see protective vaccination as something which concerned them, at least theoretically. In the end, insisting on the bacteriology of influenza until the early 1940s in Germany gained the status of absurdity. In Cold War times, no German expert could make sense of it anymore.

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