

A black and white photograph of a person's arm, likely a victim of the Holocaust, with a tattooed identification number '145 336'. The arm is resting on a light-colored, textured surface, possibly a table or a piece of fabric. The lighting is dramatic, with strong shadows and highlights.

PAUL WEINDLING

**Victims and  
Survivors of Nazi  
Human Experiments**

Science and Suffering  
in the Holocaust

B L O O M S B U R Y

# Victims and Survivors of Nazi Human Experiments



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Holocaust

**PAUL WEINDLING**

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# ABBREVIATIONS

<b>AdF</b>	Archives de France
<b>AMM</b>	Archive of the Mauthausen Memorial
<b>BAB</b>	Bundesarchiv Berlin
<b>BAK</b>	Bundesarchiv Koblenz
<b>BDIC</b>	Bibliothèque de documentation internationale contemporaine
<b>BStU</b>	Die Behörde des Bundesbeauftragten für die Stasi-Unterlagen
<b>DFG</b>	Deutsche Forschungsgemeinschaft
<b>DÖW</b>	Dokumentationsstelle Österreichischen Widerstandes
<b>HSTA</b>	Hessisches Staatsarchiv
<b>ICRC</b>	International Committee of the Red Cross
<b>IG Farben</b>	Interessengemeinschaft Farben
<b>ITS</b>	International Tracing Service
<b>KWI</b>	Kaiser Wilhelm Institute
<b>KWS</b>	Kaiser Wilhelm Society
<b>KZ</b>	Konzentrationslager
<b>MPS</b>	Max Planck Society
<b>NDW</b>	Notgemeinschaft der deutschen Wissenschaft
<b>NHM</b>	Naturhistorisches Museum
<b>NIOD</b>	Instituut voor Oorlogs-, Holocaust- en Genocidestudies
<b>NMT</b>	Nuremberg Medical Trial
<b>NSDAP</b>	Nationalsozialistischer Deutscher Arbeitspartei
<b>POW</b>	Prisoner of War
<b>RFR</b>	Reichsforschungsrat
<b>RuSHA</b>	Rasse- und Siedlungs-Hauptamt

<b>SA</b>	Sturmabteilung
<b>SS</b>	Schutzstaffel
<b>STAN</b>	Staatsarchiv Nürnberg
<b>UNOG</b>	United Nations Organisation Geneva
<b>USHMM</b>	United States Holocaust Memorial Museum
<b>WVHA</b>	Wirtschaftsverwaltungshauptamt
<b>YVA</b>	Yad Vashem Archives

# PREFACE

When the concentration camp doctor Josef Mengele stood on the ramp at Auschwitz, his clinically trained eye scanned trainloads of deportees. He selected those fit for forced labour, from the children, elderly and other racial undesirables sent for immediate disposal to the cavernous gas chambers. But he was also intent on another agenda – one that was opportunistic and self-imposed – to screen for twins, dwarves and others of genetic interest, whom he kept back for his research. The human experiments and other types of deadly research conducted in concentration camps and clinics are widely perceived as iconic of the Holocaust. Despite the notoriety of concentration camp doctors like Mengele, quite basic questions remain unanswered: what were the practices and purpose of the experiments, their extent and locations, whether they were ordered by Nazi authorities or whether scientists opportunistically exploited the killing regimes and stocks of captives for their own agendas? Most importantly, it is necessary to remedy the quite staggering neglect surrounding the persons who were subjects of the experiments: how many victims were there, who were they in terms of their religious and ethnic identities, their age and gender, and what were the victims' responses? The assumption is often made that experiments took place only in concentration camps and were undertaken solely by SS doctors, whereas a range of public health measures as well as diverse types of camps and clinics, and doctors who held neither SS nor NSDAP rank were involved. Only very late (around the year 2000) did compensation authorities attempt, albeit partially, to establish the extent of the experiments.<sup>1</sup>

Grand narratives of the Holocaust cite at most Mengele on the ramp, but these accounts do not reconstruct how Mengele threaded research agendas through the routines of duty as camp physician. Histories to date leave unanswered the extent that Nazi sterilization and the euthanasia killings of psychiatric patients involved research in terms of medical publications, student dissertations on clinical experiments on psychiatric patients, and researchers obtained stockpiles of body parts for further research. Furthermore, the place of the experiments needs to be determined, as the Holocaust was unleashed, shaping how diverse groups of Jews from across the length and breadth of Europe became experiment victims. The opportunistic researchers targeted not only Jews but also other ethnic groups such as gypsies, or groups persecuted for their sexuality as homosexuals, or deemed a security risk like Polish priests. Many others involved in resistance or simply forced labour

were subjected to invasive and destructive science. An evidence-based account of the experiments and their victims is simply lacking.

To answer these questions it is necessary to research the life histories of victims for whom an experiment was a gratuitous blow to survival. The coerced experiments showed the transformative effect of Nazism as a mindset and organization in terms of mobilizing medical research for racial ends. At the same time the experiments were generated by a highly scientized system of medical education and research. The devastation wreaked by the Nazi experiments make them a reference point in modern bioethics as a worst-case scenario of medical scientists exploiting for research vulnerable patients and populations, often to the point of death. Any understanding has to be grounded in the abundant but until now neglected sources.

This new narrative account of the experiments analyses the interaction of perpetrators and victims as the Nazi regime consolidated its power, and as the war and Holocaust unfolded. Earlier accounts mainly recite the Nuremberg documents, especially those from the Nuremberg Medical Trial.<sup>2</sup> Although vastly important, the Nuremberg Trials were limited by the selection of defendants and the prosecution strategy of demonstrating vertical administrative hierarchies reaching to Himmler and Hitler. Especially overlooked were academic networks and rationales indicating that far more was involved than ‘pseudo-science’ in terms of the rationales of leading clinicians and the involvement of research institutes. This fresh analysis is grounded in a reconstruction – as comprehensive as possible – of victims’ life histories and testimonies, and thereby building up a mosaic of personal histories to obtain a structural analysis of all experiments and their perpetrators. The aim is to analyse the full spectrum of experiments and the total population of victims for the first time.

In order to achieve this comprehensive analysis, record linkage to reconstruct victim life histories has involved evaluating tens of thousands of documents on the organization of the experiments and on individual victims. Recent years have seen new documents become available through the opening of the vast stores of Second World War victim documents gathered together by the International Tracing Service (ITS). Compensation files on surviving victims are a rich source of narratives. The wide sweep of Shoah Foundation survivor interviews provide testimonies that can be linked with documentation on the implementation of the experiments. There are extensive Nazi era records on medical and pharmaceutical experiments. Retrospective testimony was cited in postwar trials, and in the extensive victim compensation files held by Germany, the United Nations and affected countries, notably Poland, Hungary, France, Belgium and the Netherlands, and autobiographies, published and unpublished. Contrary to the expectation that documentation on the experiments was destroyed and that nearly every one of the research subjects perished, so preventing us from receiving first-hand accounts, the quantity of such accounts is immense and has been scarcely examined to date.

Yet the research has been far from straightforward. German-held documentation is often rendered problematic by access and copying restrictions. Performance by German archives, state bodies and institutions regarding disclosure of systemized criminality of a type represented by the experiments can be immensely improved, especially when measured by international standards. While the Nuremberg Medical Case left an ethical legacy leading to informed consent and data protection, abstruse interpretations of archival law impede the reconstruction of the original violations that amount to criminal acts of violence and murder. It is ironic that the injuries to victims that rendered necessary the formulation of the rights of research subjects as informed consent are used to suppress details of the original violations and their extent. There is still no comprehensive memorial record for victims of Nazi euthanasia, and identifying victims of Nazi psychiatric research poses difficulties. Privacy restrictions mean that the extent that the victims of Nazi psychiatry were subjected to research, and determining where brains and tissues of these victims have been held long after the war remains challenging. A murdered euthanasia victim had an afterlife as brain sections passed from institute to institute often until 1990 and sometimes longer, indeed – so profound are the obfuscations – until the present day.<sup>3</sup>

Recent research on the German Research Fund (Deutsche Forschungsgemeinschaft, DFG) and on the history of major academic institutions scarcely deals with experiment victims. The focus has been on the massive Nazi investment in science, and on the rationales of scientists, rather than on who were killed and maimed as a result of the mobilization of science for military and racial ends. A revisionist picture of a vibrant and innovative scientific establishment under National Socialism emerges, although German failures as regards penicillin and typhus control suggest otherwise. Indeed, the extent that scientists espoused Nazi values of autarky, race and war, or were opportunistic in seeking only resources for research remains controversial. Although the Max Planck Society commendably apologized to a handful of surviving twins from Mengele's Auschwitz research, those on its Presidential commission researching Mengele and his links to geneticists and biochemists failed to resolve basic issues of timing and rationales of the researches on Jewish and gypsy twins, as well as the overall numbers and identities of his victims.<sup>4</sup> Similarly, another renowned scientific vivisector, the aviation medical researcher, Sigmund Rascher, sent brains from Dachau to the Kaiser Wilhelm Institute for Brain Research posing uncomfortable questions as to the links between the prestigious KWI and coerced experiments. It becomes necessary to trace the provenance of brain tissues: as one German neuro-scientist reflected in 1990 on the customary depersonalization regarding slides and body parts, 'until now, nobody has thought about histological sections as being part of the body'.<sup>5</sup> Recovering the life histories of research subjects restores the dignity and integrity of a full person. At the same time, the reinstating of individual

identity provides a fuller understanding of scientific practices, as well as showing how certain criteria of age, gender and ethnicity rendered prisoners and patients liable for selection. The silence as to the victims of experiments is a topic that reflects on the inability of German academia still to adequately confront the scientific and personal legacy of a murderous medicine. Academic institutions, funding organizations and professional bodies on the whole appear not to wish to face up to the human damage resulting from past academic research. Wider questions arise of the extent that basic academic qualifications of doctoral and Habilitation dissertations involved murdering and maiming research subjects, while Jews were being stripped of academic and medical qualifications, and institutes were sustained by slave labour. Given that professional qualifications obtained under the exploitative regime of National Socialism were the basis of post-war careers, far reaching questions arise as to the extent that the legacy of Nazi research tainted the German medical profession in the longer term. How to research these issues with due empathy and responsibility towards victims poses problems in that silence as to victim identities and experiences bestows further shame and stigma on the victims, while personal sensibilities concerning injuries require due respect. Commemoration, understanding and a long-term process of institutions accepting responsibility are fundamentally desirable, and yet to date rarely fully realized. In short, despite creditable exceptions, overall there has been a profound failure by German (and Austrian) academia to accept fully the human damage to victims, unleashed by nazification of the medical sciences.

## Researching victims

The initial analysis of the experiments was made possible by funding from the Arts and Humanities Research Council in the form of establishing a database of medical experiment victims. A major grant from the Conference for Jewish Material Claims against Germany allowed the overall analysis and data retrieval to be developed to a point where a complex set of data could be assembled and analysed. The research involves linking multiple names, tracing survivors, identifying the killed, and understanding the complexities of notorious locations like Auschwitz, shadowy locations where forced labourers were incarcerated, or clinics where research was undertaken as on aborted fetuses of forced labourers or on psychiatric patients.

The research involved compiling a collective biographical analysis to chart the contours of atrocity. It became clear that an overlooked genre of victims' writing and speaking about their experiences needed recovery. The Wellcome Trust is supporting analysis of victim narratives. The United States Holocaust Memorial Museum (USHMM) summer seminar on Nazi medical research in 2010 provided an opportunity for an informal network of collaboration on the experiments and anatomical and anthropological

victims. I am grateful to the USHMM for sustained access to its extensive library, archive and documentation, not least to International Tracing Service (ITS) and other compensation records.

The above funding allowed my developing a research project on victims with a small (actually too small given the immensities of the task) research team at Oxford Brookes University. The researchers for this ambitious endeavour have been Anna von Villiez (who carried out database design and development), Aleksandra Loewenau (who tenaciously researched the several thousand Polish victims) and Nichola Farron (who took on the daunting task of documenting Soviet victims). Grateful thanks are due to Aleksandra Loewenau for compiling the index. Marius Turda collaborated on Greek victims. Oxford Brookes University has provided the project with ideal accommodation and administration.

The international composition of the victims meant further expert assistance has been necessary. Data retrieval was carried out by Marina Dubyk (for the Ukraine), Vladimir Petrović (for the former Yugoslavia), Mikhal Šimůnek (for Czechoslovak victims), Francesco Cassata (for Italian victims), and Rakefet Zalashik (for Israeli sources). Laurence Schram of the Mecheln documentation centre provided supplementary data on victims deported from Belgium, and Raphael Toledano on experiment victims at Natzweiler. Patricia Heberer (USHMM) generously shared details of Kaufbeuren victims whose brains were retained. Ryan Farrell expertly assisted with data analysis on perpetrators.

The odyssey through archives as repositories of scarred and shattered lives, and of perpetrator records means that I owe especial thanks to staff at numerous archives. I wish to warmly thank the UN archives in Geneva, the archivists and librarians at USHMM for help over repeated visits, and despite perplexing access conditions, the Bundesarchiv in their holding of compensation files of the Federal Ministry of Finance. Many other archives have been supportive. In Germany I wish to thank the Max Planck Society Archives and the Max Planck Institute for Psychiatry Archives; the German Foreign Ministry 'Politisches Archiv'; the Institute for Contemporary History, Munich; the memorial archives at Buchenwald, Dachau, Neuengamme, and Sachsenhausen; the firm archives of Bayer-Leverkusen and Schering; the Hessen State Archives; the International Tracing Service ITS at Bad Arolsen, and the Psychiatric Institute Heidelberg. In Israel my thanks are due to Yad Vashem; in Poland to the State Museums at Auschwitz and Majdanek, and again to Aleksandra Loewenau for access to research findings obtained within the framework of the collaborative projects; in France to the highly supportive BDIC at Nanterre and the Archives de France; in the Netherlands to NIOD in Amsterdam; in Belgium to the Kazerne Dossin and the Direction générale Victimes de la Guerre; in Austria to the Archive of the Austrian Resistance, the Austrian National Archives, the Mauthausen memorial archives at the Austrian Ministry of Interior, and the Department of Anthropology at the Natural History Museum;



in the United States also to the curatorial staff of the Fortunoff Collection at Yale, and the New York Public Library Special Collections; in the United Kingdom to the National Archives, Wiener Library and Wellcome Library.

Such a complex topic can only be developed in collaboration with multiple colleagues. I am grateful to Ruth Weinberger, Volker Roelcke, Gerrit Hohendorf, Maïke Rotzoll, Florian Schmaltz, Christian Bonah, Margit Berner, Thomas Beddies, Kamila Uzarczyk, Herwig Czech, Gabriele Moser, Christiane Wolters and Sabine Hildebrandt for assistance and advice. The work has benefited from my role on historical commissions for the Max Planck Society on the Kaiser Wilhelm Society under National Socialism, the Robert Koch Institute, and the German Association for Psychiatry, Psychoanalysis and Neurology. I learned much about the contours of atrocity in terms of linkages with forced labour by contributing to the project of Constantin Goschler, when I analysed the delivery of compensation for ‘other personal injuries’ by the Foundation for Memory, Responsibility and Future from 1998 to 2004.

This victims-based study follows on from the publication of documents on the Nuremberg Medical Trial, to which I contributed on initial Allied research on the experiments in 1945–48.<sup>6</sup> I gratefully appreciate that Angelika Ebbinghaus and Karl-Heinz Roth, Christian Pross, Michael Kater and Robert Lifton have provided access to their working papers for their own respective and quite fundamental landmark contributions.<sup>7</sup>

## **Note on names and identities**

Most archives allow names to be cited when the person is deceased. In some cases, surviving victims have spoken publicly of their experiences with the express intention of allowing themselves to be fully named.

Certain German archives have imposed far-reaching anonymization restrictions, notably the German Federal Archives requiring complete anonymization, and destruction of notes and the secure database entries on completion of the research. This condition is despite the fact that reconstructing a life history involves linkage from several sources, so that the database constitutes a unique record of a person’s odyssey through camps and clinics, otherwise hidden from history; moreover, these linked records provide unique verification of the analysis presented here. Anonymization of victims of systematized violence and murder, many deceased for over fifty years raises significant issues. These include why there are severe legal sanctions to publishing in ways restoring identity of persons who were persecuted and consigned to oblivion, and reconstructing the abuses to which victims were subjected?

Names are essential for the cohort analysis, in order to link records and to ensure there is no double counting. Naming a victim is to restore identity

and a whole sense of the historic person to individuals reduced to being camp numbers and research material. The ethic for Jewish victims is to name, and Sinti and Roma have recognized the need to name Auschwitz victims. Similarly, it is difficult to understand why victims of criminal acts of violence and murder should not be named? Holocaust and other murdered and maimed victims are persons of historic significance in that for each person how the tidal wave of Nazi medical violence affected them was in multiple and individually distinctive ways. Drawing an administrative line that classes the majority of victims as historically insignificant in line with German archive laws inflicts further injury. Moreover, to say that medical matters require express consent from descendants when the person was rendered infertile or killed as a child legitimates the experiments and other violations; in many cases there can be no descendants. It is ironic that the perpetrator society is the most restrictive, as regards commemoration of named victims, and generally reluctant to recognize the extent of the devastation of research in terms of identifiable individuals. Victims of Nazi psychiatric research are still often marked by their blanked out names, although this practice has of late been questioned. One might ask whether blanket restrictions on naming applied by the German Federal Archives are ethical, as the current position on blanket anonymization legitimates the violations as ‘medical’ in terms of procedures and for the persons so violated. The text presented here has balanced legal and ethical obligations with my conviction that over time a full naming of, in the first instance, all murdered victims, and ultimately all medically mutilated victims should be rendered possible.

Some victims have left courageous and frank testimonies in publicly available sources as the Shoah Foundation interviews. Others opt for silence. I have accordingly respected these viewpoints, along with whether a victim is – or may be – still living. I am also aware that a forced abortion, or damage to genitalia or reproductive capacity has special sensitivities. The statistics of victims are compiled from otherwise closed sources, and although they cannot currently be made publicly available in terms of named records, provide a basis for verification.

Finally, referring to categories of victims, I use the labels of ‘Jews’, ‘Gypsies’ and ‘Homosexuals’ with certain reservations. The self-identity of the victim may correspond, or differ in that personal faith might not correspond to Nazi racial categories. Thus one victim of the ‘Jewish skeleton collection’ at Strasbourg was a Protestant at least in terms of baptismal records. In order though to convey the situation from the point of view of both the rationales of perpetrators and the responses of victims, who were often defiant in their identities as Jews or gypsies, these terms are used. I should also point out that the English term ‘gypsy’ lacks the stigma of the German *Zigeuner*. Records do not always allow self-identity as Roma or Sinti, or Jenisch to be established. If the ethnic identity is known, this is given.

I generally specify whether victims are Polish Jews, or Polish Catholics. Here again, there were socialist atheists among the persecuted Poles, as

among other groups of the resistance and partisans who fell victim to experiments. 'Russian' was for the Germans a broad and often a derogatory category. I use the generic 'Soviet' as reflecting citizenship at the time, and specify further if it is known a victim was for example Ukrainian. With tens of thousands of victims of coerced research, it is not always possible to bring out nuances of personal identity.

# CHAPTER ONE

## Exploring experiments

### Concealed depths

Two warders pushed me to a bathroom. 3 doctors and about 10 students were already gathered there. After a heart examination I was injected with some red stuff and put in to a bath-tub with a thermometer. They switched on a ventilator. I was covered in water all but head and hands. Two of the physicians took my wrists, controlling my pulse and making notes. I was not able to describe the agony I felt being completely helpless in the hands of the so unscrupulous tormentors to whom the life of a concentration camp inmate meant less than nothing. The last thing I remember before I lost consciousness was that a slight ice-covering began to appear on the surface of the water.<sup>1</sup>

Iwan Ageew, a partisan, endured freezing water experiments at the concentration camp of Dachau early in 1943.<sup>2</sup> His scientist-tormentors focused on how long immersion could be endured – in many cases, taking the subject until the onset of death. For those who survived, the scientists assessed how quickly different rewarming procedures took effect. Ageew survived but felt dehumanized, and expendable, and was rejected for compensation on the basis that the experiment did not affect his earning capacity in later life.<sup>3</sup>

A photo of freezing water experiments at Dachau shows an unknown research subject wearing the protective jacket and headgear of a pilot. Ice floats on the water surface. Three white-coated academics take measurements. These scientists measured the heart rate, rectal temperature and pulse. For those who survived, the scientists assessed how quickly different rewarming procedures took effect.

This photo of the prisoner has become iconic of the Nazi experiments. It appeared with the caption ‘Human Laboratory Animals’ in *Life*



**FIGURE 1.1** *SS Sturmbannführer Dr Sigmund Rascher (right) and Professor Dr Ernst Holzlöhner observe the reactions of a Dachau prisoner, who has been immersed in a tank of ice water to simulate hypothermia, ca. September 1942.*

Courtesy of Ullstein Bilderdienst

*Magazine's* feature on the Nuremberg Medical Trial. Widely reproduced as representing concentration camp experiments, the photo can be viewed from various angles. One might at first presume that the unidentified victim died, having been measured and monitored to the point of death. But an alternative view is possible: that the prisoner survived, whereas it was the scientist perpetrators who died in the closing stages and the immediate aftermath of war. The photo can be seen either as an image of scientised murder, or of transcendence of victims over their destructive, and ultimately deceased torturers. The history of the Nazi experiments is one of a controlled and measured death, or survival albeit often with severe injuries. Survivors have spoken and written eloquently about their experiences.<sup>4</sup>

The photographed prisoner's life depends on the scientists: a professor of physiology and Nazi activist, Ernst Holzlöhner, and two assistants, the air force doctor, Sigmund Rascher, and Erich Finke, likely the third man holding a thermometer. By the time the Dachau freezing experiments were revealed to a shocked international press in November 1945, the three researchers

were dead.<sup>5</sup> Rascher was executed by the SS (one account was that it was for falsification in launching a blood stypic, and another was that it was for faking paternity of four abducted children). Finke died on 4 April 1945 in a military hospital in the SS enclave of Holstein. After being interviewed by British scientific intelligence about a foam survival suit, Holzlöhner attempted to kill his wife, killed his child and committed suicide in June 1945.<sup>6</sup>

The victim in the tank is unknown: he might have been one of the killed victims aged between eighteen and forty-five – the number of deaths (possibly eighty) relies on fragmentary records and a post-war statement by the prisoner assistant, Walter Neff, rather than on records kept at the time.<sup>7</sup> Or he might be one of the 133 persons known to have survived. The largest group among these were Polish prisoners, among them many priests.

Medical students were onlookers – there were students in Dachau from the SS Medical Academy in Graz, who subsequently made their careers in concentration camps and in other SS capacities.<sup>8</sup> In fact, the Dachau experiment block was a visitor's attraction for Nazi officials and groups from police, education and training institutions.<sup>9</sup> Newly qualified doctors found research material for their MD and Habilitation dissertations in concentration camps. Doctoral dissertations addressed wider issues such as forced sterilizations and racial pathology, as well as clinical experiments on drug doses and vaccines.<sup>10</sup> The prisoner pathologist František Bláha alleged pathology specimens were sent from Dachau to Munich University. Rascher had a bloodthirsty taste for 'fresh' specimens when he researched on low airpressure, and dissected a research subject in the pressure chamber.<sup>11</sup> While most experiments occurred in sealed blocks and compounds in concentration camps, they were rendered possible by academic, military and political support. Here, a dense set of power structures of the military, SS and academics shaped the research. The experiments made wider medical circles complicit in the research: patients and prisoners became resources of blood and body parts for research.

The forced immersion in the iron tank was a perverse baptism, as victims were plunged into a hellish world of scientific exploitation of their bodies, bones and internal organs. Experiments were a form of assault causing invalidity, infertility, incapacity and death. But this was violence in distinct, systematized forms that could be camouflaged as being of benefit to the war effort, to science, and the race. The experiments represent neither the random bloodshed, nor sporadic violence of camp guards and brutal punishments. They were closer to torture under medical supervision, or being subjected to medical selections that were a matter of life or death. Experiments were the calculated scientized viciousness of the injection needle or scalpel and meticulously compiled fever charts, and the minutely recorded effects of the freezing water tank and pressure chamber. Their execution was planned, authorized by administrators and funding agencies, or supported

by the military and industry, or public health agencies in efforts to prevent infections and promote productive labour on the basis of innovative research.

The freezing experiments were oriented to problems of survival of air crew, and ensuing dry cold experiments to the war in the freezing Russian heartlands. At the same time fundamental problems of the human metabolism were at stake. The scientists plunged into research without boundaries. If they wanted an eye, a testicle, a brain, or a whole skeleton, it was there for the taking. If they wanted to replicate survival at sea, a bullet wound, an epidemic infection, starvation or thirst – again, they could. The possibilities seemed limitless, and at the height of the war, the resources in terms of funding and facilities flowed.

## Experiments as exploitation

As the Nazi racial war and the ‘Final Solution of the Jewish Problem’ unfolded, medical and racial experts preyed on the blood, bodies and brains of subject populations. German (and the occasional Belgian, Danish, Dutch, Sudeten (i.e. Czechoslovak) German, Baltic German and Romanian German) researchers invaded the minutest structures of the human body, and harvested corpses, fetuses, brains and eyes, and drained vast stockpiles of blood. The motives blended exploitation for the war effort, racial studies to identify and weed out degenerates, and coldly detached scientific aims. Scientists set out to conquer new frontiers: they measured and probed the fragile boundaries between consciousness and the unconscious; between life – under adverse conditions of cold, hunger and exhaustion, high fever or infected wounds – and the physiology of death; and demarcated the boundaries between sanity and ‘idiocy’. The research concerned growth defects, physiological performance under severe stress, the destruction of reproductive organs, genetics of malformations and disease, and the sheer form of the body, not least how the body shape and skeleton from one race would differ to that of another. The experiments thus were part of a wider pattern of coerced research, involving anthropology, brain slicing and analysis of body fluids. The term ‘experiment’ should be construed here in this wider sense.

Such experiments were at the vortex of administrative and political structures, the scientists, and the victims. Reichsführer-SS Heinrich Himmler delighted in designing new experiments on topics such as survival and resuscitation that utilized concentration camp resources. Experiments and hereditary research were designed to support the racial re-ordering of Europe, as well as to reconfigure medical and racial science in a new Germanic form. Bodies were looted as research materials: rapacious medical scientists extracted testicles, chemically destroyed wombs, and extracted fetuses from slave labourers. As military fronts extended and contracted,

medical research intensified, and frenetic experiments continued up to the final dying gasps of the Nazi racial colossus.

A battery of scientific techniques was deployed, and innovative knowledge of hormones, genes and viruses was applied. The living body was stressed, and then measured and dissected. Rather than 'pseudo-science', scientific ambition drove forward ruthless agendas to advance careers, and to obtain resources and international acclaim. German medical science, for so long world leading and well embedded in military structures, was now set to demonstrate its racial prowess. Himmler and his medical deputy Reichsarzt SS Ernst Grawitz were ambitious for the scientific researches to show the Germanic ability to obtain results in daring ways that no researcher had hitherto dared to deploy – and so, to use a phrase from the period, to make the rarefied academic peaks of medical knowledge higher.

Nazi Germany invested vast resources of skilled personnel, equipment and facilities into experimental medicine. Medical research was designed to cure, prevent and ideally eradicate diseases impeding military operations, to enhance fitness and fertility of the German race and nation for vast resettlement schemes, and ultimately to deliver a wonder weapon in the shape of devastating nerve gas. Such a racially oriented and militarized medicine occupied a central place in the vast schemes of population engineering that provide a rationale for genocidal clearance for 'living space'. Europe's population map was being redrawn with grandiose schemes for Germanization of peripheral ethnic groups brought 'Home to the Reich' from the Baltics, Eastern Europe and the South Tyrol; the shifting eastwards of Slav populations, and the sterilization and killing of millions of racial undesirables. The relentless destruction of Jews and gypsies, and others deemed pathogenic was ultimately intended to revitalize the Germanic and Nordic races. Auschwitz doctors used the metaphor of excising a diseased organ to restore health. The destruction offered hitherto undreamt of scientific opportunities for the exercise of experimental agendas in clinics, camps and ghettos, and consequent research on stockpiles of body parts.

By the time the war ended, the Nazi-coerced experiments were notorious in terms of their calculated cruelty. Despite prosecutions of medical perpetrators at Nuremberg, the wider dimensions of the cataclysmic medical destruction have never been mapped.<sup>12</sup> How many victims there were, and when and where the experimental destruction occurred – and the overall delineating of the institutional and political contours of the coerced human research – have rarely been matters of historical concern. For all the ink spilled by authors on the Nazi racial war and the Holocaust, and recent historical efforts to examine Nazi science, the myriad victims of medical research – Jews, gypsies, mixed race German adolescents, Catholic priests, homosexual males, Jehovah's Witnesses, Soviet prisoners of war and partisans, and psychiatric patients to name just some of the prey of the predatory scientists in camps and clinics – remain if not hidden from history, then incidental casualties. Journalists have engaged with victims – notably



Günther Schwarberg for the twenty Jewish children killed in Hamburg, Ernst Klee on psychiatric victims, Hans-Joachim Lang on the Strasbourg skeleton and Auschwitz chemical sterilization victims; but historians have rarely engaged with the experiences and life histories of victims. Schwarberg first identified the twenty Jewish children killed just before war ended, and who for many years were an anonymous group. Klee extended the range of experiments, and compassionately included victims, although his approach was impressionistic and tendentious. What Schwarberg achieved by identifying a single group of twenty child victims, this study seeks to achieve for all victims of the Nazi experiments.

In the late 1980s, Götz Aly rightly drew attention to psychiatric experiment and brain research victims. Although he identified only a fraction of the victims, his radical critique of how the perpetrating elites continued on into the post-war era has ultimately gained acceptance.<sup>13</sup> Only a few victim clusters, notably the ‘idiot’ children researched by Carl Schneider at Heidelberg, and the several hundred children whose brain tissue was retained after they were killed at the Spiegelgrund in Vienna, have been reconstructed. Despite major German projects on research institutions under National Socialism, none has fully reconstructed the devastation wreaked on victims.<sup>14</sup>

Recent research on the German Research Fund has produced valuable case studies, notably on cancer research and genetics. But there has been a momentous failure to investigate the full spectrum of coercive research, the research practices on human subjects and especially the proportion of consensual to coercive research, and to establish fully victim identities. Consequently, the experiment victims are very much a forgotten group in Holocaust and war history – standing outside routinized killing, and representing a marginalized aspect of forced labour and the ‘euthanasia’ killings. Not only German academic institutions but the current generation of academics clearly feel threatened and insecure by following up human consequences of research practices.

The grand narratives of Holocaust and Third Reich history have been oriented to the wider parameters of mass destruction, rather than the intricate killings of experiment victims. Studies of concentration camp clinics – the *Krankenrevier* – despite their importance as centres of killing, as well as resistance, remain rudimentary. Historians concerned with the iconic Josef Mengele mainly focus on how he selected from thousands of Auschwitz arrivals on the ramp for gassing or slave labour. The anatomist Johann Paul Kremer has been of interest in his observing the newly functioning gas chambers at Auschwitz, rather than his dissecting for research on starvation.<sup>15</sup> The testimony of the prisoner pathologist Miklós Nyiszli on Auschwitz has been much cited on the operation of the murderous gas chambers.<sup>16</sup> Here, the experimenters and associated researchers provide observational evidence on the highly technological form of the Holocaust at Auschwitz. Yet the texts of Kremer and Nyiszli can be read from a different angle, as informing about ongoing medical research in the midst of destruction.

The experiments came to be marginalized from the narrative of science under National Socialism. In 1980, when the American psychiatrist Robert Lifton conceptualized his influential book about Nazi doctors, he considered that the wider biomedical vision of the Nazis was more important than the experiments. Rather than focus on the intricacies of experiments, he outlined 'the medicalization of killing – the extraordinary role played by doctors in places like Auschwitz, where they were overall supervisors of the killing process'.<sup>17</sup> A new wave of research on eugenics and racial research culminated in the 1991 study on the 'racial state' that linked the Holocaust to the wider biomedical cleansing of the German population.<sup>18</sup>

The experiments and their victims were a casualty of this historiographical breakthrough. Historians focused on 'T4' (the code-name for the Reich Charitable Foundation for Curative and Institutional Care) at Tiergartenstrasse 4, Berlin, and how it selected and killed at least 70,000 psychiatric patients. The T4 gas chambers used from October 1939 for psychiatric patients preceded and were administratively linked to the mass gassings of Jews in 'Operation Reinhardt' extermination camps from 1942. This overlooked not only the identities of T4 victims (not least the Jews who constituted the earliest victims of T4 gassings) but also how victims could be selected for their scientific interest. How researchers harvested brains on a vast scale from euthanasia victims, and conducted experiments on children held in special killing wards, have been greatly underrated in terms of their extent.

## **Nameless victims**

In 1945 survivors from Auschwitz, Buchenwald and Dachau set about reconstructing the experiments on their fellow prisoners. The first attempt to reconstruct the Nazi experiments in their entirety was by the International Scientific Commission launched in 1946, drawing on survivor testimony. Its documentation enabled the Nuremberg Medical Trial to take place.<sup>19</sup>

The Chief Prosecutor at the Nuremberg Medical Case, Telford Taylor eloquently spoke of the victims of Nazi medical research:

For the most part they are nameless dead. To their murderers, these wretched people were not individuals at all. They came in wholesale lots and were treated worse than animals. They were 200 Jews in good physical condition, 50 gypsies, 500 tubercular Poles, or 1,000 Russians. The victims of these crimes are numbered among the anonymous millions who met death at the hands of the Nazis and whose fate is a hideous blot on the page of modern history.<sup>20</sup>

The prosecution team reconstructed hierarchies of authority from doctors executing experiments up to Hitler and Himmler. However, the prosecutors thought that the experiments were pilot studies for mass destruction.

The Auschwitz prisoner doctor Władysław Fejkiel similarly viewed the experiments as genocidal. There was systematic experimental research on poison gas and phenol injection in Auschwitz in 1941, comparing Evipan, gasoline, hydrogen peroxide and phenol, and experiments on poison gas and killing techniques until the end of the war. The Medical Case was exceptional in terms of the number of witnesses, and in making radio appeals to surviving witnesses to provide evidence. The stress on military and SS linkages eclipsed connections to the scientific establishment, even though German academic institutions were Nazified, militarized and integrated into driving forward plans for a racially reorganized Europe.

The prosecutors steered away from mistaken speculations based on false rumours: that anatomical institutes used body fat to produce soap; that the Nazi doctors were intent on discovering how to produce blue eyed Nordics; that there were SS breeding farms; that forcibly extracted sperm from prisoners or monkey sperm or indeed twin blood would be used for insemination experiments in Auschwitz<sup>21</sup>; or that an anatomist might have Jewish and gypsy women raped before execution to assess the effects of stress on the reproductive system.<sup>22</sup> That there were ‘blood plants’ in the German-occupied Ukraine, Belarus and Latvia, where children’s blood was drained on an industrial scale, requires clarification.

The Nuremberg prosecutors soberly sought depositions, victim accounts and documents. The Trial documents were capably summarized by Alexander Mitscherlich, his dedicated assistant Fred Mielke, and the independent-minded psychiatrist Alice von Platen.<sup>23</sup> Their incisive, truly pioneering analyses into wider issues of how Nazi science came to be dehumanizing have remained the main basis for later accounts.<sup>24</sup> What becomes necessary is to reconstruct the total population of experiment victims, to historicize the experiments by taking a structural view in terms of their organization, and to see victims as having agency and as articulate, albeit coerced participants.

The historian of the Shoah, Saul Friedländer recognizes the importance of bringing victim perceptions into the frame. He points out the need to look beyond the ideological stereotype in the Nazi mindset: rightly, there is a need to recover the myriad lives – Jewish and non-Jewish – and responses to the compounding pressures of persecution, and the pressures of exploitative research. Friedländer highlights Mengele’s command ‘Zwillinge heraus’ (twins to the fore). Research on the effects of starvation on living victims, who were then killed by the anatomist Kremer, can be documented by this perpetrator’s diary.<sup>25</sup>

## Experiments as experience

The question arises as to whether the victim accounts, as necessarily retrospective, were tempered by subsequent notions of how the Holocaust

was represented, rather than actually experienced? While extraneous detail might have been distorted – for example in a belief that a well-known perpetrator like the Auschwitz surgeon Władysław Dering or Mengele must have been involved, the core of what was experienced remains authentic and vivid. Composed retrospectively, a victim might confuse circumstances hidden at the time – the person behind a surgical mask, or believe that they were selected by Mengele as the iconic medical killer – but the core narrative of what was experienced persists as vivid and as impressively consistent with the surviving documents.

The ordeal of increasing and intense pain, while freezing, feverish or with a head feeling that it would burst under low pressure meant a victim's memory remained focused, sharp and precise. Survival meant that as a memory crystallized, it retained a structured coherence; it was as if the memory was frozen like a photographic image in time. The Italian chemist, Primo Levi felt the events in Auschwitz were 'as if carved in stone, prevailing over all previous and subsequent experiences'.<sup>26</sup> Near-death visions of prisoners remained tangible, as the hallucinations arising from freezing, fever and starvation.<sup>27</sup> More complex is the boundary between experience and experiment – with a need to understand the rationales and effects of numerous types of injections and other physical torments. These memories inform the understanding of the experiments, and need to be set against the perpetrators' denials and efforts to minimize the extent of experimentation. As the Polish judge Józef Musioł noted after hearing diverse narratives, the experiment defined the whole experience of incarceration.<sup>28</sup>

While eliciting respect, the victim memories and accounts merit robust critical scrutiny in determining their validity as historical evidence. This study links the victim's experience with documentation from the time. Accounts show how the historian can overcome the wall of icy silence which surrounds the victims and recover their experiences. Perpetrator and camp records survived, despite frenetic German efforts to destroy incriminating evidence. Prisoner assistants (notably the medical student Eugène Ost at Dachau, Eugen Kogon at Buchenwald, Hermann Langbein at Auschwitz, and Gerrit Nales the prisoner nurse at Natzweiler) kept, at great personal risk, lists or other records concerning victims.<sup>29</sup> For some who survived, the physical scars of experiments and brutalities, excised testicles and chemically damaged uteruses was chilling evidence of what had been experienced.

While evidence and testimonies were collected immediately after liberation, there are scarcely any accounts by victims at the time of the experiments. Survivors like Stanislav Zámečník at Dachau and Hans Maršálek, an experiment victim at Mauthausen, wrote definitive works and collated documents. Jewish victims could not keep diaries in concentration camps. Recording details of experiments appeared dangerous: Arthur Haulot, a Belgian communist and prisoner nurse at Dachau who did keep a diary and was a research subject, noted on its publication that he 'talked

neither about the malaria experiments nor of those with mescaline', although he was subjected to the ordeal of mescaline.<sup>30</sup> The female experimental subjects of leg wound experiments in Ravensbrück made clandestine photographs, and communicated their plight to the outside world. Victims kept a written order to attend the experimental block, or the privilege not to have their head shaved, as they had to prove that they had been violated.<sup>31</sup>

The prisoner research subject being dressed as an aviator raises questions concerning the scientists' motives and agendas. Rascher documented his experiments with photos and film to record the physiological effects, and to impress his superiors. The freezing experiment photos show shots of the tank and harnesses in which victims were strapped. Rascher's wife Nini (Karoline) requested Himmler's permission to take colour photos of the organs of experimental victims, killed during prior low pressure experiments. Himmler and his economic maverick Oswald Pohl saw three non-fatal experiments on Sunday 1 May 1942 at Dachau, when Himmler asked the victim of a replicated parachute escape from 1,500 metres about his criminal record.<sup>32</sup> Ten days later, the pressure experiments were filmed by Helmut Bousset; the film was shown to Himmler on 14 July 1942, and again on 11 September 1942 at the office of Air Marshall Milch at the Reich Air Ministry in Berlin. Rascher reported to Himmler, complaining about how academics obstructed his deadly research.<sup>33</sup> Stockpiled brains were sent by Rascher for dissection to the Kaiser Wilhelm Institute for Brain Research.<sup>34</sup> Fragmentary stills of the harnessed prisoners, their faces distorted by the low pressure, have survived.

Undergoing an experiment meant additional trauma beyond a concentration camp's harsh regime of forced labour and starvation, and persecution. The experiment involved disabling injuries, pain, at times acute and sustained, or the effects of pharmaceutical products. To fully understand the experiments, a person's life history is important to capture the process of becoming a research subject, the intensity of the experimental episode, and how a victim subsequently coped with the after-effects and the risks of being killed. Some prisoners underwent multiple experiments. Many research subjects lost babies, children, parents or siblings, or were rendered infertile. The experiments occurred within a context of colossal deprivation and physical abuse. There was a psychological toll: after liberation, Ageew who lost a leg from infection was detained for six months in the Bavarian psychiatric hospital of Kaufbeuren, itself a former killing and research centre. In 1954 the Federal German authorities turned down Ageew's application for compensation as a victim of human experiments despite his subjection to two life-threatening experiments. Injuries – the officials conjectured – were caused by the cruelties and deprivations of camp life whereas the experiment in the freezing tank had no ill effects, and malaria is no longer recurrent after a decade.

Numbers of victims were often substantial – over a thousand malaria and typhus experiment victims, and several hundred women operated on in the

infamous experimental Block 10 at Auschwitz for experiments on their reproductive organs. Yet numbers have, to date, mainly been estimated. Although the prisoner pathologist Bláha was found to have overstated victim numbers, his evidence has a qualitative value in describing efforts to transmit freshly killed organs to Munich hospitals.<sup>35</sup>

It is necessary to base numbers on documented individuals. The prisoner doctor Robert Waitz wrote in 1945 of a thousand deaths from experiments.<sup>36</sup> This number has persisted: Robert Proctor calculated deaths from experiments cited at the Nuremberg Medical Case, as amounting to under 1,000 deaths.<sup>37</sup> Pohl, concerned to minimize his complicity, cited 350 victims. Defendants and their lawyers wanted to minimize deaths, whereas prosecutors and their witnesses conjectured high numbers. Bláha alleged that 300 priests died from experiments; later on, the figure of 3,000 Mengele twins, mostly murdered, was conjectured.<sup>38</sup> The defence lawyer for Karl Brandt, who had powers over the co-ordination of medical and chemical weapons research, Servatius claimed 2,000 died overall in the experiments, whereas the prosecutors at Nuremberg claimed ‘thousands’ of deaths. These numbers lack a basis in terms of evidence of identified individual victims. In the event the Medical Trial judgment in August 1947 settled cautiously on 2,000 victim deaths with perpetrators for all types of medical crimes at about 350.<sup>39</sup> But survivors received scant attention, despite severe and debilitating injuries. The UN Human Rights Division in 1951 still considered that there could be only a hundred survivors of the experiments, and the International Committee of the Red Cross stated that just a single survivor was known. Later accounts often assume all were killed.<sup>40</sup> But this was rapidly shown not to be the case – there were thousands of survivors, and many who were lame, sterile and with heart disease and other incapacities.

The victim narratives raise wider questions of victim identities – were the research subjects really the ‘death-deserving, asocial criminals from concentration camps’, or Jewish-Bolshevik Commissars that the SS leader Heinrich Himmler claimed were the right sort of victims? Moreover, it is a persistent myth that just a few SS doctors were involved. Experiments were never wholly an SS monopoly. Although Mengele stands as the iconic figure, his arrangements at Auschwitz were far from conventional, as there is only indirect evidence of Himmler’s approval for his research.

This study seeks to move from these selective instances. At the epistemic core lies the issue that the actual research, in terms of rationales and practices, has been only sporadically studied. Nazi Germany pumped massive funds into experimental science and medicine. While an incentive was racial war and reconstruction, scientists mixed allegiance to National Socialism with a range of research agendas. Rather than the Nazi state as simply a resource for a scientific establishment with very different agendas (as conjectured by historian Mitchell Ash), the experiments were closely linked to the wider processes of destruction.<sup>41</sup> Many perpetrators took on various offices in the Party, State, Military and SS. There was active

engagement in the unfolding of a new order with health and race as central values, and research as a means to their realization.

## The meaning of 'an experiment'

Experiments were coercive and non-consensual, and generally terrifying experiences. The experiments stood outside the routines of death and destruction, and involved many uncertainties. They varied in their intentions, and for the victim the outcome was unpredictable. When Nora Keizer arrived in Block 10, the word 'experiment' sounded strange and ominous.<sup>42</sup> Others regarded the term experiment as involving the totality of their experiences; indeed, the word for both – *expérience* – is the same in French. Western European victims were familiar with medical apparatus, but prisoners from Eastern and South-east Europe had no idea about X-ray radiation, or even at first what it meant to lose testicles.

Victims often referred to injections of unknown substances, and subsequent violent reactions of incapacitating fevers, rashes, swellings, dizziness, putrid sores, and infectious pathogens eating into flesh and bones. They wondered what was put in the injections.<sup>43</sup> Some victims can recollect the experiment in intricate, photographic detail. Others vividly remember the violation as paramount, as if tattooed into their memory, but find it difficult to recollect names, dates and circumstances. This disadvantage was exploited in compensation procedures, which required a high level of detail, and clinical examination by a German-approved physician. As a victim commented, 'to this day, we do not know what substances were injected into us when we served as Dr Mengele's guinea pigs.'<sup>44</sup>

The German Foundation for Memory, Responsibility and the Future, which compensated approximately 4,000 victims of experiments between 1998 and 2004, defined an experiment as a coercive intervention in a person's physical or psychic integrity, motivated by a research interest, and with the involvement of a Nazi authority. One has to set this against the actuality of experience of medical coercion – for example immunization, or tests conducted to evaluate products of IG Farben; or the coercive blood transfusion lacking a research element. In certain locations – the ghettos of Transnistria, concentration camps of Yugoslavia, or forced labour camps in Northern Norway – victims experienced out of the ordinary medical interventions, and were medically abused, even though compensation authorities reject these instances as having been experiments.<sup>45</sup> Other sets of experiments were on large groups of victims, as the nutritional experiment of Heinrich Kraut on over 6,000 Soviet labourers.

The experiments have also been minimized, as when scientists said that they conducted a clinical trial or *Heilversuch*.<sup>46</sup> The officials administering the compensation denied criminality. Thus they argued that all Mengele's twin research was not harmful, and did not constitute an experiment.



German finance ministerial officials fought against accepting many series of experiments, as those on cancer until the 1970s. Officials flew in the face of historical evidence in their interpretations, when they argued that after 1943 all Carl Clauberg's sterilization research in Auschwitz was not experimental but routine. In fact, all his experimental injections took place after February 1943. What happened was that Clauberg pretended to Himmler he had already perfected his technique in order to secure resources. A more reasonable view was that adopted by a Hungarian medical expert that Clauberg's sterilization procedures were experimental – on the basis of his criteria of selection, that he was engaged on a large-scale serial investigation, and that his gynaecological procedures were invasive experiments.<sup>47</sup>

The experiments require siting within a properly historicized frame of analysis, in terms of ideology, their administration, scientific rationales, and the experiences of research subjects. Grand narratives and perpetrator studies appear largely unconcerned with the Nazi leadership's driving forward medical research into grim and bloody dimensions.<sup>48</sup> Historians of science under National Socialism appear more concerned with processes of innovation. The Nazi racial mindset, the effort to reconfigure scientific medicine, the resourcing of research by multiple agencies of the state, academia and industry at a time of diminishing resources, Himmler's grim fascination with researching homoeopathic and holistic medical alternatives, and the rationales of deadly research practices remain, along with their victims, historically marginalized.





## PART ONE

# Eugenics to experiments, 1933 to 1941



## CHAPTER TWO

# Nazifying medical research

### **The experimental impulse**

The Nazi takeover coincided with an intensification of research in experimental medicine. Here, a longer-term perspective explains how Nazi science departed from international values in medical research to alleviate human suffering. Scientists felt alienated from the Weimar Republic and the new international order, and instead adopted agendas combining national assertion and experimentation. In the mid-1920s indignant German scientists strained to overcome the post-First World War boycott on their conference participation, strongly imposed by France and Belgium. German medical and pharmaceutical researchers felt spatially constrained with the loss of colonies. Researchers from the Hamburg Institute of Tropical Medicine, such as Peter Mühlens and Heinrich Zeiss experimented on often remote populations in the Soviet Union, as this fellow paraiah state welcomed experimental testing of new pharmaceuticals. They tested drugs such as Bayer 205 (Germanin) for sleeping sickness and camel disease, while supporting ethnic German communities as beleaguered outposts of a Greater Germany. IG Farben, the chemical and pharmaceutical conglomerate formed in December 1925, sought outlets in Eastern Europe, notably in Hungary, Bulgaria and Romania with ideas both of expanding its markets, testing drugs, and asserting cultural influence.<sup>1</sup>

An ethic of experimentation was strongly evident in biomedicine. Later in the 1920s a highly emotive debate on the nature and practice of medicine erupted. Opponents of scientific medicine, nature therapists and anti-vivisectionists documented hundreds of instances of irresponsible experiments. Medical publications and reports were closely scrutinized for unethical research. The nationalist physician Erwin Liek demanded a holistic medicine taking account of the whole person as opposed to medical research focused on body parts. Campaigners attacked hospitals as torture chambers for the poor.<sup>2</sup> Sporadically invoked, the Hippocratic Oath offered flimsy protection. The Oath was in Germany never a rite of passage taken by all

physicians on qualification.<sup>3</sup> By way of contrast, completing a research based, and often experimental doctoral dissertation was in Germany necessary for the hallowed title of 'Herr' and (increasingly) 'Frau Doktor'.

The socialist doctor, Julius Moses led a campaign against experimental abuses and state support for racial science from mid-1927. He protested in the Reichstag and in newspapers how patients in public hospitals were regarded as 'material' for experiments: children were treated like experimental rats, and doctors conducted experiments that delayed recovery of sick patients. In 1928 Moses published a series of examples from scientific papers relating to abusive research in university clinics on tuberculous and terminally ill children from economically deprived social backgrounds. Medical researchers stood accused of experimenting without the knowledge of parents; it damaged the patients' health and delayed recovery. The President of the Reich Health Office agreed that consent of the patient, or if a child, that of the parents was necessary.<sup>4</sup>

In 1929 Moses protested against state funding for Ludwig Schemann, the translator of a tract on the Aryan race by the racial theorist Count Arthur de Gobineau. Moses further objected to sterilization proposals being developed in Prussia. Between 1927 and 1932 Moses attempted to secure Reichstag legislation limiting experimentation. His agitation, and his advising the Reich Health Council in 1930, had a constructive outcome in terms of a Reich decree setting out guidelines for the conduct of clinical experiments. Moses died in September 1942 in Theresienstadt concentration camp, a victim of the racial policies against which he had been a far-sighted critic.

The occasion for issuing these guidelines was a contaminated batch of BCG vaccine against TB causing seventy-two child deaths in Lübeck in spring 1930. Although the Lübeck catastrophe was not the result of an experiment, the 'Final Circular of the Reich Minister of the Interior concerning Guidelines for New Therapy and Human Experimentation' was issued on 28 February 1931. This recognized the necessity for clinical trials but within limits:

- (a) experimentation shall be prohibited in all cases where consent has not been given;
- (b) experimentation involving human subjects shall be avoided if it can be replaced by animal studies. Experimentation involving human subjects may be carried out only after all data that can be collected by means of those biological methods (laboratory testing and animal studies) that are available to medical science for purposes of clarification and confirmation of the validity of the experiment have been obtained. Under these circumstances, motiveless and unplanned experimentation involving human subjects shall obviously be prohibited;
- (c) experimentation involving children or young persons under 18 years of age shall be prohibited if it in any way endangers the child or young person;

- (d) experimentation involving dying subjects is incompatible with the principles of medical ethics and shall therefore be prohibited.

As long as democratic rights and humane ethics could be upheld, there was protection against aggressively invasive experiments. The decree had neither legislative status, nor the force of criminal or civil law. Its clauses on consent and responsible experimentation stood as guidelines on best practice. But the regulations were not repealed under Nazism, and they were cited in medical publications under National Socialism.<sup>5</sup>

Robert Koch Institute (RKI) researchers followed the researcher guidelines: one example of the decree being observed in 1937 was for injecting reconvalescent serum. The Reich Health Office President, Hans Reiter, refused to allow the virologist Heinrich Gins to experiment on healthy children, and required self-experiments by the researchers.<sup>6</sup> That Reiter was a Nazi activist and Gins an SA recruit did not result in a more permissive stance. When a young doctor at the gynaecological clinic in Halle wanted to undertake experiments to prove that eclampsia was an allergic reaction by injecting eclampsia serum and studying the skin reactions, the RKI President approved – providing the 1931 regulatory procedures were followed.<sup>7</sup> These instances were from the early years of National Socialism. Once psychiatric patients and racial inferiors lost the protective status of being ‘human subjects’, life and limb were at risk.

## Man and beast

Experimental animal research looked uncertain with the Nazi advent to power in late January 1933. The Nazi leadership, notably Goering and Hitler, imposed animal protection laws to eradicate kosher butchering, banned in April 1933. A law preventing vivisection experiments on live animals was passed for Prussia on 16 August 1933. But the total ban lasted only three weeks. A decree of 5 September 1933 allowed the Reich Interior Ministry to distribute permits to universities and research institutes for animal experiments. Here the idea was that an individual life, in this case of an animal, could be sacrificed for the benefit of the organic community.<sup>8</sup> The Nazi decrees on animal protection were only sporadically adhered to, as has been found at the RKI.<sup>9</sup> The regulations were in line with the Nazi ethic of ‘Verwertung’ and the exploitation of forced labour in that subhumans were eventually substituted for animals.<sup>10</sup> The laws aimed against Jewish scientists eventually turned Jews and other racial undesirables into research subjects for vivisection.<sup>11</sup> The coerced experiments can finally be seen as in line with the Nazi restrictions on animal experiments by substituting subhumans.

Many scientists continued to advocate self-experimentation. In 1929 a newly qualified physician, Werner Forsmann, achieved the first self-catheratization by inserting a catheter through his veins into his heart, a

dangerous and uncertain procedure. The diversity of research ethics continued under Nazism. Limited self-experimentation was conducted in the air force and military, at times accompanied by overt antagonism to the coerced research of the SS.<sup>12</sup> Wolfgang Wirth, a toxicologist responsible for military experiments for chemical warfare, and Erich Hippke, responsible for aviation medical research, advocated self-experimentation, and this was extensively practised in military toxicology for gas and chemicals; students at the Military Medical Academy received a small premium for volunteering as test subjects.<sup>13</sup> The different ethics meant a clash between the SS and institutions like the Military Medical Academy.<sup>14</sup> Student guinea pigs were obtained in other locations, but with the onset of war and the military call-up, they were in short supply. The ever-growing numbers of those imprisoned by the new regime provided opportunities for experiments, measurements, and indeed as cadavers. A state of vulnerability to a science without humane constraints arose. Still, there were experiments on student SS companies as late as autumn 1944. This can be seen with dermatological experiments by the toxicologist Hans Beuchelt.<sup>15</sup> Practitioners of fatal experiments might still use safe doses in self-experimentation (as shown in 1944 by Otto Bickenbach's phosgene experiments), and then proceed to deadly doses on prisoners.

Ethics thus became nazified, as justifying a researcher's duty to undertake coercive research. The Nazi onslaught on civil law removed the legal basis for the inviolability of a citizen's body, so undermining protection against vicarious experimentation. The medically unfit were increasingly vulnerable to invasive sterilization, as racial hygiene posited the need to cleanse the German hereditary stream as it flowed from generation to generation. With individual autonomy undermined, there was a vulnerability to becoming an experimental object. It was not that Nazi research on human subjects had no ethics, but instead that ethical formulations were shaped by distinctive Nazi priorities.

## **The new German healing**

Leading Nazis remained attached to nature therapy, homoeopathy and other alternatives to an experimentally based medicine. Deputy Führer Hess was a renowned patron of homoeopathy and spiritualism. Hitler gathered a medical circle favouring performance-boosting tonics and extermination of the unfit. Himmler's medical acolytes included the SS nutritionist Ernst-Günther Schenck and the cardiologist Karl Fahrenkamp: they favoured a blend of homoeopathy, nature therapy and experimental innovations. They rallied to the much vaunted idea of a 'New German Healing'. This was a Nazi medical slogan since 1929, coinciding with Nazi efforts to recruit doctors. The National Socialist League of Physicians was launched at the Nuremberg Party Rally that year.<sup>16</sup> Party political activists attacked

experimentalism as ‘Jewish’ and materialistic, and condemned Jews as the representatives of an un-Germanic scientific medicine.

But the movement for the ‘New German Healing’ was faction-ridden. The Reich Physicians Führer Gerhard Wagner and the rabidly anti-Semitic Gauleiter Julius Streicher in Nuremberg founded a Reich Working Group for German Healing in 1935. Wagner then disillusioned with his creation dissolved it two years later.<sup>17</sup> German healing was to look to experiments for legitimation. Nazism favoured a new type of action-oriented medicine. Geared to the health of the ‘Volkskörper’, or body politic, it meant the race had priority over individual and reproductive rights.

The new generation of Nazi doctors set about developing specifically Nazi medical services, such as the medical service of the SS. Medical teaching expanded race and heredity along with a Nazified medical ethics in the curriculum. This was accompanied by the heroization of the German doctor as an iconoclast in the vein of the sixteenth-century figure of Paracelsus, depicted as visionary pioneer of homoeopathy, nature therapy and populist healing. At the Nazi training school of Alt Rehse, doctors underwent a tough regime of indoctrination and exercise. ‘Biological’ therapies were developed at the Central Hospital for the Reich, a pet scheme of Hess at Dresden. Some Nazi doctors, such as the Reich SS Physician, Ernst-Robert Grawitz, were more conventional in their wish to harness experimental medicine to racial ends. He considered new scientific discoveries offered prospects of enhanced health for the Volk and for boosting military efficiency.

## Nazifying medical research

At the Nuremberg Trials the accused medical officials stated that the central direction of science under Nazism was a myth dating from after the Second World War.<sup>18</sup> This denial stands against the rapid ‘co-ordination’ – *Gleichschaltung* – of medical organizations in the immediate Nazi takeover. The medical profession wished to consolidate its authority and – once Jews were expelled – its cohesion. Enthusiastic self-mobilization was the key characteristic: knowledge-hungry researchers drove forward the coerced experiments rather than the SS and Nazi leadership wholly imposing a racialized research agenda. Profound suspicion persisted between a medical elite that was protective of its corporate professional identity and its powers over appointments and research agendas, and the Nazified state, NSDAP, and SS. There was neither central direction of science, nor ideological standardization. Despite claims that National Socialism was applied biology, in fact the diversity of opinions on biology (holistic – either more mystic or stressing the idea of organic integration, environmentalist, genetic, biometric and psychological, as well as more mystic ideas drawing on history and myth) meant incessant conflict. Rather than scientific consensus on race as the basis of the Nazi state, the topic was conflict-ridden. Scientists engaged



in cut-throat competition for funding, positions and honours, constant intrigues and bitter rivalries.

In attempting a rapid reconfiguration of German science and medicine, Nazi leaders often expressed disdain for academics. But nazification was circumscribed by the recognition that the agenda of racial reconstruction and war needed a functioning medical science to deliver effective medicines and to impose racial policies of segregation, sterilization and ultimately extermination. Under the Four Year Plan, proclaimed at the Nuremberg Rally of 1936, the central institution, the Emergency Fund for German Science, was reconfigured into more modern agencies. The Emergency Fund became the German Research Fund (DFG) on 30 October 1937. Additional resources came from the Reich Research Council (RFR) instituted in March 1937 to direct research funds to the priorities of the Four Year Plan. 'Normal science' under National Socialism now included racial research and coerced experiments.<sup>19</sup> Funding shifted to autarky for industry and agriculture, *Ostforschung* (the term for research on conditions in lands to the east), war and armaments related research, colonization and racial research. Even when research appeared to be value-neutral – as for cancer and virology – results were meant to be utilized for germ warfare. One outcome of the new combative science was the genocidal 'General Plan for the East', drawn up under the botanist Konrad Meyer. Indeed, many subject specific studies contributed to – and benefited from – racial and military agendas.

The DFG approved and financed coercive medical research and human experiments. These were refereed by established academics, and – as noted in a 1945 pamphlet by a Dachau survivor – approved by the head of the medical section, the eminent Berlin surgeon Ferdinand Sauerbruch.<sup>20</sup> Racial anthropology was readily funded. The DFG appeared blind as to whether research was in a clinic or a concentration camp, and as to the extent that coercion was involved. The result was that the sick, disabled, gypsies and Jews were victims of DFG-funded experimental research. Similarly, the Kaiser Wilhelm Society (KWS) readily exploited human material in such fields as psychiatry, anthropology, and in medical research.

In 1929 Himmler recruited the eugenicist Fritz Lenz to devise a system for the SS recruits' health based on racial selection. SS membership went with medical screening, a commitment to a healthy lifestyle, no smoking, exercise, and a balanced diet, and genetic screening prior to marriage. The Munich psychiatrist Ernst Rüdin and Lenz hoped Nazism would usher in a biologically based dictatorship with scientists dictating policies. Instead, the Nazi Party and SS expected compliant scientists to provide usable results for the regime. The stage was set for conflict.

Some scientists tried to develop a specifically Nazi or 'German biology' or 'German physics'. There was an innovative use of concepts like that of a holistic entity or *Gestalt*, and that of the environment or *Umwelt*. The regime expected genetics, virology and hormone studies to further racial policies, if not in terms of ideology than in producing new medicines and

eradicating epidemics. Increased funding, and a Nazi political order that had competing agencies, meant a fractured but growing scientific and intellectual community, with many points of rivalry and tension. This situation meant an expanding scientific establishment and attacks on 'Jewish science'.

Medical research gained a wider significance in the rapidly Nazified state, as the twin ideas of the Volk and race became the basis of Nazi policies. Medical figures forged a career on the basis of Nazi activism, as the psychiatrist and (from 1936) SS officer, Maximinus de Crinis who achieved both the chair of psychiatry in Berlin and a role as ministerial adviser. State and party figures took posts managing science on the KWS boards, and in a proliferation of research agencies and organizations.

The SS thrust itself into a powerful administrative role: the Reich Security Office under Heydrich was to secure a cohesive *Volkgemeinschaft* by eradicating what were construed as racial enemies and biological vermin. The subordinate Race and Settlement Office (RuSHA) took a key role, drawing on medical and genetic expertise.<sup>21</sup> Scientists contributed enthusiastically to racial planning, propaganda, policy and practices. Medical researchers adjudicated on racial identity, and served on sterilization courts; they screened populations returning to the Reich, and then under German occupation for infectious diseases and for their racial qualities. It meant that studies of bodies and bones, and skulls and skin all contributed to the science of race. A new generation of SS scientists as Mengele, Helmut Poppendieck (trained in genetics at the Kaiser Wilhelm Institute (KWI) for Anthropology), and Joachim Mrugowsky (trained in bacteriology and public health) emerged. Yet, there was no centrally devised masterplan as regards racial research, which remained subject to competition and opportunism.

The scientists marched not in step to any central authority, but each to their own tune determined by professional rivalries and scientific agendas. Race theory was never a monolithic entity, despite propaganda of race purity, and draconian legislation. Racial policy required elaborate structures to screen for Jewish ancestry, and other types – gypsies, criminals, and homosexuals – deemed unfit and pathological. Racial science was rather a maze of agencies, some of a high academic calibre deploying scientific anthropology based on genetics and the biochemistry of blood proteins, and some viciously anti-Semitic, and based on crude racial stereotypes. Race was variously defined on the basis of genealogy, physical measurement, facial expression, blood group type, psychology and behaviour, geographical origins, and various combinations of these traits. Race was a composite of diverse sciences, propaganda, legislation, administrative practices, and populist mobilization imbued by a racial consciousness.

Human genetics research was deemed crucial for the Nazi racial endeavour. Scientists researching human heredity saw Nazism as an immense opportunity for applied research on heredity and reproduction. The psychiatrist and geneticist Ernst Rüdin at the KWI for Psychiatry pressed for

the imposition of a law for compulsory sterilization. This was rapidly achieved in July 1933. Rüdin advocated systematic screening of populations over generations for psychiatric and physical diseases and defects. The KWI for Anthropology obtained increased research grants, as it serviced the needs of the new regime. There were training courses in genetics for SS officers from 1934 onwards, the issuing of racial certificates, and energetic participation in defining racial categories.<sup>22</sup> Some SS men became assistants in the KWI for Anthropology, as Herbert Lohmann and Siegfried Liebau (a well-connected cousin of Reichsarzt SS Grawitz), providing a linkage between this academic institute and the SS. Heinz Kehl, Horst Geyer, and Poppendieck all completed training on the KWI course before participating in the operationalizing of racial policies, and in Poppendieck's case supporting human experiments.<sup>23</sup> Three assistants of Otmar von Verschuer served in Auschwitz, Erwin von Helmersen, Siegfried Liebau and Mengele. The foundations of racial research and coercive experiments were rapidly put in place.

## CHAPTER THREE

# On the slippery slope: From eugenics to experiments

### **Sterilization as a research opportunity**

The Law to Prevent Hereditary Sick Progeny was passed rapidly in July 1933 after the Nazis came to power on 30 January 1933. Based on a draft law of 1930, racial hygienists strengthened the compulsory element. The law imposed sterilization on categories of the sick and disabled, deemed hereditary. Schizophrenics, the feeble minded, Huntington's chorea sufferers, those considered to be hereditarily blind and deaf, so-called 'mental defectives', and chronic alcoholics became subject to sterilization. Tribunals of two doctors and a lawyer decreed sterilization irrespective of the patient's wishes.<sup>1</sup>

Although not racial in terms of the categories for sterilization, the question arises of how compulsory sterilization was specifically Nazi, and how it was – to use a concept coined by the Allied war crimes investigator, Leo Alexander in 1949 – a 'slippery slope' towards racial research and lethal experiments?<sup>2</sup> The law marked a radical reorganization of public health: the newly instituted offices for race and heredity broke down the democratic structures of municipal health provision.<sup>3</sup> In practice, the law was open to radicalization beyond its strict letter – this can be seen with the singling out of racial groups for sterilization. A case in point was that of the 'mixed race' adolescents.

Sterilization was implemented rapidly from January 1934: overall, an estimated 360,000 Germans were sterilized. From 1940 the start of systematized killing of psychiatric patients meant that sterilizations diminished. Annexed Austria showed only approximately 6,000 sterilizations, but active participation in euthanasia.<sup>4</sup> Doctors conceived the law; they were involved in referrals and decisions as to who should be sterilized; and implemented the procedures. The dream of cleansing the

German race from hereditary pathogens involved a shift from the physician responsible for the individual sick person to assuming power over the racial body of the German people for the sake of 'future generations'.

Nazi marriage laws meant the physician became a gatekeeper with rights over procreation: pre-marital health certificates ensured pedigrees free from genetic illness. Concepts of a genetic burden were extended to include forms of 'antisocial behaviour' such as criminality and addictions. Medicine thus offered Nazism a powerful technique of control; in return German doctors demanded powers to screen, segregate, and surgically operate. A patient, Wilhelm Werner, drew a series of cartoons on his plight at the Werneck hospital: he was being transported on a scientized juggernaut ('Der Triumphzug der Sterelation'), and was the object of invasive tests and treatments. Werner was eventually a euthanasia victim.<sup>5</sup>

Hereditary experts called for more research resources for the categories targeted by the sterilization law. The KWI for Psychiatry in Munich and the KWI for Anthropology in Berlin saw opportunities for research. Arthur Gütt, the public health officer in charge saw a direct link between science and racial policy. He wanted all records centrally archived and placed at the disposal of researchers. Coercive public health thus underpinned racial research. Gütt authorized the anthropologist Eugen Fischer (appointed chief judge at the Berlin sterilization court), the human geneticist von Verschuer and Rüdin (himself a judge and expert witness for sterilization cases) to have access to the records of sterilization courts for research purposes. Gütt requested that the Emergency Fund for German Science should make five scholarships available. The Reich Health Office was to collate all records of the hereditary health courts, and a special set of records was to be made available for research.<sup>6</sup> Fischer developed research into hereditary blindness and deafness, as experts drew a distinction between cases which were acquired and hereditary defects. Rüdin was to focus on psychiatric research, and Verschuer on internal medicine, paediatrics, surgery and orthopaedics. A special card index was to standardize details of sterilization cases.<sup>7</sup>

In the event, sterilization was imposed unevenly, and research on clinical conditions was sporadic. The Munich psychiatric hospital of Eglfing-Haar compiled elaborate genealogical tables of patients. The hospital was also a noted centre of racial propaganda. Rüdin at the German Research Institute for Psychiatry developed research into schizophrenia and idiocy. The next stage on was that of invasive experiments: Rüdin and his assistant Käthe Hell conducted research at the Winnenthal institution, involving lumbar punctures in 1937.<sup>8</sup>

Nazi legislation boosted the compiling of comprehensive genealogical tables known as 'Sippentafeln' linking crime, suicide, and mental and physical defects. Initially, there was no inclination to experiment. Later in the 1930s clinical studies showed a new interest in invasive research to establish what defects could be attributed to a genetic propensity for

deafness or to postnatal trauma. A paper in the *Erbarzt*, a supplement originally issued with the medical review, *Deutsches Ärzteblatt*, showed an interest in research in damaging hearing to determine what could then be deemed an acquired condition.<sup>9</sup>

At the KWI for Anthropology, Verschuier set up clinics where he could conduct hereditary research. The clinic for study of tuberculosis and heredity was located at the Waldhaus Charlottenburg. Another clinic for care of the new born and infants was established at the Kaiserin Auguste Viktoria Haus for infant welfare, and supported by the Reich Health Office and DFG.<sup>10</sup> Verschuier hoped that the clinic could refer twins to him.<sup>11</sup>

Cases presenting at the infant welfare clinic were referred for sterilization. One of the doctors there, Alfred Dubitscher conducted research on antisocial families and their genealogies. (Later, he claimed to have deliberately faked four racial evaluations to protect the children from deportation.)<sup>12</sup> In 1936 Verschuier moved to Frankfurt am Main, where he turned a former department of social medicine into one for racial hygiene and hereditary research. He continued to use clinical cases for research. Here, Josef Mengele conducted research for a medical doctorate on cleft palate.<sup>13</sup>

Verschuier's assistant, Hans Grebe completed a dissertation on hereditary blindness, having joined the NSDAP and SA in 1933.<sup>14</sup> He turned to research on the hereditary tendency to dwarfism (a condition termed Chondrodysplasia) in 1938 with a circular to German health offices. He examined dwarves clinically and with X-rays. He met with resistance but used the powers of the Sterilization Law to enforce attendance at his clinic.<sup>15</sup>

## Reproductive experiments

The methods of sterilization were subject to innovation. In 1936 X-ray sterilization was sanctioned – particularly for older females for whom the sterilization operation was found to be dangerous. Gabriele Czarnowski has studied how surgeons carried out research in the context of routine sterilizations. Felix Mikulicz-Radecki, professor of surgery at Königsberg in East Prussia, exemplifies how the opportunity of intervening in the reproductive organs of healthy women provided a research opportunity. In order to study the transit of the fertilized egg, he intervened with hormones, curatage and salpingographies, and studied the effects with additional X-rays. Mikulicz-Radecki, an NSDAP and SA member, found that carrying out sterilizations on healthy women under the new law was a great research opportunity. In 1936, he was interested in the descent of the egg prior to fertilization. He presented a series of 26 out of 199 women sterilized until 1 July 1935. The menstrual cycle of each woman was minutely studied. Two of the women of the 'experimental series' had high doses of hormones injected a couple of days before to accelerate ovulation, using techniques of Carl Clauberg.

These are among the earliest experiments, taking advantage of the coercive reproductive measures. The aim was to increase fertility by utilizing the discoveries regarding the menstrual cycle.<sup>16</sup> The women were in the clinic under compulsion, judged to be defective and subjected to sterilization against their will. They had to be forced to submit to the experimental investigations with a variety of sedatives such as Evipan, morphine and rectally administered Rectidon.

Doctors were fascinated by making the foetus and female reproductive organs visible. 'Fetography' was a term introduced in 1935 for depictions of unborn child by Joachim Erbslöh, a newly qualified doctor in Schneidemühl in West Prussia. In 1940 he became Germany's youngest clinic director, in Bromberg (Bydgoszcz), while building up a research profile with the Medical Academy Danzig.<sup>17</sup> In Erbslöh's case, no evidence has come to light that his practices were at all unethical, in contrast to the obstetric practices of Karl Ehrhardt and Clauberg. In the case of the gynaecologist Ehrhardt, he localized the placenta after injecting large doses of the radioactive element Thorium. He removed amniotic fluid, injected the X-ray contrast medium, and extracted the foetus from the womb. While working in Frankfurt prior to 1939, Ehrhardt experimented on six women. He killed aborted fetuses with a poisonous contrast fluid, so as to carry out X-ray evaluations of the foetus. Ehrhardt used Clauberg's hormonal method for treating infertility. Ehrhardt carried out forced abortions on eastern European workers, using the fetuses for research.<sup>18</sup>

There was a widespread 'eugenicization' of reproductive medicine. This went with observations on sterilization methods but also on sterility, its causes and experimental attempts at possible 'cures'.<sup>19</sup> At the Königsberg clinic of Mikulicz-Radecki, Heinrich Kolbow experimented on fifty forcibly sterilized 'hereditarily sick' and menopausal women in order to clarify the mechanisms of female reproductive 'pipework', and the functioning of the vagina. Kolbow took X-rays using an injected contrast substance to render body parts visible.<sup>20</sup> Distinguished gynaecologists elsewhere, such as the veteran eugenicist August Mayer at Tübingen, studied the formation of follicles and ovaries on women subjected to sterilization.<sup>21</sup>

## **Hormones and reproductive research**

From 1933 as assistant to Mikulicz-Radecki at the Gynaecological Clinic at Königsberg in East Prussia, Clauberg tested sex steroids, oestrogens and his patent synthetically produced progesterone. The aims were greater accuracy in their production and for assessing their effects in inducing sterility. He showed how the hormonal products worked for humans, by means of X-ray images of uterine tissue. He demonstrated how animals could be made fertile or infertile, and that the processes were reversible. Clauberg held a key place in a research community sustained by Schering with the supply of products for testing.<sup>22</sup>

The mercurial biochemist Adolf Butenandt was a catalyst, in facilitating contacts rather than himself undertaking human experiments in reproductive physiology. Butenandt undertook research on the role of glands in human reproduction and sterility. He achieved international renown for synthesizing the follicle hormone, and the pharmaceutical manufacturers Schering-Kahlbaum AG supported his endeavours. Butenandt was professor of biochemistry at the Technical University Danzig and from 1936 at the KWI for Biochemistry in Berlin.<sup>23</sup>

Sex hormone research had considerable potential for Nazi racial policy in controlling fertility. This was an area of joint concern for scientific experts and pharmaceutical production. The hormone and infertility researcher Clauberg met Butenandt at a lecture in 1929 at Kiel. Butenandt was interested in Clauberg's research, as it related to the second ovary hormone. Butenandt facilitated contacts between Clauberg and Professor Walter Schoeller, who ran the main laboratory at Schering-Kahlbaum.<sup>24</sup>

Schering-Kahlbaum paid Clauberg a monthly honorarium of 400 marks (from the outbreak of war 250 marks), while researching for a chemical cocktail to be used to induce temporary sterility.<sup>25</sup> Between 1935 and 1941 Clauberg also held a DFG grant for 'experimental research on sex hormones'. Clauberg joined the Nazi Party on 1 April 1933 as well as the SA (but never the SS). The war gave him a chance to start mass experimentation on women, and to seek support from Himmler for a proposed 'Institute for Research on Reproductive Biology' for treating infertility and sterilizing using non-surgical methods.<sup>26</sup> In the mid-1930s Schering distributed literature on Clauberg's *Progynon* for the hormonal treatment of disorders of the menstrual cycle. His developing of *Proluton* to treat infertility brought further prestige.<sup>27</sup> Schoeller arranged that Clauberg should collaborate with the Schering company laboratories in developing a test for the corpus luteum hormone.<sup>28</sup> In 1940 sex steroids were decreed prescription drugs, giving greater medical control over drug distribution at a time of rising consumption. Butenandt observed how the follicle hormone had a range of practical uses, such as against freezing tissue, something potentially useful for military medicine.

## The 'Rhineland Bastards'

The public health authorities identified 145 mixed-race 'bastard' children in the Rhineland, whom they associated with idiocy and congenital syphilis. Labelling the children as 'Rhineland Bastards' was stigmatizing in the way it used the genetic term for a cross-breed.<sup>29</sup> The nationalist right popularized the term as part of a racist campaign against the children. In July 1933 the KWI anthropologist Wolfgang Abel (an Austrian Nazi) examined thirty-nine children in the district of Wiesbaden. The group included twenty-seven part-Moroccan and six part-'Annamite', Vietnamese children. Abel took



photographs, and measured physique and mental capacity. He found all sorts of degenerate traits, notably tooth decay and recessive gums, and traces of rickets. He condemned their mental and emotional defects, concluding that nearly all were subnormal.<sup>30</sup> Abel's findings were publicized by the Racial Political Office in 1934, and its head Walter Gross pressed the case for sterilization at the expert committee for population and race policy. Abel was, by August 1935, an SS member, and remained dedicated to racial research. When a 12-year-old girl, Marianne K. was summoned to the state health office in Wiesbaden, Abel took meticulous measurements prior to her being sterilized.<sup>31</sup> His report on the children was published in 1937.<sup>32</sup>

From 11 March 1935 Nazi race hygienists and civil servants planned the sterilization of the mixed race children.<sup>33</sup> Walter Gross of the Racial Political Office hoped their mothers could give written permission, as the 1933 sterilization law did not allow for such measures. In all 385 out of an estimated 600 to 800 'mixed race' children were rounded up. A hereditary health commission from the KWI for Anthropology, composed of Abel, Eugen Fischer (renowned as a pioneer in study of the genetics of racial crossings over generations), and the assistant of Verschuer, Heinrich Schade, evaluated the children.<sup>34</sup> The sterilizations established a pattern – first, using administrative machinery to identify a group of racial undesirables; then academic study and evaluation; finally their sterilization. This process happened time and time again with research on a pathologized group preceding some form of destructive intervention.

One of the Rhineland children remembered the terror of the procedures. Hans Hauck was born in Frankfurt am Main on 10 August 1920 as the son of an Algerian soldier and a German mother. He joined the Hitler Youth in 1933. But he was summoned for sterilization. When Gestapo officers collected the children: 'we all were too scared to object. I suspected something would happen, but did not know about sterilisation and castration.' He had to sign that he would not marry or have sexual relations. He was held for fourteen days with a group of mixed race adolescents, who were all very scared, while research was conducted on this group.<sup>35</sup> Later, Hans fulfilled his patriotic ambition by joining the German army.<sup>36</sup>

## **SS research and camp castrations**

Those prisoners deemed 'asocial' and 'criminal' might be castrated or sterilized. This occurred from December 1937 in Buchenwald.<sup>37</sup> The camp doctors Erwin Ding and Werner Kirchert began castrating prisoners. This measure went beyond the sterilization law, but had possible legality according to laws against congenital criminality, or voluntary acceptance of castration by homosexuals. The SS Sanitary Office and the psychiatrist Werner Heyde approved these castrations. At least twenty-five sterilizations

and nine castrations were carried out in Buchenwald between autumn 1938 and summer 1939.<sup>38</sup>

The KWI for Psychiatry had a long-term scheme to collect details on pairs of homosexual twins. The police support indicates a dual interest in genetics and what were deemed racial crimes. By March 1943 the psychiatrists had details of 157 pairs of homosexual twins.<sup>39</sup> Theo Lang, an early Nazi activist in the SA and Nazi Doctors League, researched the genetics of imbecility and homosexuality.<sup>40</sup> But, remarkably, in 1941 he decamped to Switzerland. Lang and Fritz Lenz were supporters of early Nazi endeavours to develop genetically based racial measures, but they drew back from genocidal research. By way of contrast, Rüdin and Verschuer went headlong towards the scientific exploitation of mass killing.

Rüdin courted the SS for research resources. His assistant Käthe Hell – financed by the SS – researched on institutionalized feeble-minded twins. She conducted research on prostitutes, the work shy and asocials at the Bischofsried workhouse on the Ammersee.<sup>41</sup> She studied ‘abnormal youths’, aged 6–14, from the Indersdorf home near Dachau.

The anthropologists Abel and Fischer drove forwards sterilization as a racial measure. The anthropologists provided scientific rationales for the sterilization of the mixed race children, and also assisted with tracking them down and identifying them. The ideological mobilization on the part of the scientists, and the racial ambitions of Nazi politicians and administrators were mutually reinforcing. Racial researchers advanced Nazi public health policies by developing categories for implementation. Many anthropologists provided racial evaluations. In some cases, characteristics deemed consistent with an Aryan parent (the child being the result of an illicit liaison) meant a regrading into that of a half-breed or *Mischling* of the first grade.<sup>42</sup> Anthropologists and researchers in psychiatric genetics saw a massive research opportunity in the genetics of defects by identifying racial threats to the German racial community.



## CHAPTER FOUR

# Nazi psychiatry – ‘euthanasia’ research

### Of apes and men

Georg Schaltenbrand, associate professor of neurology at the University of Würzburg, exploited patients as experimental research objects. He was well recognized internationally having held a Rockefeller Foundation medical sciences fellowship in 1924 and 1932; he worked with the Harvard neurologist Stanley Cobb and neuro-surgeon Harvey Cushing in 1928, and for two years at the Rockefeller-funded Peking Union Medical College. He analysed cerebrospinal fluid and blood lipoids. He began the multiple sclerosis experiments at Schloss Werneck clinic. The Rockefeller Foundation was kept informed about Schaltenbrand's plans for a monkey farm for experimental studies of multiple sclerosis.<sup>1</sup>

As with another budding experimentalist, Eugen Haagen, who researched at the Rockefeller Foundation yellow fever laboratories in New York until 1934, there was a Nazi side to Schaltenbrand. He was an SA stormtrooper from 1934, and he joined the Nazi Party in May 1937.<sup>2</sup> Nazi activism was pursued in terms of clinical research. Schaltenbrand viewed multiple sclerosis as damaging fertility, and its concealment as damaging marriages. He considered multiple sclerosis should be grounds for forced abortion and sterilization.<sup>3</sup> Schaltenbrand set out to prove the infectious nature of multiple sclerosis, as transmitted by a virus, spirochete or bacteria. He thought most people might be infected, but that a special trigger gave expression to the disease as a recognizable clinical entity. He first injected spinal fluid from patients, whom he considered clinically in the early stages of the disease, into apes and monkeys.

Schaltenbrand began the research in 1935 and continued until 1942. By this time the University of Würzburg was a centre of Nazi psychiatry with Werner Heyde's rise to the chair of psychiatry in 1939. Heyde directed the

secret 'T4' euthanasia administration. Schaltenbrand's research is revealing of a radicalization from clinical and genealogical research, consistent with the sterilization researches of the 1930s, to full-scale experiments on patients by late 1939. On 2 February 1940 he began injections with ape liquor and these continued until 16 August 1940. These experiments represented a new phase of deliberate infection of psychiatric patients: he treated patients as expendable and on the level of experimental animals.

The apes became sick but Schaltenbrand could not decide whether they contracted multiple sclerosis or a disease specific to apes. He decided to inject the cerebral spinal fluid from the apes into fourteen 'idiotic' individuals. In all, Schaltenbrand injected thirty-four persons with 'ape fluid'. He was convinced that experimenting on the idiotic or 'Verblödeten' was in order: some were schizophrenics, some catatonic, one was an 'idiot child', and another was a sexual criminal who had been castrated in 1940.<sup>4</sup> For comparison he carried out human to human injections of what he called 'multiple sclerosis fluid' into patients in a catatonic state, twice claiming a positive result in causing the disease. He injected filtered and inactive multiple sclerosis spinal fluid to no effect, in all injecting twelve epileptics with inactive fluid.<sup>5</sup> One research subject opportunely died from pneumonia, and within twenty minutes, Schaltenbrand prepared sections of spinal tissue. Another patient who died from an infected ulcer could conveniently be dissected.

In October 1940, the research was 'interrupted' by the 'transfer' of patients.<sup>6</sup> In fact, 'the interruption' was due to his patients and research subjects being among the 800 patients cleared from Werneck, many to institutions involved in the euthanasia killings. Certainly at least eight research subjects were sent to killing centres and the surviving T4 victim records document these. Nursing personnel later testified how some of the transferred were given fatal injections.<sup>7</sup> The rapid dissolution of the hospital was to make way for groups of 'repatriated' Baltic Germans and Dobrudscha Germans from Romania. The Werneck hospital was now Lager VIIIa of the 'Heim ins Reich' scheme to secure German minorities under the Nazi Welfare Organisation (NSV).

The DFG funded Schaltenbrand's hazardous and invasive research. To validate the experiments, Schaltenbrand hoped to carry out further experiments on a far larger number of apes (something quite unrealistic in the war) and humans (who became plentifully available in camps and clinics).<sup>8</sup> Schaltenbrand assembled the 'Case histories' in the monograph on multiple sclerosis published in 1943.

Multiple sclerosis as a degenerative disease achieved a high profile during the war to justify the euthanasia killings. The scenario of the euthanasia propaganda film 'I accuse' was of how the gifted pianist wife of a professor having progressive multiple sclerosis. The romanticized mercy killing was followed by the professor being acquitted in court: Schaltenbrand felt similarly justified in the dangerous and painful research.

## Harvesting brains

After the onslaught on Poland began on 1 September 1939, Hitler empowered the head of his Chancellery Karl Bouhler and his surgeon-in-attendance, Karl Brandt, to execute the ‘euthanasia’ of incurable psychiatric patients. The order was symbolically backdated to 1 September. Arrangements for killing infants were already underway from August 1939. The mistaken identification of the disabled infant whose death was – according to Brandt – condoned by Hitler has provided an instructive episode on the need for historical accuracy. The historian Udo Benzenhöfer has explained how a distorted view of the origins and early operation of ‘euthanasia’ results from the erroneous identification.<sup>9</sup>

Hitler put procedures in place for adult killings around early October. Adults were to be sent to designated killing centres, equipped with carbon monoxide gas chambers. The organization in charge was called euphemistically, the ‘Charitable Foundation for Curative and Institutional Care’. It was soon to be situated at Tiergartenstrasse, number 4 in Berlin, so it later became known by the cryptic designation ‘T4’. Patient files were sent to the T4 office, where Heyde’s medical team decided whether to kill.

Psychiatric patients, demeaned as ‘life unworthy of life’, became vulnerable to research on infectious diseases and on degenerative conditions. The launching of ‘euthanasia’ brought new opportunities for research on patients before they were killed, and then on their brains and neural tissue.

The brain researchers established pathological laboratories in hospitals, providing them with specimens. The idea was to prove links between brain abnormalities and the clinical forms of illness.<sup>10</sup> The Wittenau psychiatric hospital in Berlin funnelled brains to the research laboratories. On 23 December 1937 Leonardo Conti as the Medical Officer for Berlin signed an agreement with the KWG for the supply of brains. Clinicians from the designated killing installations like the psychiatrist Hans Heinze were invited to the KWI for Brain Research, building up networks of contacts and supply of specimens.<sup>11</sup>

The neuropathologists Julius Hallervorden and to a lesser extent Hugo Spatz acquired brains of war casualties, and from euthanasia victims. Hallervorden relentlessly pursued research objectives amidst mounting death and destruction. At times, he actively decided who was to be killed by visiting institutions and inspecting clinical records. In 1939 Hallervorden joined the Nazi Party, while developing his career at the Kaiser Wilhelm Institute for Brain Research, at Buch near Berlin and as Prosector (the term for a full-time pathologist conducting dissections) at the large psychiatric hospital of Brandenburg-Görden.

The transfers of brain specimens provides insight into how the killing centres were linked to research and teaching institutions. Hallervorden gathered brains from military, psychiatric and Holocaust-related sources.

In his military capacity he dealt with war wounds.<sup>12</sup> The result was a *Sonderstelle* for research on war wounds of the central nervous system, based in the Military Medical Academy Berlin. In this case, there was a mixture between legitimate research and research on body parts of victims of persecution. Not only brains of head wound casualties arrived here, but also the brains of persons who had multiple sclerosis. Furthermore, 185 brains came from typhus patients from the Jewish hospital in the Warsaw Ghetto, and 17 brains of Jews from the Lublin region.<sup>13</sup>

The Reich Committee (often referred to as 'Reichsausschuss') for the Scientific Registering of Serious Hereditary and Congenital Diseases allocated children to approximately thirty-eight 'special children's units'.<sup>14</sup> Some units had deceptively reassuring names such as 'Wiesengrund' (meadow ground) in Berlin, and 'Spiegelgrund' (mirror ground) in Vienna. The names served to camouflage the deadly treatment, and to detach victims from the main hospitals where they were located. The major centres of deadly research were those in Berlin and Vienna; others as at Leipzig or at Loben in Silesia researched to a lesser extent, or killed but did not research.<sup>15</sup>

About half these child killing units experimented on the children. The units were unaffected by the ostensible 'euthanasia stop' in August 1941, and ran until 1945. The children referred to these units had in red 'RA' (denoting the 'Reichsausschuss') on their medical file. While the prime purpose was to kill, about half the units experimented on the children, and sent the bodies and brains on to Hallervorden, Carl Schneider the professor of psychiatry at Heidelberg or the KWI for Psychiatry for research. At Brandenburg-Görden, researchers from 1942 studied long-term biological processes. At Leipzig under Werner Catel research was conducted on 'idiot children'

The T4 killings ostensibly stopped on 24 August 1941. Instead, decentralized killings continued – so that over 100,000 victims were killed in addition to T4's documented 70,273 victims. Then in 1942, the T4 organization established two research centres at the psychiatric hospital of Wiesloch in association with the Heidelberg University Department of Psychiatry, and the other under Heinze at Brandenburg-Görden. Researchers at both institutions made clinical observations before killing and brain dissection. Heinze also tested a scarlet fever vaccine.<sup>16</sup> These initiatives show that the central administration of euthanasia remained in place throughout the course of the war.

Children – selected for 'special treatment' – were starved to death, subjected to fatal injections, and experimented on. The first 'special care unit' was at the Brandenburg clinic of Görden, and about twenty others opened where several thousand children were killed. Both the centralized T4 organization, and the decentralized child killing clinics were resources for experimentation and research on the murdered children's body parts.

On 29 April 1940 Hallervorden heard about the 'euthanasia' killings. He avidly harvested brains both from the large T4 killing centres and the

smaller, more decentralized children's killing units. Hallervorden may already have known about the killings through contacts with Heinze, who ran the Brandenburg psychiatric hospital.<sup>17</sup> Between August and October 1940 about 100 children from Brandenburg-Görden psychiatric hospital were killed in a gas chamber improvised at the Brandenburg prison.<sup>18</sup> Forty brains of a group of fifty-six children and adolescents went to Hallervorden and Heinze, and Walter Vollhand published results of the dissection of brains of virally infected Jews.<sup>19</sup>

Children's 'special units' held children designated for death, and thousands were exploited for research. At the Psychiatric Clinic, Heidelberg the research was supervised by Julius Deussen, who worked jointly with Ernst Rüdin of the KWI for Psychiatry, and Hans Joachim Rauch. Children were sent to be killed with Luminal at Eichberg Hospital, faking a respiratory cause of death. The mother of Beate Schropp (Beate was experimented on in December 1944) removed her daughter without telling Deussen as doctor in charge, thereby saving her life.<sup>20</sup>

Hallervorden ran a central pathology laboratory for dissection for all Brandenburg. Of fifty-nine children transported from Görden to the Brandenburg Prison gas chamber on 28 October 1940, the brains of twenty-five went to Hallervorden.<sup>21</sup> When the Brandenburg gas chamber was closed at the end of 1940 as too conspicuously situated in the town, brains came to Hallervorden from Bernburg Psychiatric Hospital, where a new T4 gas chamber opened. At Bernburg patients were photographed; the selected persons had a cross marked in their backs so that their brains could be extracted for Hallervorden's growing collection.<sup>22</sup>

The 'Prosecutor' – a pathologist conducting autopsies – took a key role in selecting which of the patients who were killed should be retained for research rather than cremated. In October 1940 Hallervorden got to know a young doctor, Heinrich Bunke, who assumed the fake name 'Dr Rieper'. Hallervorden persuaded Bunke that the brains of the killed psychiatric victims should not be lost to science. As Prosecutor at Brandenburg, Bunke took another fake name, that of 'Dr Keller'. He extracted the brains, and these were sent to the KWI for Brain Research or to the University of Heidelberg. Newly armed with his Dr. med. qualification, Bunke's reward was the prestigious invitation of a four-week training course with Hallervorden in May to June 1941 at the KWI for Brain Research. He learned the criteria that Hallervorden required for brains. A pathologist's room was equipped for him next to the Bernburg gas chamber, where he could extract the brains. He marked the back of his preselected research victims with a red cross.<sup>23</sup> Bunke went for further training at Heidelberg with Schneider in 1942.

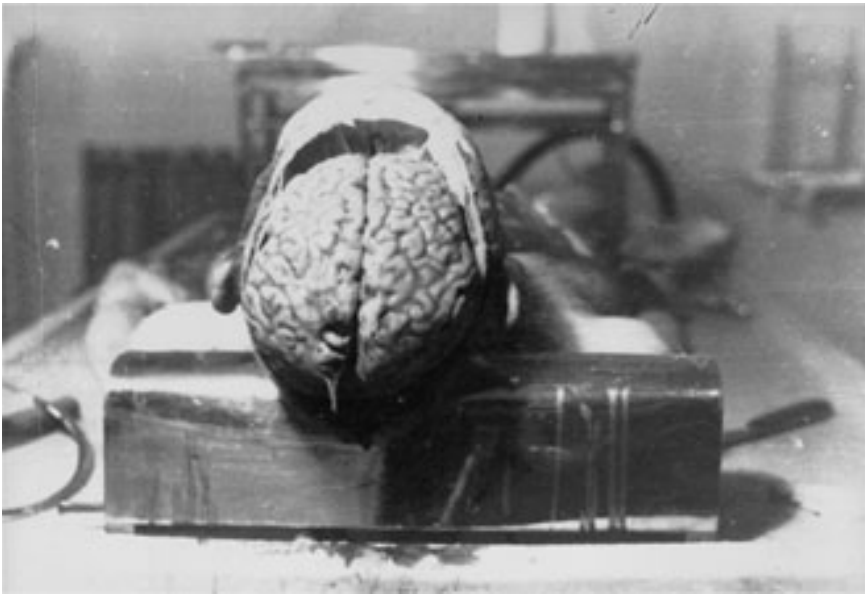
Germany was criss-crossed with transports of brains to research institutes. Brains of the low pressure victims went from Dachau to KWI for Brain Research. An external department for brain research came under the director of the KWI for Brain Research, Hugo Spatz. Its purpose was mainly to



analyse brains of German air force casualties. Here, the brains of the Dachau low pressure experiment victims were dissected. Rascher reported to Himmler on 11 May 1942 that the KWI for Brain Research was involved in the dissections.<sup>24</sup>

In a frenetic effort to secure fresh specimens, Rascher dissected a brain of a research subject deliberately suffocated at 32,000 feet (10 km), conducting the autopsy in the pressure chamber. He wanted to show the air emboli, and how the heart continued to beat for up to four hours after removal of the brain. In this case, the brain went to the Experimental Station for Aviation at Berlin-Adlershof.<sup>25</sup>

The brain pathologist Franz Büchner in Freiburg had a research assignment to investigate brains of airmen who died from oxygen deprivation. He worked in association with Willibald Scholz of the KWI for Psychiatry.<sup>26</sup> The experimental victims represented a dark side of ongoing research on the rehabilitation of German airmen for head wounds, encephalitis and aphasia. While Büchner made his critical views known on the euthanasia killings, the other brain researchers Hallervorden, and his head of department Spatz, were complicit. Scholz and the KWI for Psychiatry also received euthanasia brains.<sup>27</sup> Overall this KWI received something like 400 brains between 1940 and the end of the war. Eleven were brains of the executed, most from the Munich prison of Stadelheim. Willibald Scholz's Brain Pathological



**FIGURE 4.1** *The brain of a prisoner who was subjected to low pressure experimentation in Dachau. March–August 1942.*

Courtesy of National Archives and Records Administration, College Park

Department received 633 brains from euthanasia victims, and of these 144 were from the Munich psychiatric hospital of Eglfing-Haar.<sup>28</sup>

The KWI for Psychiatry operated an additional brain collecting and research centre. Hans Schleussing was Prosecutor at Eglfing-Haar, where he was assisted by Barbara Schmidt.<sup>29</sup> Schultze of the Bavarian Interior Ministry was supportive of their endeavours, and their reports were signed off with a ‘Heil Hitler’ salute. The Prosecutor’s laboratory was an outpost of the KWI for Psychiatry. Patients who died in psychiatric hospitals had to have an autopsy. The subsequent transfer of a brain to the KWI Prosecutor indicated that here was a specimen considered to be of research value. Brains from euthanasia victims from the Swabian Bavarian hospital of Kaufbeuren were transferred to Schleussing for dissection when these were of sufficient interest. One brain was of a dwarf, while most were of schizophrenics and ‘idiots’.<sup>30</sup> Indeed, corpses deemed of scientific interest were sent from many parts of Germany to this research institute.

Schleussing conducted a triage, forwarding brains to different Kaiser Wilhelm Institutes according to research interests – brains of Huntington’s Chorea and Parkinson’s Disease cases went to Hugo Spatz of the KWI for Brain Research, and those with Little’s Disease to the KWI for Psychiatry. Child brains however were sent to Willibald Scholz at the pathological histological research department of the KWI for Psychiatry in Munich.<sup>31</sup> The brain pathologists were indifferent if this was a naturally occurring death, or a euthanasia victim. Something like a third of the brains dissected by Spatz were victims of euthanasia or of the withholding of food and treatment.

Hallervorden later portrayed himself as an opportunist, seeking to extract scientific value from killings with which he had nothing to do. He told the American scientific intelligence officer and neurologist, Leo Alexander, how he initiated the collaboration:

I heard that they were going to do that, and so I went up to them and told them ‘Look here now, boys, if you are going to kill all these people, at least take the brains out so that the material could be utilized.’ They asked me: ‘how many can you examine?’ And so I told them an unlimited number – the more the better.

Hallervorden equipped the euthanasia personnel with fixatives, jars and boxes, and instructions for removing and fixing the brains. Richard von Hegener, office manager at the Department IIb of Hitler’s Chancellery, organized the delivery of what Hallervorden found to be ‘wonderful material’. He delighted in the brain tumours, specimens from depressives, ‘beautiful mental defectives’, Parkinsonians, and early infantile diseases.<sup>32</sup>

Batches of brains arrived steadily for Hallervorden and Spatz at the KWI for Brain Research from a variety of killing institutions. Hallervorden span a web of ever widening contacts to obtain brains for the KWI Institute for

Brain Research's collection. Hallervorden appeared in Bernburg to select patients whose brains would be of scientific interest.<sup>33</sup> Further contacts with T4 doctors included Otto Hebold and Kurt Borm. Among institutes which supplied brains was the T4 killing centre, Sonnenstein established by Horst Schumann, and the 'special children's unit' at Leipzig-Dösen.<sup>34</sup> Links developed between the T4 Research Office and Carl Schneider at the Heidelberg Psychiatric Clinic. The medical killers formed a network, as when Heinrich Gross from the Spiegelgrund in Vienna visited the Görden state psychiatric hospital, and collaborated with Hallervorden.<sup>35</sup>

Hallervorden was in touch with the Wiesengrund 'special children's unit' at the Wittenau hospital in Berlin. These contacts to a research and killing unit led to transferring victim bodies to the neuro-pathologist Berthold Ostertag and his assistant Hans Klein at the nearby Rudolf Virchow hospital. Two child psychiatrists, Ernst Hefter and Ernst Wentzler, were involved in running child euthanasia killings in Berlin. They supplied Hallervorden with a stream of brain specimens.<sup>36</sup> The children's units came under the Reich Committee. In October 1942 Wentzler proposed a comprehensive research programme on the children involving the toxicologist Weimann, the brain pathologists Hallervorden and Ostertag, experts on child malformations including Werner Catel at Leipzig, and the expert on heredity and race Lothar Löffler, at the time professor in Königsberg.<sup>37</sup> Such luminaries opportunely exploited the euthanasia killings for their research.

The KWI for Brain Research had close links to T4 experts who made life and death decisions on psychiatric patients. De Crinis, the Berlin professor of psychiatry and ministerial adviser, provided research funds to investigate hereditary feeble-mindedness. Hallervorden later admitted to obtaining 500 brains of persons killed with carbon monoxide, although the actual number was higher. Leo Alexander recorded:

Only the brains were sent; they were killed in such large groups that autopsies on the bodies were not feasible. That greatly reduces the scientific value of the material. Doctor H[allervorden] states that he always felt slightly nauseated when another batch came. He was also offered brains of schizophrenics and epileptics, but he refused; not from moral indignation, but because he felt nothing of significance would be found in them.<sup>38</sup>

Hallervorden acknowledged receipt of 697 brains from T4 and the brain pathologist Jürgen Peiffer confirmed that at least 707 brains stockpiled by Hallervorden and evacuated in May 1944 to Dillenburg-Giessen derived from euthanasia victims.<sup>39</sup> In all, Peiffer estimated that German neuropathologists examined 2,097 brains arising from the Nazi 'Euthanasia' killings. Additionally, brains were taken from the Warsaw Ghetto and prisoners who died in POW camps. Brains were opportunistically harvested from the deliberately murdered.

Hallervorden later presented himself as a passive recipient of brains. The question arises whether he – or his associates – actively researched on particular ‘cases’ as living specimens, who were then killed to order for dissecting in the hope of finding some anomaly in the brain corresponding to observed physical or psychological defects. Anonymization of euthanasia victims makes such record linkage difficult for the historian. However, certain cases when a researcher had a victim killed to order can be documented.

One was of Valentina Zachini. The distressing torture of this girl by physiologists who recorded this on film has been documented by the author Ernst Klee.<sup>40</sup> Valentina was born in June 1932 in Nottingham, Britain to parents who were circus performers, and American citizens. The child psychiatrist Gerhard Kujath at the Berlin Charité diagnosed the child as microcephalic in January 1937. Kujath filmed Valentina’s movements and reflexes, causing her distress and pain. By October 1941 she was on the dissection slab, dissected by Ostertag and Klein. It was Klein who later worked with Hans Nachtsheim at the KWI for Anthropology, and in 1945 dissected the lymph glands of twenty Jewish children killed at the Bullenhusen Damm school.

Other research centres included the special children’s unit under Ernst Buchalik at Loben/Lubliniec in Silesia. Here a series of experiments on luminal were made on children, testing what dose caused death: only two or three children survived. The specimens were sent to the department of neurologist Viktor von Weizsäcker in Breslau.<sup>41</sup>

Psychiatric clinics were the first locations of systematized Nazi killing, and they were also major centres of research in terms of both neurological and infectious disease experiments. It has been estimated that there were 240,000 euthanasia victims: the number of brains gathered for research (not all from euthanasia killing centres, however) amounted to at least 2,000 victims. In contrast to the sterilization research on women as living objects, the researches now involved killing, and the collecting of ‘interesting’ specimens.



## CHAPTER FIVE

# Racial research

### An unstable science

Race was a fractured and contested set of ideologies, theories and practices under National Socialism. A person was not so much an individual but a fragment of a race. In turn, race was meant to compose the firm foundation for the Nazi reconstruction of society, and to inculcate a new sense of existence and purpose. Yet, race as providing universal norms for action-oriented policy was inherently unstable. Persons of ‘mixed race’ (part Jews, gypsies and black Africans) were subject to constantly varying policies. Systematic efforts to map the racial composition of Germany were beset by scientific rivalries, conflicting definitions and diverse research methods.

There were diverse racial concepts – the older concept of an Aryan, or Indo-European Master Race gained legal force with the ‘Aryan pass’ required to prove the non-Jewish ancestry of officials over three generations, and the Nuremberg Laws preventing inter-marriage with Jews.<sup>1</sup> The racial scientist Hans Günther divided Germany into the Nordic and the Southern German groupings of Alpine, Dinaric and Mediterranean. New categories were added, such as an East Baltic race on the frontier between the Nordic and Asiatic.<sup>2</sup> Methods were based on measurement of facial and physical features, genetics and genealogy, serology with blood group type as a racial marker, minutely detailed studies of soft tissue expression, and the psychology of expression and behaviour. Complicating the expert efforts was that Aryans and Jews were racial composites.

The Nazi takeover meant that ‘German blood’, derived from ancestry rather than the serology of blood, became the basis of citizenship. The vast endeavour of proving Aryan – as opposed to Semitic – ancestry resulted in new racial authorities, and a range of genealogical, genetic, medical and psychological experts adjudicating on problematic cases. The Nazi Party established the Racial Political Office; the state medical administration founded public health offices for heredity and race as part of coerced

sterilization measures; there was a Reich Genealogical Office, and regional genealogical offices for each NSDAP Gau or district. The SS had a Race Office under Bruno K. Schultz within the powerful Race and Settlement Office, and Himmler was personally fascinated by the researches of the Ahnenerbe ancestral research organization.<sup>3</sup> Medical agencies such as the Reich Health Office extended their administrative competence over racial issues. These institutions were rapidly in competition with each other. Scientists hoped to dictate racial policy, whereas political activists harnessed science under Nazi control. Each phase of research radicalized implementation of policies.

Racial research was fragmented with university institutes, the rival KWIs for Psychiatry and Anthropology, acquisitive museums in Berlin, Leipzig, Munich and Vienna, NSDAP offices and a plethora of SS agencies. These offices and institutes were keen to build up reference collections of bones and tissue, and to legitimate diverse racial theories. Researchers developed links to state or party agencies. The SS Race and Settlement office (RuSHA) had close links to the anthropologists Otto Reche in Leipzig and to Wilhelm Gieseler in Tübingen. The KWG psychiatrist Rüdin looked to SS funding; the KWG anthropologist Eugen Fischer to the NSDAP's Racial Political Office.<sup>4</sup> The Vienna Museum anthropologists collaborated with the German Institute for the East in Cracow.

The aim was to identify, count and map pathogenic population elements as homosexuals and criminals, and the pathogenic races of Jews, Sinti and Roma. Whole categories were subject to ferocious debate. Fritz Lenz clashed with the SS Lebensborn over women with illegitimate children as Himmler found them racially valuable, whereas he found them degenerate. The genetically minded Lenz attacked the Breslau school of racial typologies as too impressionistic. Despite the academic quibbling, the Reich Security Main Office (RSHA) took a key role in the operationalizing of racial policies in conjunction with the SS Race and Settlement Office. The inter-office and scientific friction led to radicalization of racial agendas and their implementation under Nazism. Researchers were opportunistic in exploiting locations involving coercion and detention as POW camps and ghettos to obtain measurements, images and specimens. Researchers compiled indices of racial characters, notably of facial features, hair and physique.

One strategy was to search for populations deemed suitable for Germanization. The studies were preparatory for reinvigorating the German qualities of these relics of earlier settlement, as the Danube Swabians scattered in Yugoslavia, Hungary and Romania, the Transylvanian Saxons in Romania, and the Baltic, Ukrainian and Volga Germans. Anthropologists like Lenz and Eugen Fischer promoted studies of these scattered outposts of Germandom, convinced that simple peasant lifestyles should be strengthened for the resettlement of the conquered and cleared lands in the east.

As Jews were increasingly segregated, they became objects of study. Research students at the KWI for Anthropology researched in Jewish schools

and sports clubs from 1933. Walter Dornfeldt made the head measurements of 2,252 Jews for a doctoral dissertation, completed finally in 1939.<sup>5</sup> Typologies were constructed of Jews as criminals, and sexual predators.<sup>6</sup> In the early months of 1940 Eugen Fischer sent an assistant (probably Sophie Ehrhardt) and three students (two were students of the geneticist Nachtsheim – Harry Suchalla and Christoph Schnecke) to Łódź (renamed Litzmannstadt), to carry out studies on 250 Jews, taking finger and hand prints.<sup>7</sup> It seemed increasingly urgent to keep a record of Jewish racial types before they were subjected to extermination.

## Racial research

Anthropologists in Vienna pursued diverse approaches to study of living persons. Walter Greite, who headed the Reichsbund for Biology, rose to leadership of the Ahnenerbe's Applied Nature Studies division in January 1939, and began taking detailed measurements of 2,000 Jews at the Vienna emigration office to develop an 'index of Jewishness'.<sup>8</sup> In September 1939 a commission of eight anthropologists set to work on 'stateless' Jews, rounded up in the Prater sports stadium in Vienna. Josef Wastl from the Natural History Museum in Vienna and a Nazi since 1932 (when the NSDAP was illegal in Austria), directed the research. The commission took anthropological measurements from 440 'stateless' Eastern Jews (out of about a thousand viciously rounded up by stormtroopers and police) in the Prater stadium. Twenty-one of these Jews were 'gegipst' or plastered when their face masks were made. Their 'stateless' position had meant difficulties in arranging emigration, even though some had lived in Vienna since 1905.<sup>9</sup>

Wastl selected from the terrorized internees. The internees thought the anthropologists were trying to prove the stereotype of a bulbous nose and thick lips. As one of the subjects recollected, 'I doubt the researchers found the stereotypical Jew the Nazi press displayed in their perverse cartoons.'<sup>10</sup> The subjects were photographed, measured and hair samples were taken. Having a mask made was not painful, although it involved brief discomfort to ensure the nostrils were clear of plaster for breathing. What hurt was the vicious violence of the persecution that placed lives in peril.

The 16-year-old Gustav Ziegler, later Gershon Evan, remembered the anthropologist as polite: 'A man in a white coat, the only person in the room, received me in a friendly manner, and throughout the performing of the work tried to set my mind at ease.' Gustav perceived his experience as an act of defiance in disproving the Nazi racial stereotypes that were on display at an exhibition at the Natural History Museum on 'The mental and physical appearance of Jews'.<sup>11</sup>

The anthropologists opportunistically tried to make the most of Nazi racial measures.<sup>12</sup> The group of Vienna Jews were sent from the Prater Stadium to Buchenwald for 'protective custody': most were killed, some





**FIGURE 5.1** *In 1998 Gershon Evan (formerly Gustav Ziegler) holds his face mask taken in 1939.*

Courtesy of the Natural History Museum Vienna

rapidly, so the face mask of a living person became if not a death mask then an image of a person experiencing life-threatening persecution. This was the first occasion that Jews were specifically targeted for coerced research. Vienna anthropologists continued research in the newly established ghettos for Polish Jews.

## Sinti and Roma studies

The racialization of science resulted in a vast machinery of racial research with the aims of identification and exclusion. In 1936 the Racial Hygiene and Population Biology Research Unit of the Reich Health Office at Berlin-Dahlem was launched, with Robert Ritter as director. Ritter, who before medical studies had completed a dissertation on the threats of psychosexual disturbances, researched on mentally defective children for his habilitation thesis in 1937. He was convinced of the animal-like characteristics of the ‘Zigeuner’, a stigmatizing term for the Sinti and Roma. Himmler drew on Ritter’s studies in an order to combat ‘the gypsy plague’ of 8 December 1938, requiring registration and racial biological examination.<sup>13</sup> Ritter’s office interviewed, measured, photographed, fingerprinted, and examined

thousands of Sinti and Roma in order to document them and create vast genealogical listings for every gypsy identified.<sup>14</sup> In 1940 Ritter established an office with the Security Police to enforce gypsy registration. By 1942 Ritter's 'Research Institute' had documented 15,000 'racial biological cases', and by 1943 it had notched up 21,498 'clear cases'; the work continued until November 1944.<sup>15</sup>

The Baltic-German but Kasan-born Sophie Ehrhardt, and Ritter's assistant Eva Justin conducted studies of Sinti and Roma exploiting conditions that were coercive. They imperilled the lives of their research subjects, who were then deported. In spring and autumn 1940 Ehrhardt studied over 1,000 gypsies in East Prussia, many forcibly brought to her by the police. Ehrhardt's documentation was used as a basis for their deportation.<sup>16</sup> The work of Ehrhardt and Justin was supported by racial ideologists – notably Hans Günther in Ehrhardt's case – as well as by Ritter at the Reich Health Office in Berlin.

Research funds for Roma studies came from the DFG. Sophie Ehrhardt lobbied for racial selections of the Rhineland mixed-race children, Jews and Roma. In 1938 Operation Work-Shy Reich resulted in over 500 gypsies being interned at the Sachsenhausen concentration camp. In December 1938 Justin, Ritter and Ehrhardt carried out anthropological measurements in Sachsenhausen, determining eye and hair colour, taking blood samples, and taking face masks.<sup>17</sup> In 1939 Ehrhardt conducted racial research at Dachau, and in 1940 in the Litzmannstadt ghetto. These constitute some of the earliest research on concentration camp prisoners, while ghetto studies ran concurrently. Prompted by the SS racial biologist Wilhelm Gieseler, her favoured research objects became the gypsies of East Prussia.<sup>18</sup> The research was heavily genealogical and involved reconstructing families over the generations. The police rounded up the terrified research subjects, who asked about the purpose of the investigations. Ehrhardt found herself unable to explain the motives of her exterminatory mission. Once racially biologically registered, the victims could be tracked down for re-arrest, and deportation. Many died in the Auschwitz 'Gypsy Family Camp'.<sup>19</sup>

## Researching POWs

The Vienna anthropological school combined photos, films, sound recordings and face masks of the living with precise biological measurements of living persons. Wastl conducted anthropological studies in prisoner of war camps, Kaisersteinbruch and Wolfsberg, excited by the prospect of the unique collections of non-Germans. He found not only Poles but also French Jews, Indochinese and Africans during repeated visits between 1940 and 1942. British officers at the POW camp at Wolfsberg (Stalag XVIII A) protested against the anthropologists taking photos of British, and of New Zealand

white and Maori prisoners. Wastl found a local photographer had photos of the prisoners, and purchased the required prints.<sup>20</sup>

Wastl made 'racial films' in the new medium of colour film to record how the prisoners moved, danced and even fought. The films showed their hair and iris colour, and the taking of face masks from prisoners. The resulting film, called 'Racial Studies on Prisoners of War. A Colour Film', was publicly shown from autumn 1941. Wastl filmed folklore and traditional life in the village of Hinterstoder in Upper Austria. Here, he asked permission of the inhabitants, rather than just obtain authorization from the local Nazi organizations. In 1941 Wastl filmed German populations in the recently annexed 'Sudetenland', and obtained the local NSDAP support for physical anthropological research on rural communities.

## Researching Jews

In June 1941 Wastl visited Amsterdam to study Sephardic Jews. He then supported research at the Tarnow ghetto in Southern Poland. In all, the Vienna anthropologists studied 7,000 persons. Funding came from the Nazi Gau Vienna, the Vienna Academy of Sciences, and the Reich Research Council.

University of Vienna anthropologists collaborated with the Institute of German Work in the East (IDO) in Cracow in research on Jews. This Institute, established by Governor General Hans Frank, had a Section for Race and Folk Research at the now closed and pillaged Jagiellonian University. From 1940 until evacuation in summer 1944 it collected some 6,000 records of Jewish and Christian Poles. The IDO contained divisions on Racial Research under Anton Plügel, and on Jewish Research under Josef Somerfeldt. Elfriede Fliethmann came from Vienna to direct the Racial Research division, aiming to determine the racial hierarchy of the inhabitants of occupied Poland, assessing mental and physical qualities of 'intermediate groups' such as the Góralen.<sup>21</sup>

In Łódź handprints were made in January 1940 by Hella Pösch from Vienna and Sophie Ehrhardt on behalf of Ritter.<sup>22</sup> The Jewish Council in Tarnow was forced to help organize the research. The anthropologist Dora Kahlich-Koenner was in charge of the Tarnow ghetto studies in 1942, where along with Marianne Pevny and Elfriede Fliethmann, she studied 578 Jews. Photos of faces and the person naked, and social data supplemented physical measurements.<sup>23</sup> Each test occupied the researchers for half an hour. The aim was to compare the Jews of Vienna with the Jews of their Galician homeland in order to determine physical changes resulting from migration and urbanization. Kahlich then suggested blood, iris and fingerprint tests on a sample of 100 families. But as Fliethmann wrote to Kahlich in Vienna, none of 'theirs' was left: the 'material' had 'a rarity value'.<sup>24</sup>

The anthropologists felt the urgency of a situation in that here was a population on the brink of destruction, but who were conveniently contained

for the carrying out of research. The photographic record and measurements often represented a final record of the person. The ghetto inhabitants would soon become swept up in the mass killing at the extermination camp of Belzec. Research was not carried out in the Aktion Reinhardt extermination camps of Belzec, Sobibor and Treblinka: here the aim was to channel as many Jewish victims as possible into the lethal carbon monoxide chambers, and then to incinerate their bodies. No records whatsoever were kept. The large-scale ghetto research was a preliminary to the genocide of Polish Jews. By the time Mengele researched in Auschwitz, Polish Jews hardly figured in the camp.

## Race and infection

While the exterminatory research was underway, similar screening was carried out on Germans from Eastern and South-Eastern Europe. 'Resettlers' were subjected to medical selections for infectious and hereditary illness, and psychiatric abnormalities. National Socialist Welfare (NSV) nurses screened the 'returnees' on the German frontiers, and weeded out the undesirable. Finally, as a marginal ethnic group they too were subjected to experiments. The bacteriologist Gerhard Rose was the medical officer in charge of what was called, in Nazi-parlance, the 'Umsiedleraktion', or resettlement programme. Rose channelled the psychotic to the Pfafferoode asylum where they were later used for malaria experiments. The eugenicist Fritz Lenz also imposed strict racial criteria.<sup>25</sup> Mrugowsky's Hygiene Institute of the Waffen SS was mobilized to conduct serological tests on the resettlers for sexually transmitted diseases. The threat of typhus was an increasing preoccupation, not least in ghettos and camps.

The war meant an opportunity to develop the immunology of infectious diseases on a racial basis. Karl Horneck was an Austrian-born physician who was an 'illegal' Nazi Party and SA member from 1928. He took a post offered by the racial biologist Lothar Löffler in Königsberg in East Prussia in 1936, because of his interest in racial immunology. He served with the German army in the attack on France. Working at the Hospice General in Le Havre from 1940 to 1941 he injected sera from rabbits into some Moroccan, and 'Anamite' (i.e. Vietnamese) prisoners of war. He argued from the evidence of the immunological precipitin test that the Africans had a higher immunity in combatting infections.<sup>26</sup> He resumed these studies at the colonial hospital of St Médard at Bordeaux in 1943 where he developed a precipitin test. He dangerously cross-injected 'white' and 'racial sera' into his research subjects. This research competed with that of Mengele in Auschwitz using Abderhalden's ferment reaction.<sup>27</sup>

The years 1940 to 1941 saw research in the German-imposed ghettos in the hospitals in Warsaw and Lwow/Lemberg. Vaccines were supplied and tested; in Lemberg a vaccine devised by Ludwik Fleck from urine

was evaluated by the Germans. This can be seen as a step towards experiments on Jews – but here ghetto medical authorities were expected to be compliant in delivering the results of their research on disease control to the Germans.<sup>28</sup> In March 1942, Richard Bieling of IG Farben analysed the blood of patients in the Jewish typhus hospital at the Radom ghetto. Hans Fleischhacker completed his habilitation in May 1943 on Jewish handprints in the Litzmannstadt ghetto.<sup>29</sup> Racial research was exploitative of Jews on the brink of extermination.

## CHAPTER SIX

# First SS experiments, 1939 to 1941

### SS medicine

Himmler held the reins of power over most (but not all) concentration camp experiments: he authorized, advised and resourced experiments on topics spanning nutrition, reproduction, wounds and resuscitation. Himmler worked through his adept secretary Rudolf Brandt, who spun a web of correspondence so that research could be conducted in special installations. Grawitz, an early Nazi and Freikorps activist, supported experiments, but opposed Himmler's predilections for alternative medicine.<sup>1</sup> The SS economic administrator Oswald Pohl, the camp medical supervisor Lolling, the Ahnenerbe racial research director Sievers, and Himmler's medical cronies Karl Gebhardt and Fahrenkamp were all involved in furthering the experiments. Waffen-SS General Karl Wolff mediated for Rascher. The Hygiene Institute of the Waffen-SS under Joachim Mrugowsky became the major agency in typhus (*Fleckfieber*) research, and a resource for poisons. Lolling attempted to assert his power, so that camp doctors would not go direct to IG Farben for retainers and supplies of specimens to test; but he failed in these efforts to assert his authority.<sup>2</sup> Hitler exerted influence through the devoted surgeon Karl Brandt, who was steadily given powers over medical provision and research, and the task of killing psychiatric patients. The result was sporadic experiments between 1939 and the close of 1941. Then facing military challenges and the gargantuan task of realizing racial policy, there was an explosion of research from 1942.

Reichsführer-SS Himmler pursued a sinister new type of ruthless science and experimental medicine, in the hope of achieving stunning breakthroughs. His adjutant, Waffen SS General Karl ('Wölffchen') Wolff observed, that one of Himmler's favourite pastimes was devising medical experiments.<sup>3</sup> The SS surgeon Gebhardt explained that Himmler wanted to make productive use

of the concentration camps by utilizing prisoners for medical research. Himmler supported the idea of 'a new German healing' oriented to homoeopathy. He consequently radicalized the experimental plans of the impressionable Sigmund Rascher, persuading him to experiment in a concentration camp rather than a clinic. Himmler had pronounced views on who should be utilized for experiments, generally criminals and Jews, specifying whatever types when authorizing experiments.

Pohl placed the initiative with the researchers rather than Himmler: 'Representatives of the medical profession who knew how to sell him a medical problem as extremely important or who had good friends to intervene for them, could easily arouse his interest.'<sup>4</sup> Himmler radicalized the experiments: first, they should be more gruesome in terms of injuries; second, he had the idea of longer-term investigations. Here, he wondered about seeing whether diet or drugs could enhance resistance to cold. Himmler combined a macabre obsession to taking experiments to the point of death, with a predilection for the 'biological' in a holistic, organicist and racial sense. He favoured herbal cures and a natural diet, supporting a vast herb plantation at Dachau. The experiments were part of an expansion of SS power in medical faculties, pharmaceutical production, and ultimately to develop a new form of racialized medicine and dietetics. Yet far from cohesive, those experiments coming under the SS provide insight into conflicting elements of SS ideology, and competing internal interests.

## Historical roots

Himmler's medical underlings Grawitz and Gebhardt were more oriented to conventional experimental medicine than the Reichsführer. Grawitz was a school friend of Leonardo Conti – a founder of the Nazi Doctors League in 1929 in Berlin, and he joined the SS in November 1931 placing political activism over further academic research. On 1 July 1935 Himmler bestowed on Grawitz the august title of Reichsarzt SS.<sup>5</sup> Hitler then appointed Grawitz Deputy President of the German Red Cross from January 1937 – ensuring that this key humanitarian organization was compliantly instrumentalized by the SS. One result was that the International Committee of the Red Cross (ICRC) and their delegates turned a blind eye to the experiments, and prisoners of war suffered appalling abuse, some becoming experimental victims.

Another area of SS innovation was sports surgery and orthopaedics, directed by the surgeon Karl Gebhardt. The Gebhardt and Himmler families came from the Bavarian town of Landshut, and Gebhardt's well-connected Bavarian father was the Himmlers' family doctor. Gebhardt advanced steadily through the academic ranks at the University of Munich, running a sports camp at Hohenaschau for the League of the Child Rich, and assisting in the clinic of the celebrated master surgeon Sauerbruch. In 1932 Gebhardt gained his Habilitation qualification in Munich. The Nazi takeover drew

Gebhardt to the Northern planes of Berlin-Brandenburg. Reich Physicians' Führer Gerhard Wagner appointed Gebhardt on 1 November 1933 as Director of the rambling Red Cross sanatorium of Hohenlychen. Gebhardt joined the SS in 1935. Himmler appointed him escort surgeon in 1938. With the support of Conti and Grawitz, he became Consultant Surgeon in the SS Sanitary Service along with the rank of SS Oberführer from May 1940.

Gebhardt set about modernizing Hohenlychen as a centre of orthopaedic medicine, emulating the American model of Warm Springs, and he founded a medical institute at the Academy of Gymnastics in Berlin. In 1935 Gebhardt transferred to the University of Berlin to develop sports medicine and orthopaedics; he became full professor from 1937.<sup>6</sup> He established at Hohenlychen the Reich sports sanatorium for surgery and therapy of sports accidents.<sup>7</sup> His prestige rose, when he took charge of medical services for Olympic athletes at the Berlin Games of 1936. Sports were not only a way of legitimating the Nazi regime through demonstrations of German racial prowess, but an arena of applied physiology, and opportunity for orthopaedic surgeons to display their mastery of muscular traction.

Ambitious to develop Hohenlychen into a major centre of clinical research, Gebhardt conducted experimental operations on children with disabilities. In 1938 he reported to the German Society for Surgery a series of operations on thirty-five children. Along with an ever-growing contingent of assistants he experimented with what he called Seidenzügel – or silk rein – operations.<sup>8</sup> From 1939 children underwent harsh experimental treatments for TB. One case was of Manfred Bartke who was held immobilized in plaster from 1939 aged 8 to 1943.<sup>9</sup>

During the war Gebhardt and Hitler's escort surgeon Karl Brandt had orders to improve surgical services. Military surgeons wanted to settle a debate on drug or surgical treatment of war wounds, which had flared in the Russian campaign. They saw the experiments as ascertaining how to combat a battery of infections threatening frontline troops. These infections included hepatitis (which German researchers claimed to be an infectious rather than chronic disease), the insect-borne diseases of typhus and malaria (all widespread in North Africa and on the Eastern front), and wound infections.

The war spurred Gebhardt to develop military surgery on an experimental basis. Gebhardt inspected Waffen-SS field hospitals in Russia,<sup>10</sup> and attained high rank as SS-Gruppenführer and Generalleutnant in the Waffen-SS. Hohenlychen, by now serving the Waffen-SS, was just 12 kilometres from Ravensbrück concentration camp. The series of experiments went well beyond the immediate aim of testing the efficacy of sulpha drugs in wound treatment. Gebhardt was ambitious to develop Hohenlychen into a major centre of experimental medicine with an institute of cancer research, and animal research laboratories. The Allied bombing of Berlin meant that Gebhardt gained a division of the pathology department from the city's Virchow Hospital.<sup>11</sup>

The SS-backed researchers – whether senior figures such as Gebhardt or the tyro Rascher – had immense academic ambitions, and saw the



concentration camp as a vast reservoir of research materials and resources. They intended to reshape military medical procedures, and ultimately the whole nature of medical science. For young concentration camp doctors like Erwin Ding, Waldemar Hoven and Herta Oberheuser, the experiments gave them a sense of dizzying opportunity, overcoming the isolation of camp routines.

The war caused a fundamental reorientation in German science towards military and racial research. At first there was an expansion of German science with new Reich universities at Strassburg (from 23 November 1941) and German-conquered Posen from 1941, conceived of as vanguards of germanization. Research budgets increased, so empowering organizations like the DFG. Research institutes and clinical medicine increasingly relied on forced labour, and the use of human research subjects was consistent with coercive exploitation of human resources. Whole research papers were devised and written by prisoners, and prisoner scientists staffed research institutes at Auschwitz and Buchenwald. The evacuation and dispersal of research laboratories shaped a new research landscape.

## Blood sampling

Rascher was the prototype of the SS medical researcher, groomed by Himmler and yet voraciously ambitious in seeking to achieve momentous medical breakthroughs. He collaborated with Himmler's medical confidante Karl Fahrenkamp – mendaciously sending the cardiac readings of murdered research subjects. He fawned to Himmler about his discoveries.<sup>12</sup> Rascher vicariously researched on cancer, cardiology, aviation medicine, resuscitation, poison capsules, and on blood stypic tablets as a coagulant.<sup>13</sup>

Rascher's mix of ambition, a taste for combining science with a mystic holism, and a capacity for fraud lay at the foundations of his career. His MD dissertation was about a pregnancy test. This was a topic of wider interest among hormone researchers at the time. He hoped to use the test for diagnosis of diseases.<sup>14</sup> His idea was that pregnancy hormones could be detected using a copper-sulphide crystal test devised by the biodynamic agriculturalist and anthroposophist Ehrenfried Pfeiffer. Despite the unorthodox basis for his research, Rascher received 4,200 marks over the Pathology Institute from the Emergency Fund for German Science (the precursor of the DFG) to finance his doctorate and ensuing studies in 1937 and 1939. The Pathological Institute was under the eminent Max Borst, a Freikorps veteran.<sup>15</sup> Pathologists from the University advised on post-mortems at Dachau.<sup>16</sup> Rascher rapaciously aimed to obtain 'fresh material' from – and later for – the local Schwabing Hospital.<sup>17</sup> From 1936 until 1938 Rascher worked on cancer diagnostics and a fertility test with Borst's friend, the elderly paediatrician Joseph Trumpp. As Rascher gravitated to the SS, Borst declined Himmler's protégé further lab space.<sup>18</sup> Rascher managed to publish in the prestigious *Münchener Medizinische Wochenschrift*, even

though the scientific findings could not be replicated. The Munich professor of internal medicine Alfred Schittenhelm expressed doubts regarding the scientific quality of the doctoral dissertation.<sup>19</sup>

Karoline 'Nini' Diehl, a widowed singer, older by several years, befriended young Rascher, and in April 1939 she secured a decisive interview for her budding protégé with Himmler. Rascher responded with a report on tasks that Himmler assigned. Consequently, on 13 May 1939 Rascher was appointed to the Ahnenerbe Ancestral Research organization of the SS, as the Ahnenerbe's first medical researcher. Its Curator was the indologist Walter Wüst, who was also Rector of Munich University, so further strengthening Rascher's position, and showing how the tentacles of the SS were penetrating German academia.<sup>20</sup> On 30 May 1939 the Ahnenerbe began paying the impecunious Rascher 350 RM per month. Rascher submitted to Himmler, an erstwhile agriculturalist, a memorandum on connections between artificial nitrogenous manures and cancer in cows.<sup>21</sup> Rascher also thought of inducing cancer in mice with the aim of rat control.

Rascher requested Himmler's approval for long-term screening of the blood of prisoners to detect early cancers. Instead, Himmler recommended that Rascher should study the blood of prisoners in camps and prisons under a 'life sentence' – indicating how Himmler had by early 1939 the idea of researching in concentration camps. The anthropological studies on gypsies were already underway. On 26 May 1939 Himmler arranged that Rascher should have a pass to the concentration camp of Dachau. These were the first medical researches on concentration camp prisoners.<sup>22</sup> Himmler, ever medically inventive, thought that Rascher should link a cancer register with genealogical and racial research in contrasting locations as remote alpine villages, the Memel gulf on the east Baltic coast, and Pomeranian coastal areas.<sup>23</sup> *Die Woche* (a nationalist and anti-Semitic illustrated magazine owned by the industrialist Alfred Hugenberg) praised Rascher's rapid success in cancer research. Rascher transferred from the SA to the SS on 1 October 1939. SS marriage controls meant Himmler's permission for Rascher to marry Nini was withheld until she presented her Sigmund with a first and then a second child. Ultimately the deception over the births was to prove the downfall of this macabre couple.

Rascher set up a provisional laboratory at Nini's apartment. His project was on links between cancer and artificial manure, and about the effects of arsenicals in pesticides on the human organism. By 20 June 1939 Rascher had the permit for Dachau blood experiments, and research space at the Schwabing Hospital – that way he could have 'fresh and impeccable experimental material'. The research was sporadically pursued: on 1 December 1940 Rascher requested to Enno Lolling, the SS physician in charge of camp medical facilities, that blood samples be delivered weekly from Dachau to his assistant Lulu (Julie) Muschler for analysis.<sup>24</sup>

Rascher was drafted into the Luftwaffe in August 1939, interrupting his cancer and Dachau blood specimen researches. The Luftwaffe introduced

him to problems in aviation medicine. Ever concerned to produce rapid and stunning discoveries, he resorted to duplicity and faking results. The manipulative Himmler thought this ambitious young physician could be transformed into the prototype SS medical researcher. The mix of esoteric holistic science and vicious human experimentation was to become a lethal combination, once Rascher formulated a new research agenda in May 1941.

## Ancestral research

Rascher as a ruthless experimentalist fitted in with the SS strategy of reconfiguring medical research on a racial basis. The Ahnenerbe, or Ancestral Heredity Research organization of the SS was founded in 1935 by Himmler, the blood and soil agriculturalist Walter Darré, and the prehistorian Wirth. Drawing on volkish studies, its aim was to supply the German people with its ancestral pedigree reaching back to prehistory. Its endeavours had a parallel in that each citizen had to prove their ancestry was clean of racial stains over three generations, and SS personnel for five generations. In 1937 Wolfram Sievers, an autodidact publisher became chief Ancestral Research administrator. The prehistorian and Munich University Indo-European expert, Walter Wüst took on the role of Curator; Wüst's academic credentials legitimated Ahnenerbe research.

Initially the Ahnenerbe focused on prehistory and anthropology. The motivating idea was that the erstwhile innovative Germanic race long ago became scattered and dissipated. The recovery of primal Germanic values went with a sense of mystic, cultish devotion. Ahnenerbe researchers excavated Goth sites and settlements of the Teutonic knights. The Ahnenerbe spawned departments for Indo-Germanic languages, folk tales and sagas, the geology of caves and karst, and German folklore. One archaeologist came up with the theory that prehistoric bog people were homosexuals and criminals, so reinforcing Himmler's views on the dangerous degeneracy of homosexuals and how ancient Teutons rightly killed such degenerates.<sup>25</sup> The Ahnenerbe maintained an international profile by supporting representatives for 'Germanic Science' in outposts in Brussels, The Hague, Oslo and Stockholm, as well as ambitious expeditions. Sievers nurtured ambitions of obtaining hegemony over racial and military medical research.<sup>26</sup>

By 1939 the organization ventured into a range of sciences, notably botany, mineralogy and geology, geophysics and meteorology, cave exploration – and racial anthropology. Himmler supported the expansive programme of ethnological research with eight expeditions to remote locations in South America and Tibet in 1939. The Tibet expedition was originally proposed by the SS zoologist Ernst Schäfer, although most finance came from the DFG and other funders. The expedition searched for remnants of the ancient Aryan race among the Tibetans, while studying botany, zoology and geology.<sup>27</sup> The researchers took plaster face casts – a process captured on film – as well as

taking measurements, and palm and hand prints. Among five SS members on the Tibet expedition was the young SS anthropologist Bruno Beger, who had transferred from the SS Race and Settlement Office to the personal staff of Himmler.<sup>28</sup>

## A 'New German Healing'

The Ahnenerbe advanced Himmler's ambitions to devise a 'New German Healing', based on Germanic racial values. 'German Healing' required a reorientation of medicine to an anthropological basis of race as well as some more esoteric areas. Diet, clothing, homoeopathy, nature therapy, herbal medicines as a 'biological medicine' challenged standard experimentally based medical science.<sup>29</sup> Homoeopathy was a central interest of the Nazi leadership. In 1937 the world homoeopathic congress took place under the patronage of Rudolf Hess.<sup>30</sup> Homoeopathy had a massive expansion with institutions such as the Rudolf Hess Hospital in Dresden, and new publishing ventures under the Hippocrates imprint to disseminate a reformed medicine to the profession and a wider public.

An ever more beleaguered Hitler, prone to involuntary neurotic twitches and spasms, became dependent on vitamin cocktails and performance enhancing injections. The Führer's circle of medical acolytes included the devotedly compliant surgeon Karl Brandt and the SS nutritionist Ernst-Günther Schenck.<sup>31</sup> Brandt and Schenck became involved in human experiments, and Hitler had high expectations of Brandt in terms of reorganizing medical science and research.

Himmler favoured the physical therapist Felix Kersten, as well as homoeopathic medicine. He cultivated links with the Munich cardiologist Fahrenkamp, who ran a clinic to maintain the health of the Waffen-SS at Dachau, where he tested blood circulation. Fahrenkamp advised on the experiments, and dabbled in homoeopathic experiments on his Pabenschwandt estate, designated an outlying camp of Dachau. Jehovah's Witnesses were forced labourers on the estate, and Himmler liked to visit Pabenschwandt to hear lectures on nutrition.<sup>32</sup>

The racial therapy agenda had a number of elements: developing herbal medicine at Dachau was linked to the phlegmon experiments, and sponsoring SS pharmaceutical and vaccine experiments and production. Ideally, the new medicine should be holistic, in line with the Germanic feeling for nature. Himmler's agenda was linked to homoeopathy and racial reproduction, and the Dachau herb plantation was to support new measures. Research on the South American plant, dumbcane (*Dieffenbachia seguine*) was intended to induce sterility. The Madaus firm of homoeopathic manufacturers became involved in June 1942. The scheme was supported by Pohl and Grawitz, but cultivating the plant proved to be too difficult.<sup>33</sup> Himmler encouraged experiments at Dachau with the homoeopathic Schuessler salts in his quest

for a German alternative to penicillin. The experiments became part of a wider attempt to transform medicine under the leadership of the SS.

## The SS Hippocrates

The Hippocratic Oath became a new battleground for Himmler's efforts to lay new ethical foundations for SS medical research. Rather than a powerful statement of dedication to the individual patient, and an ethical, life-sustaining medicine, the Nazis paraded Hippocrates as a mythic Führer figure, standing for the doctor's duty to research in the name of the community. The Oath lacked the authority of an agreed text, and could be interpreted in varying ways as regards medical experiments. Although occasionally invoked, the Oath was not routinely subscribed to in German medical schools.<sup>34</sup> Nazi scientists developed a medical ethics based on the idea of the German physician having an overwhelming duty to the nation and race. Hippocrates was harnessed to a volkisch, intuitive and holistic medicine, endowing the physician with powers to root out the persons who posed a threat to the health of the nation. Nazi scientific enthusiasts expressed contempt for a mechanistic and materialist 'Jewish science'.

In 1939 the medical curriculum was revised so as to include ethics, and the Nazified ideas on Hippocrates. In 1940 Reichsarzt SS Grawitz appointed the medical historian Bernward 'Sepp' Gottlieb to his staff, and a new SS institute for the history of healing was inaugurated in 1941.<sup>35</sup> Himmler commissioned a set of ethical writings, aimed at SS medical officers. The Hippocratic texts belonged to the Aryan heritage, as Himmler was convinced that the Greeks in fact were a branch of the ancient Aryan race.

In 1942 – just when the human experiments were rapidly on the rise – Grawitz published texts from the Hippocratic corpus, compiled by the SS medical historian Gottlieb, and introduced by Himmler.<sup>36</sup> Himmler praised 'the great Greek doctor Hippocrates' and his 'unity of character and accomplishment' which 'proclaims a morality, the strengths of which are still undiminished today and shall continue to determine medical action and thought in the future'. Himmler fervently hoped that this new medical morality linking thought and action was to be written in the heart of every true German doctor.

The Hippocratic Oath featured only in terms of solidarity among colleagues. Patients were to be managed. Here was medicine in a collectivist and environmentalist frame of thought.<sup>37</sup> The Waffen-SS distributed the text to all doctors, dental surgeons and pharmacists in its service, with the aim of their ideological motivation. The idea was to canonize a series of great physicians – notably Hippocrates and Paracelsus – and use these as models for the dynamic Nazi physician engaged in war.<sup>38</sup>

Medical ethicists saw themselves as biological warriors: the Nazi medical functionary, Rudolf Ramm proclaimed that Nazi medical ethics marked a

radical break from previous forms of ethics. Ramm from 1941 edited the National Socialist Physicians League journal, *Ziel und Weg*. Ramm argued in his textbook of medical law and professional regulations of 1942 for the propriety of killing the disabled.<sup>39</sup> The Director of the Sanitary Office of the Waffen-SS, Joachim Mrugowsky argued that medical ethics changed over time, and he wanted to replace the Christian ethic of compassion and charity with principles focused on the primacy of the Volk. Mrugowsky considered there was a cogent set of ethical principles as regards the duty to the patient, albeit of racially worthwhile stock.<sup>40</sup> Himmler's grand plans required a new type of medical ethics, inculcating a sense of racial duty. The coerced experiments were underpinned by this ethic of a racial medicine, and the normative values of the Nazi Weltanschauung.

## A faltering advance

Mobilization in autumn 1939 resulted in the call-up of doctors and scientists for active service. This interrupted the momentum of research, which rapidly diminished in 1940. In contrast to the well co-ordinated Allied war research in biology and medicine, the German scientific planning appeared ill-prepared and fragmented in relying on traditional academic structures with all their rigidity and academic infighting. It has been argued that German scientific mobilization was relatively effective in natural science and technology.<sup>41</sup> By way of contrast, medicine became a battleground of entrenched professional and scientific interests. The experiments show that even the expansive SS was divided over the imposition of an ideologically driven 'New German Healing'. Academic factions were rife.

The use of concentration camp prisoners for scientific research evolved slowly. With the outbreak of war concentration camps became sporadically used for racial research. Erich Wagner, a Sudeten German and 'illegal' Austrian Nazi, was camp doctor at Buchenwald in 1939–41. He submitted a dissertation – partly written and researched by a prisoner, to the nearby University of Jena on 22 September 1940, earning him the title Dr. med. Entitled, 'A Contribution to the Tattoo Problem', this was a study of 800 prisoners with tattoos, which Wagner used as a basis for the study of links to criminality. Wagner described the topography and sentiments of the tattoo – such as 'Auf zum Kampf' on a penis, and photographed the many types of tattoos on his prisoner research subjects. According to the prisoner assistant Gustav Wegerer, many of the prisoners were killed in the sick bay so that their skin could be exhibited.<sup>42</sup> Buchenwald established a macabre museum of murderous artefacts. The collection of tattooed skin became notorious, appealing to Ilse Koch, the camp commandant's wife.

Sachsenhausen came to be used for war-related experiments.<sup>43</sup> The camp's Oranienburg location on the northern outskirts of Berlin was the centre of SS administration and where the Auer Company was developing

scientifically based armaments production. Reichsarzt SS Grawitz demanded research on 'defensive' (the term was often a euphemism for offensive) measures against mustard gas. He ordered the camp surgeon, Hugo-Heinz Schmick, in association with the camp doctor Walter Sonntag to experiment on fifty camp prisoners at Sachsenhausen. The aim was to test powders known as F1000 and F1001 as preventively applied to the skin against mustard gas poisoning. Schmick claimed that he selected fewer prisoners; thirty-one are known. Here, in late October or November 1939 experiments on the poison gas 'Yellow Cross' or Yperit (a type of mustard gas and lewisite combination) were conducted. The prisoners were Germans, apart from one Czech. Wolfgang Wirth, the poison gas expert of the Military Academy Berlin observed a film of the procedures, and concluded that the military had conducted tests of better scientific quality.<sup>44</sup> The experiments ceased when Schmick moved to work under Gebhardt at Hohenlychen.

Research on mustard gas and other chemical weapons for the army at the Spandau citadel involved self-experiments by Wirth and his staff, resulting in scars and sickness. The military researchers paid a premium to medical students and military volunteers for tests – for instance, a glass of schnapps and 50 marks for a mustard gas test.<sup>45</sup> Wirth's extensive poison gas research did not (at least at first) involve coerced subjects.

August Hirt an anatomist and SS member since April 1933, worked under Wirth at the Institute for Pharmacology and Military Toxicology of the Military Medical Academy Berlin. Hirt researched on the use of Trypaflavin (or acriflaviniumchloride) for mustard gas casualties, using first animals and then two military cadets. Wirth regarded Hirt's experiments as unnecessary and unfounded. Indeed, Wirth tried to have Hirt's experiments stopped much to the latter's frustration. Hirt transferred to the Ahnenerbe SS which meant he radicalized lethal experimental practices.<sup>46</sup>

In 1941 Hirt researched on mustard gas using rats, but both Hirt and his assistant Anton Kiesselbach were injured. Hirt had ideas on preventing the effect of the gas by means of vitamin A.<sup>47</sup> Around July 1942 Hirt began research at Natzweiler in Alsace supported by Himmler and Karl Brandt. Hirt clashed with the camp commandant Josef Kramer over allocating an improved diet to his research subjects.<sup>48</sup> Experiments by Hirt with the airforce doctor Karl Wimmer and the anatomist Anton Kiesselbach began on 25 November 1942. Fifteen prisoners (including the Kapo Ferdinand Holl, an anti-Nazi from Alsace) had higher rations for a month so they could serve as experimental subjects. The liquid was applied to the prisoners' underarm. Burning, pain and blindness resulted. After five days came the first death and seven more died. The wounds were photographed, and the internal organs were taken out and examined.<sup>49</sup>

From 25 January 1943 Sievers decided to upscale the experiments – four series of experiments were conducted at Natzweiler on 240 detainees.<sup>50</sup> Two prisoner nurses noted prisoner numbers, and Hendrik Nales noted the names of those killed.<sup>51</sup> Holl described how the gas was placed on



their upper arm, and some hours later the prisoners experienced burning, and some became partially blind. The injuries were documented and photographed. By day 5, some died. The bodies were dissected in Strasbourg by Wimmer, the anatomical assistant.<sup>52</sup> Two groups of fifteen were subjected to the gas in an improvised gas chamber. The gas warfare experiments continued until September 1944.<sup>53</sup>

## Comparing tuberculosis therapies

Himmler hoped that medical treatments for TB could be improved. He sponsored extensive homoeopathic experiments on treating TB in Dachau, Sachsenhausen and Buchenwald from 1941 to 1943. The aim was a synthesis of scientific medicine and nature therapy. Himmler wished to apply the scientific methodology of experiment and causality, so as to reconfigure scientific values by placing medicine on a racial, nature-therapeutically oriented and intuitive basis.

In January 1941 two entrepreneurial brothers Gualtherus and Herman Zahn, appeared on the scene. Herman had studied medicine for a time, but his medical credentials were fake. Gualtherus managed to qualify in medicine at the University of Lausanne in 1940, and then to take a course in nature therapy at the Rudolf Hess Hospital Dresden.<sup>54</sup> The brothers were Dutch nationals, and supported Dutch Nazi organisations. On 24 January 1941 the Zahn brothers discussed with Himmler and his Finnish medical masseur, Kersten the possibility of ozone breathing experiments. The SS paid Gualtherus Zahn 1,000 marks a month, and Swiss-manufactured breathing apparatus was installed.<sup>55</sup>

In 1941 TB experiments were initiated in Dachau and Sachsenhausen, and there was a set of experiments in Buchenwald. These three series of experiments showed how the SS for the first time co-ordinated large-scale research in different camps. In Sachsenhausen a TB experimental block was erected by November 1941. Between fifty and sixty German, Dutch and Polish prisoners with existing TB were identified. There were two groups, each research subject having a counterpart of similar physique. One group had to do the inhalation 'cure'. The other group had a standard therapy. The Sachsenhausen experiments ran to the end of 1943. About 100 prisoners died, and the mortality rates were the same in both groups.<sup>56</sup> One prisoner nurse was a criminal and confidence trickster, Rudolf Thierhoff. He divulged the composition of Zahn's secret remedy. Zahn however claimed the experiments were a success, and the therapy went into commercial production.<sup>57</sup> The Dutch prisoner Post Uitweer tried to become a test person, because he was hungry and hoped to get better food; as he had pleurisy rather than TB he was just a *Kalfaktor* (assigned to cleaning the rooms). He felt threatened in Sachsenhausen by Gualtherus Zahn. He felt in danger and feared being deported to the killing centre of Hartheim. He transferred to Dachau where he became a test person of Rascher's freezing experiments, a terrifying experience.<sup>58</sup>



In Dachau the parallel experiments ran from around September 1940 to February 1942 under the homoeopath Karl Hann von Weyhern, who had treated Himmler, and Rudolf Albert Brachtel, a Sudeten German and SS doctor. Himmler paid Grawitz a monthly retainer of 600 RM to attend each afternoon to his group of prisoner research subjects. Reichsarzt SS Grawitz appointed Brachtel to run experiments in Dachau in the hope that he could show the superiority of conventional therapies. Brachtel arrived in Dachau on 15 April 1941.<sup>59</sup> The prisoners were divided into two groups of forty-eight to compare standard therapy with a Swiss patent homoeopathic therapy called *Spenglersan*. A third group received a special diet administered by the homoeopath von Weyhern. A fourth 'control group' was subjected to various medications, as well as thorax operations by Helmut Müllmerstadt: ten died from this group. The experiment ran for over a year. Prisoners (as in Sachsenhausen) were not deliberately infected, setting this experiment apart from later experiments, involving injection of TB bacilli. Each prisoner received some extra rations. The communist prisoner Christian Hoffmann died.<sup>60</sup> Conti came to inspect the proceedings.<sup>61</sup> There was fierce rivalry between Brachtel and von Weyhern, and both manipulated results to show the superiority of their chosen treatments.

The Buchenwald camp doctor Hoven tried to prove the efficacy of breathing coal dust as a cure for TB. He needed to acquire medical qualifications, and in 1942 faked these by dragooning prisoners to prepare his doctoral dissertation. The research involved experiments on the inhalation of coal dust. In fact, the experiments were devised by the Buchenwald Kapo (senior prisoner) at the Pathology block, Gustav Wegerer, an engineer and Austrian communist. He wrote the dissertation along with an imprisoned physicist from the Sudetenland Kurt Sitte, who also worked in the pathology block. A group of thirty-three prisoners were experimental guinea pigs; twenty-three had to breathe coal dross for forty days. The remaining ten prisoners served as controls in that they had no special treatment. The dissertation contained details of twenty-three experiments and seven deaths. There followed deliberate killing for autopsies when five prisoners were killed. Hoven drew the conclusion that coal dust could be effective as an inhalation therapy.<sup>62</sup> Other prisoner groups were injected with coal dross extract. Given that the prisoners had TB and were malnourished, due to camp conditions, the causes of death were difficult to attribute.<sup>63</sup> Hoven, as camp doctor, was involved in conspiratorial intrigues, corruption, and had a taste for sexual depravity and exploitation. He sporadically ran the experiments block due to Ding infecting himself with typhus. Hoven was arrested by the SS in September 1943 for corruption.<sup>64</sup>

The TB experiments show Himmler's predilection for unconventional therapies. Himmler and Grawitz had an interest in resolving on an experimental basis whether homoeopathic or conventional – allopathic – remedies were superior. In contrast to later experiments, these TB experiments did not involve infecting research subjects. The superiority of standard medicines meant that Himmler was to reorient his overall strategy on the experiments.

## CHAPTER SEVEN

# Prisoner of war experiments

### Shoe testing

From June 1940 the bleak shoe testing track at the centre of the Sachsenhausen camp was inaugurated. The track had different surfaces, some very rough and even a stretch that was under water. Guards liked to add a session of 'sport' when the test subjects had to do painful exercises. Tests ran until February 1945: the track thus saw the longest-running series of coerced experiments. It had a dual function – physiological tests on human performance, and the testing of military footwear and clothing – in this sense objects were tested, albeit as regards their effects on the body. The track owed its origins to a consortium from industry and science, including the KWI for Leather Research, the German Leather Institute, and the Department of Rubber Research. As Germany became increasingly reliant on Ersatz substitutes for raw materials, the testing track gained importance. Within the camp its function was considered by prisoners and guards alike as punitive.

The immediate concern was to assess different types of artificial shoe soles, and their production to satisfy both civilian and military demands.<sup>1</sup> The idea at first was to carry out orthopaedic tests on SS men. In the event, prisoners were used even though being subjected to different footwear would produce distortions.<sup>2</sup> The Reich Office for Economic Development offered to run tests for 6 RM per prisoner undergoing a gruelling 40-kilometre march over an 11-hour day in often ill-fitting, or even female shoes. Prisoners' feet could be inflamed and frozen but the camp doctor, Heinrich Baumkötter refused care for the open wounds.<sup>3</sup> The tests were conducted with gratuitous violence, as when an SS man beat a prisoner to death, because he could not put the ill-fitting shoes on.<sup>4</sup> The British prisoner of war S.P. Best related how a punishment was to march for two hours bare foot on the cinder track. It became standard to be on the punishment squad for six weeks, carrying a heavy knapsack filled with sand.<sup>5</sup>

The tests used scientific methods and testing procedures, yielding results for the rationalization of wartime production.<sup>6</sup> It showed how civilian authorities saw the test results as objective, although obtained under punitive and often lethal conditions.<sup>7</sup> The Reich Office took commissions from the shoe factories, Salamander, Freudenberg and Fagus. From 1943 the German army tested its footwear, produced from new synthetic materials.<sup>8</sup>

Shoe testing meant prisoners of war (including thirteen British and one Irish POW, Jim Cooles) were subjected to punishing endurance tests. POWs and detained resistance activists were prominent among the test subjects. Shoe testing involved high numbers of prisoners, up to 140 at a time. Identified shoe track victims include: approximately forty Poles, seven Royal Navy commandoes, who were earmarked for execution, and Russian/Soviet forced labourers. There were Belgian, Dutch, French, Romanian and Italian political prisoners and a Norwegian. Numerous German 'criminals', 'asocials' and 'workshy', and 'moral criminals' (the classification of homosexuals) were test objects. Shoe testing was deemed suitably punitive for all these prisoner categories. The SS doctor Baumkötter tested military performance. Overall, there were roughly 30 sets of experiments at Sachsenhausen, most with a military relevance.<sup>9</sup> Among these were experiments on an ointment to treat phosphor burns in 1943.<sup>10</sup>

The shoe track experiments were the longest running series of all the concentration camp experiments. Often test subjects carried heavy rucksacks for 40 kilometres a day. Performance enhancing drugs such as cocaine and Benzedrine were used. In October 1944 the naval medical officer Hans-Joachim Richert and the pharmacologist Gerhard Orzechowski tested four types of stimulants, including cocaine and the amphetamine, Pervitin, on twenty-six prisoners who had to run over periods of several days. The Pervitin producer and supplier of the drug to the military, Temmler-Werke in Berlin, undertook the experiments, prompted by the long hours required for the two-man *Seehund* submarines.<sup>11</sup> The justification was that only living subjects could produce the necessary results. Gunther Lehmann was dosed with 75 mg cocaine, and over four days on the track slept for just five hours.<sup>12</sup> The camp guards turned scientific tests into gratuitous torture.

## Crete

The dispersal of German medical researchers with the mobilization for war meant that they conducted research in peripheral locations under military occupation. Friedrich Meythaler, a bacteriologist and military doctor, began experimenting on Allied prisoners of war in Crete after the German occupation in May 1941. His aim was to prove that jaundice, 'Icterus', or hepatitis, was a transmissible, infectious disease. On 19 September 1941 Oberstabsarzt Professor Dr Meythaler wrote: 'We carried out person to

person experimental vaccinations on the English, one of whom reacted with an enlarged liver.’

Despite referring to ‘the English’, the victims might have been Australians, or from elsewhere in the United Kingdom. The results were published in a medical journal, *Klinische Wochenschrift* in August 1942. The account referred to experimental infections with hepatitis. How many prisoners were infected is not clear. Meythaler observed an enlarged liver on the infected, and no mention was made of fatalities:

As the cause is unknown, I carried out on Crete transmission experiments from person to person through transfer of blood in a pre-Icteric condition . . . Three of the experimental subjects had a higher temperature and an enlarged liver . . . They were observed for eight days, but no Hepatitis/Icterus occurred.<sup>13</sup>

Hepatitis was a major problem in the German army. Kurt Gutzeit was professor of internal medicine at Breslau since 1934, advisory internist to the Medical Inspector of the Army, and he joined the SS in 1933. Initially he carried out a self-experiment on himself, three students and on Arnold Dohmen, his assistant in 1941. Another assistant Hans Voegt carried out experiments on psychiatric patients at the Neurological Clinic, Breslau.<sup>14</sup>

German military medical personnel were ready to exploit whatever wartime opportunities for experiments arose. At the end of June 1943 Dohmen contacted Karl Brandt, visiting him at Hitler’s military headquarters; Brandt agreed that proof as to the pathogen required human experiments. While Dohmen first considered conducting the experiments on psychiatric patients, Brandt referred Dohmen to Grawitz, for approval for a concentration camp experiment. Grawitz advised Himmler that there could well be fatalities. Himmler then agreed that Jews from Auschwitz ‘under sentence of death’ could then be used.<sup>15</sup>

The hepatitis research shows how university-based researchers used whatever available opportunities they had to experiment – in a psychiatric hospital, a prisoner of war camp and finally a concentration camp. While Himmler and the SS opened concentration camps to medical experiments, university-based medical researchers took the initiative and determined the shape of the experiments. The ICRC monitoring of experiments in POW and concentration camps was a catastrophic failure, given Grawitz’s key role as representing the German Red Cross, and a pro-German bias among ICRC staff members.<sup>16</sup>

In 1942 the Waffen-SS doctor Rudolf Brachtel undertook liver punctures on (according to witnesses at his later trial) 180 prisoners but on his own admission conducted 80 punctures on Germans, Czechs and Poles during a jaundice epidemic at Dachau. Ten healthy prisoners were controls. He claimed ‘only one’ prisoner had died. The question was whether these punctures were for research or diagnostic purposes with the consent of the prisoners.<sup>17</sup>

Gutzeit, who ran a department for internal medicine at the Military Medical Academy Berlin, pointed to the infectious nature of jaundice in October 1941. Dohmen, working under Gutzeit was attached to the Military Academy; but he was based at the Robert Koch Institute (RKI). While in Greece during autumn 1942, he researched on ‘hundreds’ of patients and gathered liver puncture tissue.<sup>18</sup> Dohmen used these specimens to isolate what he thought was the infectious agent of hepatitis. Whether these were POWs or civilians dragooned into experiments is unclear.

Between September 1939 and December 1941 we find a readiness to exploit a variety of wartime contexts for research: locations under German occupation, psychiatric clinics, ghettos and camps. The research was in part an autonomous initiative of researchers and clinicians whom the war transposed to other locations. Manufacturers and pharmaceutical companies were keen to cultivate links with concentration camp doctors. At first they tested drugs on naturally occurring cases. The links with companies were set to expand, while experimental procedures were to be radicalized by deliberately infecting incarcerated victims.

## PART TWO

# Peak years, 1942 to 1944



## CHAPTER EIGHT

# Experiments and extermination

### Himmler's medical vision

From late 1941 the SS took a key role in radicalizing experimental science. The experiments became caught up in the planning and implementation of racial policy and the Holocaust. New methods of sterilization were tested, and Jews and gypsies became favoured research subjects. The SS sanctioned experiments in the camps, seeking to increase their scale. On the one hand, the SS was internally divided into competing and conflicting elements – the surgeon Gebhardt despairingly reflected that there were too many medical groups in the SS.<sup>1</sup> On the other, the SS was increasingly in competition with other power blocs – notably those of the military and Hitler's medical fixer, the devoted Karl Brandt. The Racial Political Office was closed in 1942, as the SS established primacy over the NSDAP in the realization of racial policy. The experiments require situating in an increasingly genocidal context.

Himmler wished to harness academia to the pursuit of a racial reformation of Germany under SS leadership. He nurtured ideas of SS control over German scientific and medical research, as well as pharmaceutical production. The offer of resources to academics was a way of gaining their loyalty, binding them to a bloodthirsty organization in its drive for power over academia and medical provision. The SS constantly searched out prominent academics at universities, the KWS, and state research organizations. The chemist and SS Brigadeführer Mentzel occupied key positions in the DFG, RFR and KWG ensuring a degree of alignment with the SS, while pursuing covert weapons research. The wider aim was a reforging of German science in line with SS values, for the SS to gain power over the supply of pharmaceuticals, and to expand the tentacles of SS control over medical institutions. Some academic collaborators were SS officers, some were just Nazi Party members; occasionally (as the malariologist Schilling) an SS-sponsored experimenter was neither a Party nor SS member. The intersections of academic ambition with the SS agendas raise questions of the aims and



expectations of the scientists. Sometimes the SS managed to penetrate deeply into the established academic system, as with the medical faculty at the Reich University of Strassburg. But sometimes the SS completely circumvented conventional academia, as at the orthopaedic hospital complex of Hohenlychen under Himmler's protégé Gebhardt. The hospital rapidly became a major centre for rehabilitation of wounded military and SS soldiers.<sup>2</sup>

The Ancestral Inheritance (or *Ahnenerbe*) organization of the SS had a key transformative role in the reconfiguration of medical research. The research agenda became linked to German military conquest, looting of artefacts, and racial transplantation and resettlement of German populations. Here the concentration and extermination camps had a key role in the sifting out of pathogenic elements as homosexuals and gypsies. The *Ahnenerbe* conducted archaeological research (with a racial agenda) in conquered territories such as the Crimea. There were opportunities at universities where SS academics had strategically important positions (as at Munich and Marburg), and at the new Reich Universities of Posen and Strassburg. The Hygiene Institute of the Waffen SS took a decidedly holistic approach to the ecology of infectious disease. Himmler saw the war as a way of recasting experimental science into a new racialized form. He hoped astounding medical breakthroughs could be obtained by rolling back the frontiers of what was considered ethically permissible by ruthless experiments on prisoners.<sup>3</sup>

A key issue arising from 1941 was to develop and test vaccines so as to prevent the German military succumbing to epidemics in Russia, the Balkans and North Africa. The German army and SS during 1942 took major co-ordinating roles in resourcing experiments. Systematized experiments were backed by resources of the state, military and Nazi authorities. Yet throughout – with rare exceptions – scientists retained the initiative in terms of the organization and conduct of the experiments.

Himmler had a strategic aim of fusing alternative and conventional scientifically based medicine. The SS doctor was both a political soldier, and expert in the use of this new scientific weapon.<sup>4</sup> A select number of ambitious researchers were given honorific titles: the power hungry Gebhardt was Advisory Surgeon, Max Pfannenstiel (professor at Marburg) became Advisor in Hygiene, and Josef Vonkennel (professor at Leipzig) was appointed Advisory Physician as well as Advisory Dermatologist. The SS networks constantly pushed for academic credentials for younger researchers like Rascher, for university positions for more senior figures, or at the elite SS Medical Academy at Graz. Pfannenstiel was given an honorary chair at Graz.<sup>5</sup> Joachim Mrugowsky as Director of the Hygiene Institute of the Waffen-SS had to overcome academic opposition to his holistic programme of 'Geo-medicine' to obtain an academic recognition at the University of Berlin.

The SS aimed to become a major force in medical research and in pharmaceutical manufacturing. Himmler recruited academics – Rascher to manufacture the blood stypic 'Polygal', and Schilling for a malaria remedy, Mrugowsky for a typhus vaccine, Hirt for chemical warfare tests, the

dermatologist Vonkennel for new pharmaceuticals, and the hormone researchers Clauberg and Carl Vaernet – to develop human experimental programmes.

Himmler saw the value of non-SS collaborators, such as Clauberg. Himmler crucially intervened with the DFG on 8 September 1940 to obtain for Clauberg a doctoral student: Siegfried Fudalla (later a widely read advocate of holistic medicine), and a female assistant devised a method to render rabbits infertile using formalin to seal the Fallopian tubes.<sup>6</sup> Clauberg required a carrying agent for the formalin, and to be able to check that the Fallopian tubes were sealed. For this he concocted an X-ray contrast agent, 'Neo-Röntym', which was based on the chemical barium sulphate.<sup>7</sup>

Clauberg regularly treated infertile wives of SS officers. He at first suggested to Reiter of the Reich Health Office a 'research institute for reproductive biology', but Conti rejected the plan in January 1940. Clauberg met Himmler on 22 March 1940, advocating how hormonal research could enhance the reproductive potential of the SS. From 1940 Clauberg became the director of the Women's Hospital at the industrial town of Königshütte (Chorzów) in Silesia.<sup>8</sup> In March 1941 he announced to Himmler his method of sterilization without an operation. Himmler was gullible when it came to fantastic claims concerning race, reproduction and holistic therapies.<sup>9</sup> Clauberg explained about experiments on making white mice sterile, and his plans for an institute for reproductive biology to research and treat infertility. Clauberg suggested that a cause was underdevelopment of the sexual organs as a result of unwholesome nutrition. He linked 'positive population policy' to the importance of agriculture for the female capacity for 'propagation'.<sup>10</sup>

Clauberg cunningly appealed to Himmler's expectation of a method to sterilize hundreds in a day that suited forced labour policies for racial undesirables. X-ray sterilization had been contemplated under the 1933 sterilization law, and eventually permitted for women aged over 36.<sup>11</sup> But the law's cumbersome administrative machinery and hereditary focus was unsuited to the concentration and slave labour camps. Forced abortion was disruptive. Himmler stated to the DFG that it should fund Clauberg and finance the purchase of an X-ray machine, in addition to supporting the position of a scientific assistant.<sup>12</sup>

In May 1941 Himmler considered that Clauberg's new method of sterilization be tested not in a clinic but on prisoners in a concentration camp – ideally, Ravensbrück as the sole camp at the time with primarily women prisoners. Clauberg responded that as the technique was still in a developmental stage, he needed to be there to supervise. In fact, the technique was based only on animal experiments. Grawitz suggested that Clauberg be supported for a research institute at his Königshütte clinic, and that this be linked to a women's concentration camp.<sup>13</sup> Fortuitously Auschwitz – within a few hours of Königshütte – began to take larger numbers of Jewish women by 1942. Himmler delayed final approval until a meeting of 7 July 1942,

attended also by Gebhardt and (Pohl's underling) Richard Glücks, when authorization for Clauberg to experiment in Auschwitz was given. The SS radiologist Hans Holfelder and organizer of the *SS-Röntgensturm* was to provide support.<sup>14</sup>

As scientists expanded their research institutes and resources, they radicalized racial agendas, which became increasingly coercive, exploitative, and invasive. Himmler developed the idea of Germany's enemies as 'human animals' requiring special treatment.<sup>15</sup> The SS operationalized human experiments on a large scale. Routine animal experimentation continued alongside human experiments: animals were used at the concentration camp of Struthof in Alsace as a preliminary to phosgene experiments, and SS research institutions eagerly acquired stocks of animals. Gebhardt at Hohenlychen developed a department for animal pathology.<sup>16</sup>

The aim of the deadly research was to launch a stunning new portfolio of SS produced pharmaceuticals, eliminating diseases such as TB, malaria and typhus, curing infections, and even sexual deviants. Once experiments showed the superiority of conventional scientific drugs over homoeopathy, Himmler changed strategy to establishing a large-scale organization for research, clinical testing and pharmaceutical production. The SS dermatologist Vonkennel was encharged to develop new drugs and manufacturing plant, especially to produce a 'German penicillin'.<sup>17</sup> Vonkennel was a Nazi enthusiast who joined the Party in 1933. His researches led to support from the Waffen-SS for a chemotherapeutic research institute, camouflaged as a university institute but really an SS installation. When Vonkennel moved from Kiel to Leipzig in April 1943, he entered into impromptu arrangements with the SS researcher Ding at Buchenwald. Vonkennel had long-term links to the Schering pharmaceutical company, and he developed the new sulphonamide Globucid. Schering had also offered this product on 17 November 1941 to the SS Hygiene Office for testing.<sup>18</sup>

There were rival constellations of researchers competing for supremacy. This situation flatly contradicts the tendentious interpretation of efficient and rationalized medical research under National Socialism with the KWS and luminaries such as Butenandt at its core, and pharmaceutical companies such as Merck (Darmstadt) and Schering in an effective partnership between the military, science and industry. This view blends out the role of prisoner research. Instead, the situation is one of bitterly feuding factions: there was Butenandt and the KWS deeply immersed in complex scientific problems of the toxicity of alternatives to penicillin to be effective, Paul Rostock and the military prioritizing the opening of test plants, and the SS as an ambitious entity forcing through camp experiments, and developing production.<sup>19</sup> The competitive situation was replicated by competition in virological research, and over the development of diverse types of vaccines against Fleckfieber.

Himmler, defeated on homoeopathy, had to accept the validity of the sulphonamides, but at least he wanted production under SS control.

Vonkennel established a new pharmaceutical company, the Deutsche Heilmittel GmbH, which had taken over a Prague-based manufacturer and its plant. Its SS-financed research institute had ten staff, among these the physician Josef Kimmig. It worked – with some success – on penicillin, and the drug *Sulfonamid-Präparat DDS* (Diaminodiphenylsulfon), which was tested on prisoners in Buchenwald, resulting in fatalities.<sup>20</sup>

The more these SS medical networks developed, the more the SS became riven with internal feuds and animosities. Supporters of coerced research such as the SS Surgeon Gebhardt and the Reich SS Physician Grawitz were mutually suspicious of each other.<sup>21</sup> The worsening typhus problem, and the increasing dependence on Zyklon gas for delousing, meant that Mrugowsky's sprawling Hygiene Institute constituted an independent power bloc. While Auschwitz became a location for multiple experiments, those in Block 10, Mengele's Twin Block in Birkenau, the infectious disease and blood experiments at the laboratory of the Hygiene Institute of the Waffen-SS at Raisko, and the IG Farben sponsored experiments at Monowitz represented differing and competing elements within the SS. Consequently, even those experiments under the SS were erratically co-ordinated, and lacked coherence in their aims.

## SS command and organization

Having previously cajoled and rewarded scientists to research in concentration camps, Himmler authorized most (but not all) concentration camp experiments from 1942. Proposals were filtered up to Himmler by Karl Brandt (for hepatitis), Gebhardt (for TB), Grawitz and Pohl (for the SS nutritionist, Schenck). In September 1942 Pohl wrote a manifesto on the need to have massive experiments in concentration camps on poisonous elements in diet, in part to improve soldiers' diet and in part in preparation for when rationing would end after the war, to ensure that Germans ate healthily.<sup>22</sup> Yet Pohl became critical of the findings: although they established what was physiologically necessary for survival, the prisoners' state of nutrition was so different from the frontline German soldiers, and they lacked the morale evident (Pohl thought) among the German active combatants.<sup>23</sup>

Pohl, the SS's chief economic manager through the WVHA, held from March 1942 power over financial resources, buildings, and manpower, including the organization of forced labour. Concentration camp experiments generally (but not always) required his authorization.<sup>24</sup> Working under Pohl's WVHA, the physician Enno Lolling had responsibility for medical provision in the concentration camps, as well as for pharmaceutical and sanitary supplies. The priority was the health of camp staff, but there was responsibility for those experiments authorized by Himmler. Lolling's medical command was under Pohl's economic office, giving Pohl authority over experiments in terms of access to prisoners and resources.<sup>25</sup>

By November 1942 an internal dispute flared in the SS between Grawitz and Sievers over control of the experiments. Grawitz objected to Sievers as a non-physician, whereas Sievers of the SS Ancestral Research Organisation felt that he should have the authority. Originally under the SS Race and Settlement Office, the Ahnenerbe became an independent entity from April 1942. In December 1942 Himmler came out on the side of Grawitz over Sievers.<sup>26</sup> The feuding factionalism intensified within the SS, as the Ahnenerbe organized an institute for military research; the Waffen-SS had its research tentacles, and the concentration camps under Pohl had a powerful administrative hierarchy controlling resources. Pohl conceded that Himmler would bypass his office and communicate direct with camp commandants.<sup>27</sup> At the same time, researchers had contacts with outside providers of research resources as Ding with IG Farben, and Mengele to Verschuer and other scientists at the KWG. Mengele was financed by the DFG and supported by Verschuer, who reported to the DFG in March 1944, that Mengele supplied 'scientific materials' from Auschwitz:

My assistant, Dr. Mengele (M.D., Ph.D.) has joined me in this branch of research. He is presently employed as Hauptsturmführer and camp physician in the concentration camp at Auschwitz. Anthropological investigations on the most diverse racial groups of this concentration camp are being carried out with permission of the SS Reichsführer [Himmler]; the blood samples are being sent to my laboratory for analysis.<sup>28</sup>

The euthanasia doctor, Schumann worked under the auspices of Viktor Brack of the Chancellery of the Führer to devise an X-ray sterilization procedure. He carried out the assignment, despite his limited understanding of radiology and reproductive medicine. Brack's status meant that Himmler handled the correspondence concerning the X-ray sterilizations personally, and that accordingly Reichsarzt-SS Grawitz was only marginally involved.<sup>29</sup>

Although Karl Brandt as Hitler's protégé and a rising star in the administration of sanitary matters and in the co-ordination of research held rank within the SS, this mattered far less than other allegiances. As professor on the Berlin medical faculty, he had a network of academic advisers as Gutzeit and the fellow surgeon Paul Rostock, who was dean of the faculty. Karl Brandt's hazy powers from 28 July 1942 as the Führer's General Commissioner over Health and Sanitation – with the aim of co-ordinating civilian and military health – were greater in theory than reality. Brandt, at loggerheads with Conti, tended to collaborate with Grawitz – as when Himmler approved the hepatitis experiments. Followed by Grawitz's request to Himmler on 1 June 1943, Himmler approved experiments on eight criminals specified as Jews under death sentence for involvement in the Polish resistance. Dohmen though selected twelve (eventually eleven) Jewish

adolescents for transfer to Sachsenhausen.<sup>30</sup> Beger similarly transformed the directions to select Bolshevik commissars for the Jewish skeleton collection. At Buchenwald the researchers Hoven and Ding manipulated the selection process to target criminals rather than political prisoners. Elsewhere the camp commandant rather than the researchers selected as at Dachau and Ravensbrück.

In April 1943 Himmler contemplated having an organizer for the various series of experiments to provide greater uniformity and control of the experiments. He considered appointing Hans Deuschl, a Nazi medical activist in the National Socialist German Doctors League and former Director of the Leadership School of German Physicians at Alt-Rehse in rural Mecklenburg, to oversee all experiments.<sup>31</sup>

Pohl had doubts about Deuschl's suitability as experiments co-ordinator. This was the nearest that the experiments came to becoming systematically organized by a medically qualified SS functionary. Himmler's dedicated but colourless secretary SS-Obersturmbannführer Rudolf Brandt contacted both Grawitz and Pohl on 28 April 1943 – as both shared the major organizational responsibility for experiments – as to Deuschl's suitability.

Himmler's idea was to base Deuschl in Dachau. There he could oversee and organize the experiments approved by Himmler in this and other camps. Another role was for Deuschl to oversee the convalescence and rehabilitation homes for the SS. Deuschl was an academic outsider and (a great positive for Himmler) had already shown a murderous streak – he advocated killing Soviet prisoners to save food rations. He had holistic ideas about medicine compatible with those of Himmler.<sup>32</sup>

Pohl, at the time (around June 1943), thought there were between eight and ten separate sets of experiments, running at the same time. He recommended discussions with Lolling, as medical officer in chief of all camps (his office was Amt D III).<sup>33</sup> Deuschl in fact visited Dachau with Pohl on 23 June 1943. But then Pohl withdrew support from Deuschl. By July 1943 Pohl claimed there were only three to five sets of experiments running, too few to warrant a special administrator.<sup>34</sup> In the event nothing came of the proposal, leaving Deuschl without a significant role in Nazi medicine.<sup>35</sup> It was just at this time that Himmler had to accept that experimental results in homoeopathic wound treatment showed the lack of effectiveness of holistic alternatives. Pohl especially may have been wary about potential demands as regards the resourcing of experiments. New initiatives were more conventionally scientific. The experiments mostly required Himmler's authorization, even when the Reichsführer SS had other urgent priorities. There continued to be no standard procedure as regards authorizing experiments; eventually, on 15 May 1944, Himmler ordered that all experiments required an application to the Reichsarzt SS. Grawitz was required in turn to obtain the opinions of Gebhardt, Nebe and Glücks, and to present a dossier to Himmler for final authorization.<sup>36</sup> In the case of the seawater drinking experiments, the procedure was followed, but for other experiments the centralized procedures appear not to have been

ever adhered to. Major sets of experiments as by Clauberg, Mengele and Schumann ran on organizational lines that were very different, despite all being located in Auschwitz.

## Nutrition

Diet was central to the SS concept of health. Himmler was counselled by the SS cardiologist Fahrenkamp as regards natural foods and reduction of stress.<sup>37</sup> While SS men were to be encouraged to improve their eating, the dark underside was the ‘useless eaters’ of camps and prisons were to have their diets rationalized and reduced. Vetter took photographs of starving prisoners; the prisoner doctor Fejkiel observed how, Vetter then killed by phenol injection into their hearts and had the cadavers dissected to examine their internal organs.<sup>38</sup> Wirths in Auschwitz experimented with a mixture of yeast and nettles to remedy the severe starvation in the camp.

The SS Nutrition Inspector Schenck conducted experiments at Mauthausen. The historian Kopke raises the question whether Schenck or prisoners wrote the report of 10 December 1944 (as they did for the dissertations of Hoven and Erich Wagner, mainly prepared by the prisoner Paul Grünewald), and for Hans Delmotte assisted by a Jewish prisoner at Auschwitz. Schenck devised large-scale nutrition experiments in summer 1943 on 450 prisoners working in the quarry, and from 1 December 1943 to June 1944 on 370 victims in three groups. These groups were subjected to three diets – normal camp diet, normal diet with yeast added, and the third group with mashed cereal instead of meat and bread. Schenck tried to minimize the fatal effects of his experimental feeding by alleging a higher nutritional value. For Schenck’s experiments there is a record of numbers who died as a result of starvation. At least forty-seven survivors of the experiment were sent to Schloss Hartheim to be gassed.<sup>39</sup>

## Deadly medicines

On several occasions Himmler specified experiments on ‘prisoners condemned to death’. Although Jews and gypsies were the targets, often the selection of victims was left to camp commandants or administrative underlings. Thus whether the camp administration or doctors were selecting requires specification. Rascher randomly selected victims, notably for potassium cyanide experiments, when he watched the time taken to die.<sup>40</sup> At Buchenwald the order played into the hands of an internal camp struggle between ‘red’ political prisoners and ‘green’ criminals; Jews were rejected. At Ravensbrück the Polish women were selected by the commandant, who then regretted the resulting disorder. The question arises how the cohorts for often long-running experiments were targeted.



Injections were liberally dispensed in concentration camps. Most injections were simply designed to kill, referred to among the habituated as 'Abspritzen'. Such injections were frequent: to dispatch the sick in psychiatric hospitals, concentration camp Revier (the prisoner dispensaries although there was often little to dispense), and for forced labour. Some research was conducted on the effects of phenol. Conti compared injections as opposed to gas for psychiatric patients. At Mauthausen, the garrison physician Eduard Krebsbach was called 'Spritzbach' because of his predilection for administering fatal injections. He claimed that the head of Office III D, under Lolling, ordered him to kill all who were a burden on the state. The young Majdanek doctor, Heinrich Rindfleisch killed prisoners with Evipan, phenol, air and petrol.<sup>41</sup> At Ravensbrück, Oberheuser not only mistreated the survivors of experimental operations, but she also gave sick prisoners lethal injections.<sup>42</sup>

Unknown substances had dire physical effects – fevers, swellings, sweats. The enigma is whether the injection was the cause. Doctors were testing drugs and vaccines: in some cases we know that there were tests but not who the victims were. In others we have victims' accounts of swollen necks, limbs and fevers. In certain cases, the time, location, and the doctor's name indicate a link to a set of known pharmaceutical experiments. The constant challenge is to connect and contextualize victims' narratives to documentation on the German side.





## CHAPTER NINE

# Wartime expansion

### Rascher and rapid descent

The sense that Germany was losing the medical war meant pressure for systematic experiments. In May 1941 Rascher attended a meeting on aviation medicine for the Luftgaukommando VII in Munich. On 15 May 1941 Rascher requested permission for experiments on rapid descent, warning ominously that these experiments will involve fatalities. At this time the SS had no autonomous structures in place for experiments. Himmler contacted the Luftwaffe medical researchers for approval for the pressure experiments in Dachau.

The military and airforce had large-scale research installations, and affiliated academics. Rascher was under Luftwaffe command, despite personal backing from within the SS. Military scientists critically evaluated the concentration camp experiments from the standpoint of their scientific quality. The German airforce became drawn into experimental research at Dachau. The extent to which Rascher's results were circulated through the Luftwaffe hierarchy and its medical advisers and experts (notably to the physiologist Hubertus Strughold) remains controversial. The atmosphere in the Luftwaffe medical services was much more open to innovation and research, than the more rigid and traditional medical services of the German army.<sup>1</sup>

At Tempelhof Airport, the Reich Air Ministry took over the land on which the Columbia-Haus concentration camp had stood, and turned this into the centre for manufacturing Stukas by the Weserflug company. Lufthansa had its Lilienthal forced labour barracks here.<sup>2</sup> It is alleged that experiments were conducted at the new military airfield at Tempelhof, where there was also a military prison conducting torture, a forced labour camp and a research centre.

Rascher obtained the support of the German Aviation Experimental Station at Berlin Adlershof. He was officially seconded to the newly established 'Luftwaffe Institute for Air Experiments – Dachau Station'. Himmler then pressed the Luftwaffe to support and make use of the

experimental results. These manoeuvres show how Himmler extended the SS tentacles into research oriented but otherwise somewhat resistant Luftwaffe.<sup>3</sup>

Rascher was an ambitious experimentalist keen to become an academic high-flier. The Office of Sanitary Inspector in the air force authorized and resourced the experiments. Within the air force Rascher's experiments were controversial. Erich Hippke, as Sanitary Inspector, insisted on self-experimentation as a prerequisite. Himmler associated Hippke with opposition to Rascher, and efforts to transfer Rascher to the eastern front. On 19 February 1943 Hippke tried to conclude the experiments on survival in freezing temperatures by thanking the SS for their help and cooperation. Still, Rascher was not released from the Luftwaffe.<sup>4</sup>

Rascher conducted low pressure experiments at Block 5 room 3 in Dachau from 22 February to 23 May 1942. He informed Himmler about the progress of the deadly research and other life-threatening experiments on low pressure, as Himmler had ambitions for the SS to advance into hitherto taboo scientific territory. The research required experiments up to 68,900 feet, and then freefall with and without oxygen supply. The rate of fall was correlated with consciousness. The limit for a safe jump with a parachute was fixed at 42,700 feet, while 59,100 feet was deemed possible.<sup>5</sup>

On 2 May 1942 Himmler addressed ten experimental subjects, promising that they could act as Kapos. Rascher recognized the resulting damage to the heart; he appears to have secured release for one prisoner, and three (Sostka, Rockinger and Dobovick) were transferred to act as Kapos at the newly established camp of Majdanek.<sup>6</sup>

The low pressure experiments at Dachau involved the air force medical services, civilian aviation medical researchers who were sponsored by the airforce (effectively two air force command hierarchies were involved), university academics, and finally the SS through the Ahnenerbe. To carry out the experiments, Rascher required authorizations, resources and support from all of these as a serving Luftwaffe medical officer and SS officer. Rascher worked as part of research teams, although these were riven by personal rivalries, and were shocked at his ruthless conduct. For the pressure experiments, his collaborators included Wolfgang Romberg from the German Experimental Institute for Aviation (DVL) Berlin, and Georg Wertz of the Munich Institute for Aviation Medicine. The questions arise whether these researchers and the involved authorities supported, restricted, or resisted the experiments, or whether Rascher had sole responsibility?

Rascher required a mobile aviation pressure chamber to be brought into the Dachau concentration camp.<sup>7</sup> He convinced Himmler to support the experiments, and the SS pressurized the Luftwaffe to resource these. Sievers of the SS Ahnenerbe was a key intermediary, and witnessed three experimental 'rides'.<sup>8</sup> Sievers secured Rascher's promotion in the SS to the rank of Hauptsturmführer (equivalent to a captain), and in December 1942 initiated a drawn-out process to transfer Rascher to the Waffen-SS to facilitate his experiments, but which would lead to his arrest.<sup>9</sup>

At first, the experiments were harmless; in mid-March Rascher killed sixteen Russian research subjects; then the SS medical officer Anton Endress brought a political prisoner on the next day, when two further persons were killed. Rascher carried out a fatal experiment on a young Belgian, whom he then dissected. Even on the day the chamber was removed, Rascher had a final stab at experiments and killed five persons. Prisoners were taken to point of low pressure, when Rascher deprived them of air. At his trial, the commandant Martin Weiss said between thirty and forty deaths occurred, but the Nuremberg Medical Trial cited evidence of the prisoner assistant Walter Neff that there were seventy deaths.<sup>10</sup>

It can be reconstructed that 540 prisoners endured these low pressure experiments, and that of these between 30 and 80 died. Neff and Stanislav Zámečník state 200–300 prisoners overall; the Nuremberg Document NO-402 on low pressure experiments stated that 180–200 prisoners were used and that 70–80 prisoners died.<sup>11</sup> Camp documents and compensation records indicate that 61 Poles were subjected to experiments, and just one respectively who were Belgian, Czechoslovak, German, Soviet and Jewish victims by name, making a total of 73 persons. Poles were a large group in the camp at the time, and priests were deemed to be suited for such research. No priest died. Their accounts tell of enduring painful cramps, bleeding, and hallucinations. Survivors were weak and enfeebled. The German political prisoner, Fritz Fruehwald was a revier nurse but was forced by Rascher to be an experimental victim; he was taken to 17,600 metres; he then became a patient for several weeks.<sup>12</sup>

Rascher radicalized the experiments on ‘VP’s (*Versuchsperson*, or experimental person) during the absence of the aviation medicine specialist Wolfgang Romberg by undertaking ‘terminal’ experiments. He gloated on the chance to undertake ‘live’ dissections in the chamber, and on newly deceased prisoners.<sup>13</sup> Rascher reported to Himmler on 5 April 1942 on these more extreme experiments. He proudly told of a Jewish victim aged thirty-seven held for over an hour at 12,000 metres. The heart was still beating while Rascher removed the brain and spinal cord.<sup>14</sup>

Rascher took a person to 7,000 metres, and then rapidly up to 20,000 metres. Experimental subjects hit the back of their heads from this, and became unconscious and died. A Polish experimental subject, Ignacy Haremza, was two weeks in the experimental station in 1942 and underwent initial X-ray, and blood tests. In the pressure chamber, he felt that he had no more air to breathe and began to choke on his blood, fell unconscious and collapsed.<sup>15</sup>

Hans Hornung described how he was forced to undergo three pressure experiments. Each was more extreme than the previous one. For the third experiment on 17 September 1942, when blood was taken by the imprisoned chemist Rudolf Punzengruber, he passed out: ‘he was later told he had just escaped death and an experiment with brain liquid and spine puncture had been performed on him.’<sup>16</sup> After the experiment he felt that he was suffocating, ice was stuffed in his mouth, and his loosened teeth fell out.

Rascher cultivated an academic network for analysing results. He sent electrocardiogram data to Fahrenkamp. Brains were sent for dissection to various institutions, not least those of the brain researcher Otto Spatz at his brain research station for aviation casualties.<sup>17</sup>

Rascher submitted the final report to Himmler, Sievers and his superiors at the Gausanitätsamt 7 on 28 July 1942.<sup>18</sup> Once the air force took back the pressure chamber in July 1942, the air force chief medical officer Erich Hippke declined to return it to Dachau for further use.<sup>19</sup>

## Rascher and freezing experiments

In 1942 the ambitious Rascher conducted a second set of deadly experiments on low temperature, the onset of death, and resuscitation. Rascher represented the tip of an iceberg of complicity that incorporated the scientific and medical establishment. While an archetypal Nazi scientist in his murderous research, he had support from scientific networks. He collaborated with the physiologist Holzlöhner from the University of Kiel on the Baltic. Technically, Rascher was Holzlöhner's assistant along with Finke, who was at Dachau from August to October 1942.

When the altitude experiments finished, Rascher asked Hippke of the Luftwaffe research department in June 1942 for him to authorize resuscitation experiments on freezing prisoners. Hippke agreed there was a real need for resolving issues of rewarming.<sup>20</sup> He insisted on self-experiments, and then pardoning the experimental subjects. Hippke's motto was 'on ourselves first' – 'alles an uns zuerst'. Hippke required the involvement of the air force pathologist, Franz Büchner, from Freiburg as he had a strong Christian moral viewpoint. It meant that Büchner would be involved with the dissections of victims. Hippke claimed that he intervened when Büchner opposed outright the euthanasia killings.<sup>21</sup>

Holzlöhner, professor of physiology at Kiel, was commissioned on 24 February 1942 by Hippke to investigate the effect of rapid cooling. Rascher invited him to join the cold experimentation research. The first set of freezing experiments ran from 15 August 1942 to the beginning of October 1942. Holzlöhner already had two research projects, one on protective clothing and another on testing medications in the context of rewarming. Again, Rascher drew on established research networks: he took advice from Adolf Jarisch junior – a pharmacological specialist from Innsbruck, who was interested in blood circulation. The pathologist Ludwig Singer conducted autopsies on fatalities in October 1942 at the Schwabing hospital. Holzlöhner left Dachau by October 1942, marking the end of the first collaborative phase of the experiments. According to the prisoner assistant Neff, there were fifty to sixty experimental victims, and fifteen to eighteen deaths.<sup>22</sup>

In the second phase of the experiment, Rascher continued in the Block 5 experimental station to callously sacrifice prisoners' lives in the freezing

experiments. Collating records from the time with applications for compensation allows identification of 133 prisoners by name, who were subjected to the freezing water experiment. The largest group of research subjects were eighty-six Poles, although there was only one Polish priest, Leon Michałowski, who survived.<sup>23</sup> Others were Soviet prisoners of war, and Ukrainian forced labourers; there were five Dutch and three Belgian political prisoners, and a stateless gypsy. Again, among those killed were at least three Jews.<sup>24</sup> The prisoner assistant, Neff, testified that in the second phase from October 1942 to May 1943, this used 220 to 240 persons, and resulted in 65 to 70 deaths. Overall, a standard estimate of numbers killed by Rascher is that of 80 to 90 persons.<sup>25</sup> As with the pressure experiments, many victims were Soviet prisoners of war.<sup>26</sup>

Leo Alexander, in reviewing the evidence after the war was convinced Rascher faked results of the freezing experiments when he reported these to Himmler, reducing the time it took to die. Himmler came to Dachau on 10 November 1942 and saw a freezing experiment on two prisoners in the ice water tank being performed. One was rewarmed by the two naked female prisoners, and the other in hotwater.<sup>27</sup> One of the prisoners was Hentrik Knol from Haarlem:

While I was lying in the water, Himmler asked me whether I was 'red or green'. The red colour indicated the political prisoners and green the criminals. I told him that I was red and he answered 'if you were green, you would have a chance of freedom.'<sup>28</sup>

Himmler attributed the lack of recognition of Rascher to 'Christian medical circles' associating these with ethical opposition to harmful experimentation. Rascher's deadly experiments expressed a new ethic of the heroic experimenter who could sacrifice lives of lower value, and so serve the cause of racial survival.<sup>29</sup>

The cold water freezing experiments marked an attempt to replicate under controlled conditions what German air force crew experienced when their plane came down at sea. The scientific purpose was to make a case for rapid rewarming of rescued German airmen. The Germans considered that the physical condition of a prisoner and pilot might be rendered the same by providing some extra food. This neglected a range of physiological and psychological factors affecting malnourished prisoners and their survival capacity.

The Germans focused on clothing. A victim, Władysław Kapera, remembered being dressed in a German pilot's leather uniform, with helmet, furlined boots, a parachute harness, and flotation jacket. After asking him whether he had any last wish to write to his parents, the scientists thrust him into an ice-covered tank of water, which he felt was like a coffin, and where he rapidly lost consciousness.<sup>30</sup> The Belgian Fernand Labalue blacked out after forty minutes in the freezing tank; he came round to find himself

sandwiched between a French and a Yugoslav woman to warm him with their body heat.<sup>31</sup> At least eight prisoners were rewarmed by women prisoners transferred from Ravensbrück.<sup>32</sup> Rascher rejected – on the basis of his ‘racial sensibility’ – one of the women, aged twenty-one because of her ‘pure Nordic racial features’.<sup>33</sup> The experiments were repeated three times on Labalue.

Labalue and fellow prisoners were fed rather better for a few days before the experiment, not knowing that their lives were at risk. He took the risk for extra food: he was young and tough as his soubriquet ‘Tarzan’ suggested, and defiant with a record of resistance and escape. He came back from the experiment to share the prized rations with his compatriots, but the ordeal had been so painful and traumatic that he dissuaded any of them from volunteering in their turn.<sup>34</sup>

The cold experiments involved being held in water of 3 to 8 degrees from 80 minutes to three hours. Rascher kept a Russian commissar submerged in water of 7 to 8 degrees centigrade – he was conscious for three hours, and survived for five hours, the longest observed in any subject. A Belgian died accidentally as Rascher lowered the temperature too far.<sup>35</sup>

Himmler by return suggested resuscitation experiments by placing the experimental subject between two women.<sup>36</sup> Himmler, ever opinionated on scientific matters, wrote to Milch convinced of Rascher’s important results, but expressing dismay at obstructive ‘Christian medical circles’. How could the life of a ‘criminal’ be ranked above that of a German aviator? The SS Leader complained at his protégé Rascher’s exclusion from presenting a paper at a conference on survival on land and sea at the Hotel Deutscher Hof, Nuremberg on 26 to 27 October 1942, an event organized by Hippke, the medical inspector of the Luftwaffe.<sup>37</sup> Rascher attended the meeting along with the distinguished physiologists Rein and Hubertus Strughold, and others on the military side as Albert Anthony, the deputy of the ostensibly critical Hippke. The results of the Dachau experiments were presented under the headings ‘Prevention and Treatment of Freezing’, and ‘Warming Up after Freezing to the Danger Point’.

Holzlohner announced that it was possible to research on humans who had been immersed in water for a long period. He credited Rascher and Finke for their collaboration, rather than as having a role in the design and conduct of the experiments. Holzlohner reported how stiffening of muscles made rescue or climbing into dinghies difficult. Once out of the water, temperature would still fall, as shown by how rectal temperature was associated with a range of physiological consequences, as blood composition and viscosity.<sup>38</sup>

Rascher complained to Himmler how Holzlohner took sole credit for the results of the experiments. At the ensuing discussion, Rascher added details of systematic temperature measurements of different rates of lowering with alcohol, Dextropur, and hot infusions, making his direct involvement quite clear. Various scientists commented on whether animal research could be extended to humans. Finally, Strughold cannily observed how there was varying salt content and differing temperatures in different seas.<sup>39</sup> Strughold’s astute

comment could be read as implying that the Dachau study made with freshwater did not reflect actual conditions. The wider academic community responded with tacit acceptance of the deadly experiments to criticism of technical details.

At first, prisoners volunteered. Rascher had Hornung transferred to kitchen duties. Rascher appears to have regarded Jewish and Soviet victims as disposable, taking them to the point of death.<sup>40</sup> Some Russians, such as Wladimir Kowaltschuk survived the experiment, but the rest of camp imprisonment led to his death shortly after liberation.<sup>41</sup>

Rascher examined the cooling of subjects during rapid descent and whether alcohol or sugar could accelerate rewarming. He triumphantly endorsed Himmler's view that one of the main causes of deadly chilling was the low temperature of the cervical spinal cord. It meant that life jackets should keep the upper chest above water.<sup>42</sup>

In November 1942 Rascher planned a third set of experiments on dry cold. These were to be at the military medical mountain research station at St Johann in the Tyrol, and at the SS mountain house at Bayerischzell. The research was to be on acclimatization to severe cold, and on preventing frostbitten feet in deep snow.<sup>43</sup> Certainly, some dry cold experiments were carried out at Dachau.<sup>44</sup> The dry cold experiments were further developed by Ulrich Westphal, who undertook three weeks' research involving human metabolism experiments in 1942.<sup>45</sup>

Rascher boasted to Himmler that he had exposed thirty naked prisoners for 9 to 14 hours at 27–29 degrees below freezing in the dry open air. The cosmetics firm Weleda supplied Dachau with a cream against frostbite.<sup>46</sup> Grawitz insisted that he should have experiments running on 100 persons, but Rascher managed to experiment on 'only' the thirty subjects (apparently without fatalities) by February 1943 in dry cold overnight, and then rapidly rewarmed.<sup>47</sup> The number of experiments was limited because of a warmer winter than usual, and typhus risks placed the SS sauna baths off-limits for rewarming. Rascher asked for permission to research at Auschwitz or Majdanek.<sup>48</sup> The results of the dry cold research were reported to the Second Conference of Special Medical Consultants from 30 November to 3 December 1942 at the Military Medical Academy Berlin.<sup>49</sup> There were freezing experiments at Mauthausen when the Italian Constantino Zervos was a victim.

The Dachau experiments required considerable organization within the camp concerning assistance, resources and supply of victims. Rascher found an apparently dependable assistant in Walter Neff, who had been imprisoned in 1937 for preventing a Nazi bomb attack on a police post.<sup>50</sup> From February 1942 Neff was a nurse at the camp sick station. He was released on 15 September 1942, but stayed on to assist Rascher, keeping records and statistics of Rascher's experiments, as well as working for the new SS entomological institute.<sup>51</sup> The researches were supported by five prisoner chemists (including Punzengruber). Himmler considered that Neff should be retained for the rest of the war, because he could work effectively with prisoners.<sup>52</sup>

On 9 March 1943 Rascher was finally transferred to the Department D of



the Sanitary Service of the Waffen SS releasing him from the Luftwaffe. He remained attached to the Ahnenerbe, becoming part of its new military research arm, the Institute of Military Research (*wehrwissenschaftliche Zweckforschung*). Rascher headed a division R, another being under Hirt, and section M under the entomologist Eduard May.<sup>53</sup> Yet rather than the solution to his problems, Rascher was now in the grips of destructive powers.

Rascher came under scrutiny from Gebhardt in May 1943.<sup>54</sup> Gebhardt reprimanded Rascher for the poor quality of research in his report to Himmler. Rascher insisted it was only a general report, although based on intensive research. Gebhardt considered Rascher was academically too isolated at Dachau, and that he would benefit from a post as assistant at a university research institute. Gebhardt was a dangerous enemy at a time when Rascher was seeking a university for a habilitation, and to advance within the SS medical elite.<sup>55</sup>

## Wound infection

The experiments on the treating of war wounds show the high level of co-ordination of experimental series by mid-1942.<sup>56</sup> Large-scale experiments ran parallel in Dachau, Ravensbrück and Sachsenhausen. These resolved a debate on surgical as opposed to chemotherapeutic management of wound sepsis. Sulphonamides were introduced after their discovery was announced by Gerhard Domagk of IG Farben in 1935. Research at the Pasteur Institute and in the UK showed that sulphonamides were effective in checking infections, leading to rapid developments of new preparations. Indeed, the Allies operationalized field use of sulphonamides far more rapidly than in Germany where more traditional surgical views on excision of infected tissue prevailed. This prompted German surgeons and bacteriologists to undertake animal experiments.<sup>57</sup> Volker Roelcke has pointed out that there was no evidence-basis on precise dosage, but instead a general enthusiasm on the part of the Allies on the efficacy of sulpha drugs in preventing wound infection. Moreover, Roelcke explains how there was in Germany a sustained effort to develop an animal model for evaluating the sulpha drug doses. In July 1942 Domagk sent Gebhardt samples of Karfanil powder (a type of sulphonamide) for testing on a comparative basis.<sup>58</sup>

A crisis arose with war casualties dying from secondary sepsis. Gebhardt was appointed advisory surgeon to the Waffen-SS, and observed the casualties on inspection tours to the Eastern Front. The high casualty rates were compounded by underresourced Waffen-SS field medical units. On 18–19 May 1942, an expert meeting of advisory military surgeons held inconclusive discussions at what became known as the first 'Arbeitstagung Ost'. Events now moved rapidly, as Gebhardt met with Himmler at his field command centre on 26 May. Himmler stressed that resolving war wound therapy was a military issue, and a great crisis for the people of the Third Reich. The

decision was reached to test the efficacy of sulphonamide-based antibiotics in order to 'avoid all possible injury to the Waffen-SS in the future'.<sup>59</sup>

Coincidentally, on 27 May 1942 two parachutists from the Czech Brigade seriously wounded Reinhard Heydrich – by then acting Protector of Bohemia and Moravia – on the outskirts of Prague in the daring 'Operation Anthropoid'.<sup>60</sup> At first, Heydrich, who had reached for his gun and chased his assailants, expected to recover. Sudeten German surgeons from the German University Prague rapidly operated on Heydrich with apparent success.<sup>61</sup> But the bullet, after hitting the rear axle of Heydrich's bloated black limousine, had been diverted vertically through Heydrich's back, carrying cloth, wire and wool of the seat; his wounds became infected by gangrene.

Himmler ordered Gebhardt to Prague to save Heydrich's life.<sup>62</sup> Gebhardt found that the site of the wound and its contamination prevented his operating to remove the damaged spleen. Heydrich died on 4 June, and the Nazi leadership's consternation turned into ruthless revenge with the brutal destruction of the villages of Lidice and Ležáky: men were shot, women sent to concentration camps, and over eighty children – taken for forced adoption – were mostly killed in mobile gas chambers as insufficiently German.

There was a calculating, medical side to SS brutality. Hitler's medical entourage erupted in vicious recrimination. The Führer's doctor, Theo Morrell, was angry at not having been selected to treat Heydrich. He criticized Gebhardt for not using his more powerful patent form of sulphonamide, Ultraseptyl. Sulphonamides had initially contained the infection, but then rapidly lost their effect.<sup>63</sup>

Himmler used the Heydrich incident to gain a hold on military surgery through the Waffen-SS, augmenting its powers through ruthless medical experiments. He authorized Gebhardt and a team of surgeons to embark on experiments on the legs of concentration camp prisoners. The surgeons were ambitious to produce a German answer to British discovery of the powerful therapeutic effects of penicillin; the discovery was announced in *The Lancet* in August 1940, and the first tests on a handful of severe and often fatal infections were published early in 1941.<sup>64</sup> Gebhardt claimed to have privileged access to Allied literature on sulphonamide preparations. It was a chance for this arrogant and pedantic surgeon to prove that operative skill had greater value than chemotherapy, while exonerating himself from the charge that he was incompetent in letting Heydrich die. Indeed, he could when on trial plead that he acted under pressure from Himmler. Gebhardt took an entrenched position against the efficacy of sulphonamides, whereas Grawitz supported their use. Himmler's antipathy to sulphonamides and his predilection for homoeopathically inclined doctors and commercial interests added a third set of experiments. The surgical, sulphonamide, and the homoeopathic approach to wound infection were to be assessed.<sup>65</sup>

The leading surgeon Sauerbruch rallied to defend his colleague Gebhardt. Himmler and the SS Criminal Police chief Arthur Nebe ordered that wound experiments be carried out by Grawitz at Dachau and by Gebhardt at

Ravensbrück.<sup>66</sup> Twenty-five prisoners were exposed to tetanus-infected pus at Sachsenhausen to test whether surgical treatment or sulphonamides were more effective.<sup>67</sup> Medical researchers discussed whether it would not be better to monitor therapeutic trials on already infected patients, but Himmler supported those who wanted to replicate ideal laboratory conditions in concentration camps with experimentally infected prisoners. The standard method involved comparing results with the experiences of a control group.

The first set of tests was rapidly implemented at Dachau. Grawitz was sceptical of homoeopathic remedies in sharp contrast to Himmler's predilection for the homoeopathic and holistic.<sup>68</sup> Grawitz conducted two series of experiments from 15 June 1942. The victims experienced swellings, throbbing pain, bronchitis with phlegm, headaches and weakness of heart and circulation. Six Jewish victims had pus from the existing research subjects injected into them. Grawitz triumphantly reported:

All sepsis cases were ad Exitum . . . Overall, experiments were conducted on 90 prisoners. These included forty clergy, six Jewish and ten criminal prisoners. Twenty-nine prisoners died.

From a total number of 40 cases one positive case and four cases to be estimated with reservations as positive face 35 failures, 10 of which ended fatally. The tests in Dachau will be continued . . .

His report on the lamentable failure of homoeopathy was submitted to Himmler on 29 August 1942.

Grawitz, ever the hard liner regarding the inflicting of deep wounds and deaths, conclusively informed Himmler on 29 August 1942 that the homoeopathic (or 'biochemical') remedies for the inflicted wounds and furuncles were on balance ineffective. Of forty cases, only one was really healed, and there were ten deaths (and by December 1942, eleven priests had died). He referred to three further fatalities in Auschwitz.<sup>69</sup>

Himmler responded critically the next day that Grawitz's experiments lacked precision. His furious tirade against Grawitz revealed a smouldering animosity against academia, the medical sciences, and the medical profession. Himmler condemned Grawitz for using the experiments to retrospectively justify his title of professor; indeed he poured scorn on his medical qualifications. Himmler even criticized how many of Grawitz's medically qualified relatives were in the SS. In Himmler's view, the SS should have a reputation for objectivity, not least in experimental research. For the SS stood apart from the 'chemical trusts', by which he meant the IG Farben conglomerate.<sup>70</sup>

## **The Ravensbrück Rabbits**

The second stage of the wound experiments was at Ravensbrück. The overbearing and irascible Gebhardt ordered his young assistant Fritz Fischer

to carry out the wounding experiments.<sup>71</sup> The camp authorities provided the subjects. First, a group of men were tested – according to Fischer – on 20 July. Here, the narratives are shadowy and contradictory with figures of fifteen (according to Gebhardt), twenty (according to Fischer) and thirty male prisoners. One account is that fifteen men were transferred from Sachsenhausen concentration camp to Ravensbrück for use as experimental subjects.<sup>72</sup> Another narrative was that the men were from the small male compound at Ravensbrück. The three groups of men endured a 10 cm incision of the lower leg, and were injected with adrenaline to create an anaerobic zone.<sup>73</sup> Gebhardt used the men to teach Fischer the technique to perform the operation. The British forensic pathologist Keith Mant, who was the first to reconstruct the sequence of operations early in 1946, explained that as the cultures were introduced directly into healthy tissue, the desired infection did not occur.<sup>74</sup> Mant proved that the experiments were not instigated by the camp medical staff but arose from Gebhardt's insistence on human experiments.<sup>75</sup>

On 24 July 1942 a group of Polish women were summoned to the office of camp commandant Max Koegel, where they were met by the doctors Gerhard Schiedlausky, Rolf Rosenthal, and Herta Oberheuser.<sup>76</sup> There then occurred a series of experiments with ever deeper, infected wounds inflicted with more virulent cultures. The first set of six female victims were infected and wounded on 1 August 1942. There was still no sign of systemic sepsis, and the results of the controls were similar to that of the test subjects. The sulphonamide Katoxin improved healing time, although it initially increased inflammation.<sup>77</sup>

Nine women composed the next group, when on 14 August Fischer made a 10 cm incision into each woman's lower leg. He injected adrenaline to create an anaerobic zone, and added wood shavings to worsen the infection. The wound was treated with the sulphonamides Katoxin for one group and Protosil for another; the third group were given nothing.<sup>78</sup>

Gebhardt found the experiments inconclusive. Reichsarzt Grawitz ordered that victims' legs be gashed with splinters and glass shards, and infected with tetanus to replicate battlefield conditions.<sup>79</sup> When the Hohenlychen surgeons did not go to this extreme, Himmler was angered that no deaths resulted. He took death as conclusive evidence of the failure of the therapy under scrutiny. The greater the brutality, the more the surgical perpetrators would be bound into the SS. The spilling of blood cemented loyalty.<sup>80</sup>

Oberheuser selected camp prisoners with perfectly healthy legs, which had no signs of infection. The Hohenlychen doctors gashed the legs and infected the wounds with wood and glass shards; they broke bones, transplanted them, placed the injured limbs in traction, and destroyed muscles and nerve fibres. Bacteria causing gangrene were injected into the wounds of one group, and in another cultures causing blood poisoning. In the event, thirteen of the seventy-four experimental subjects died from gangrene and tetanus or from loss of blood, and six were executed. Władysława Karolewska protested against a third operation, boldly

objecting that 'it was not allowed to perform operations on political prisoners without their consent'.<sup>81</sup>

The next experiments were on 30 September on eleven women, and on 7 October on twelve women: there was a 10 cm incision into the lower leg, which was injected with adrenaline. Superficial muscles of the lower leg were tied off. Wood and glass were added to the wounds, making them deep and painful. Again, Katoxin powder was applied. The outcome was five deaths (Zofia Kiecol, Weronika Kraska, Kazimiera Kurowska, Aniela Lefanowicz and Alfreda Prus) from gangrene, and one death from tetanus. The Germans over time shot six of the 'Rabbits' from the various experiments, but would have liked to have liquidated them all, as they turned out to be immensely disruptive.

The experiments continued relentlessly. Over the course of a week from 18 to 24 November 1942 another ten women had pus injected. Some were injected with sulphonamides and some had surgery. Then in April, July and October 1943 women were again injected with pus from phlegmonous abscesses. This was in response to irate criticism from Grawitz, wanting to compare the surgical approach in Ravensbrück with homoeopathic experiments in Dachau. Aleksandra Loewenau has found that forty-two of such procedures were conducted on twenty-six prisoners, and that overall 118 operations were performed. Her definitive study of the Rabbits shows that forty-seven of the women were in their twenties and sixteen were still in school when the war began. The youngest among the victims was sixteen and the oldest forty-five when they were first operated on.<sup>82</sup>

The protracted series of painful experiments caused long-term wounds and disabilities. What made things worse was that conditions in the operating theatre were not sterile. The administration of the sulphonamides was not done carefully or often enough. Gebhardt delegated what might euphemistically be called aftercare to Schiedlausky, but he in turn passed over all responsibility to Oberheuser, whose attention – according to survivors – was 'little better than sadistic'.<sup>83</sup> Gebhardt, preferring surgery to pharmaceuticals, wanted the experiments to fail.

The sulphonamide and bone transplantation experiments gained notoriety. The name 'Rabbits' was bestowed by fellow prisoners as a mark of sympathy and solidarity.<sup>84</sup> In March 1943 Władysława Karolewska protested in writing to the camp commandant Fritz Suhren. The coerced subjects signed the protest, and refused to attend the Revier (the camp hospital) for further 'experiments'.<sup>85</sup> The Rabbits marched in protest to the commandant, and demanded that he inform them whether the operations were part of their sentence. They showed extraordinary political acumen, when in February 1943 they submitted a statement that 'international law does not even permit experimental operations on criminals/political prisoners'. This was an audacious stance, separating their status as internees from their ordeals as experimental victims. While inspired by the Red Cross agreements on the rights of detainees, the ICRC did nothing to halt the

medical abuses, even though the camp authorities conceded that the experiments went beyond an appropriate punitive regime.<sup>86</sup> The protest was cited when delivering judgment on Gebhardt, Fischer and Oberheuser at the Nuremberg Medical Trial.<sup>87</sup>

The Ravensbrück commandant Fritz Suhren found the prisoners' opposition provoked ill-discipline. Unlike other camps, there was no sealed experiment block; the situation resulted in a wider solidarity among prisoners on behalf of the victims. On 15 August 1943 – over a year after the experiments first began – ten prisoners refused to present themselves for more operations. Suhren declined to hand over further prisoners for experiments. Ten days later Suhren was ordered to report to Richard Glücks (the WVHA Inspector of the Concentration Camps) who asked him why he refused to supply prisoners. Glücks accompanied Suhren to Gebhardt in Hohenlychen where Suhren was humiliatingly forced to apologize. Himmler ordered Suhren to supply three more human guinea pigs. This was the final group of experiments carried out in the camp, and as Suhren foretold, the girls revolted and were operated on by force in the camp prison.<sup>88</sup>

Further experiments required elaborate operations on muscles, bones and nerves. In autumn 1942 Ludwig Stumpfegger conducted operations to see if injured fibula and tibia bones, muscles and nerves in the lower legs could regenerate. Stumpfegger and Fischer performed several muscle operations, on lower parts of legs causing painful damage.<sup>89</sup> In all, twenty-two women were subjected to bone regeneration and transplantation experiments. Many were operated on several times. Stumpfegger was appointed first in Gebhardt's place to attend Himmler and then in Karl Brandt's place as Hitler's surgeon in attendance in October 1944. (Stumpfegger remained in the Führer's Berlin bunker and administered poison to the six Goebbels children, and poisoned himself alongside Martin Bormann after a failed escape attempt on 2 May 1945.)<sup>90</sup>

The experiments left the Polish Rabbits profoundly disabled. The Rabbits planned to alert the Allies and the Vatican about their plight. One prisoner, Nina Iwanska, had the idea of letters to their families with code words and secret writing in urine. She joined with Krystyna Iwanska, Wanda Wojtasik (a psychiatrist from Cracow), and Krystyna Czyż (a geography teacher from Lublin) in sending messages to their families with details of the seventy-four Rabbits.<sup>91</sup> They asked that news of these experiments reach the BBC in London, the Red Cross in Geneva, a Swiss Catholic mission in Fribourg, and Polish exiles in Lisbon. Labour detachments came into the camp, and then communicated details of the atrocities.<sup>92</sup> A French prisoner, Germaine Tillion (later a distinguished anthropologist), secretly carried the roll of undeveloped photographic film with pictures of the injured legs from 21 January 1944 until she left the camp.<sup>93</sup>

As a consequence, the Polish underground press published details of the Ravensbrück experiments, and the Lublin command of a resistance group sent the information to London.<sup>94</sup> The Reich Security Office informed

Gebhardt that intelligence about the experiments had reached Great Britain and Switzerland, and a delegate of the actively pro-German Swiss Red Cross told him late in 1944 that the Polish government in exile had condemned him to death.<sup>95</sup> In December 1943 a released prisoner, Aka Kolodziejczyk who had US citizenship left the camp with a list of the names of the victims and the dates of the operations.<sup>96</sup> The plight of the Rabbits as experiment victims gained attention among the Allies during 1944.

## The Dachau final series

Dachau saw a further round in the competition between the homoeopathic and conventional scientific approaches. Himmler and Theodor Laue commissioned a set of experiments conducted by the homoeopathic physician, Rudolf Kiesswetter. From October 1942 he infected ten German prisoners with pus: their legs swelled painfully and horrifically. Seven of the ten died, so even Himmler's homoeopathic faith was shaken. The next round of experiments was conducted by SS Sturmbannführer Heinrich ('Heinz') Schütz, who had since 1940 worked under Fahrenkamp at Dachau in the heart and circulation clinic for the Waffen-SS. In March 1942 he attained the position of 'camp physician'. Grawitz ordered Schütz to conduct the third series of wound experiments from November 1942 in Dachau. He was assisted by Karl Babor and Heinrich Wolter. Three sets of experiments involved comparison of sulphonamides with herbal or 'biochemical' plant-based remedies. The injected septic pus caused high fevers and numerous deaths from septicaemia.<sup>97</sup>

Twenty of the healthiest Polish priests were selected on 10 November 1942. There were two groups, one treated with cell phosphor. The hostage deacon, Majdanski felt just a number, and an object to be observed. The phlegmone injection with streptococci took rapid effect: one Czech priest died in just a few hours. Father Stanislaw Wolak was in excruciating pain:

It seemed more clear to me that every minute I was going to die. The doctors began to lose hope. I asked the doctor to amputate my leg not because I cared to live, but because I could no longer bear the excruciating pain, which it is impossible for me to describe. This was not permitted. The experiment had to be brought to a conclusion, even though the subject was to die.

Another priest Ignacy Walewski underwent six operations, and his decaying tendon was removed. Seven out of twenty died who were sacrificed to prove that the 'biochemical' therapies were ineffective.<sup>98</sup> These experiments ran until early 1943. Overall, the wound experiments abused 193 persons, of whom 65 died.<sup>99</sup> The evidence of deaths and unhealed wounds meant Himmler had to rethink his approach to therapy.



## CHAPTER TEN

# Infectious threats, 1942 to 1944

### Fleckfieber

The onslaught against the Soviet Union in June 1941 brought a massive risk of epidemic diseases to the invading forces. Diseases that could normally be held in check became a hazard, as when the 2,500 men of the Leibstandarte Adolf Hitler succumbed to a diphtheria epidemic in December 1942. But it was louse-borne typhus (Fleckfieber) that flared into a major threat in eastern Poland and further east. How best to combat these infections meant upscaling the researches as infections impeded military operations. The SS had ambitious schemes to produce a battery of new vaccines to eradicate typhus and malaria. Doctors conducted secretive research in special compounds in Buchenwald and Dachau. The research continued until the last gasps of the war, subjecting thousands to reckless experiments.

Race and genocidal agendas shaped the conduct of the experiments against both typhus and malaria, and the search for effective medicines. While all these experimental initiatives were sited in concentration camps, each was very differently organized. The Waffen-SS took a lead in typhus research, at first seeking to train its own research staff, but then having to draft in prisoner researchers. Malaria was run by a veteran researcher, who had the support of Himmler but had no SS affiliations. IG's drug research ran independently of Himmler who was scathing about this massive corporation, with researchers being paid retainers.

Louse-borne typhus (not to be confused with the German abdominal *Typhus* or typhoid) brought about a high fever and hallucinations, recovery was slow, and one in ten cases were fatal. The German invaders were especially vulnerable. Louse-borne typhus had virtually died out with improved hygiene in Germany by 1900. Consequently, German soldiers had not acquired immunity in childhood when contracting the disease was like a mild bout of flu. For young adults the disease was severe if not fatal. The louse transmitted a distinctive pathogen, neither a bacteria nor a virus, and



known as a rickettsia, for which a vaccine might give partial immunity, but unlike a viral disease a fully effective vaccine was unrealizable. The crowding of Jews into ghettos and camps created a typhus risk, so that the responsibility for typhus was displaced on to the victims by referring to it as a 'Jewish disease', adding to the savagery but not necessarily to the effectiveness of eradication efforts.<sup>1</sup>

Essentially the Germans pursued a dual strategy of typhus control: they relied on delousing using showers, and the highly effective but dangerous Zyklon gas for clothes, and rooms. The second line of defence was production of vaccines to enhance immunity. Delousing routines were established in the First World War, and using hydrocyanic acid or its patent Zyklon form had a well-trying set of procedures. DDT was produced by the Swiss firm of Geigy and offered to both the British and United States, and to the Germans. It was tested by Rose of the RKI and despite his recommendation, other scientists became concerned about toxicity. The Germans remained fixated on poison gas. The dual use of Zyklon (a patent form of hydrocyanic acid with a warning agent that caused painful wrenching) for delousing clothes and genocide offered a cover for the murderous gas chambers of Auschwitz, and Majdanek.

The Hygiene Institute of the Waffen-SS was a sprawling and expanding set of laboratories. The decentralization increased, as in 1942 its central laboratories in Berlin were hit by Allied bombing, prompting the establishing of research stations in Auschwitz and Buchenwald.<sup>2</sup> The SS did not welcome potential competitors. Mühlens from the Hamburg Tropical Institute asked Sievers of the Ahnenerbe on 10 January 1942 to be able to enter Neuengamme camp and test delousing methods.<sup>3</sup> He especially wanted 'fresh cases' of typhus.<sup>4</sup> But Himmler rejected this, demanding instead a zoological rather than a medical approach.<sup>5</sup> Moreover, the rapid build-up of research at Buchenwald suggests that Himmler's strategy was that typhus research and vaccine production should be under SS control.

On 29 December 1941 two crisis meetings were held: the chief military doctor Siegfried Handloser, Mrugowsky for the Waffen-SS, Gildemeister for the RKI, and Reiter and Conti for the health administration discussed the need to test a battery of new vaccines against typhus on humans, as animal tests were insufficient. At a subsequent meeting between Gildemeister, Mrugowsky and Otto Buurmann of the Generalgouvernement, and representatives of IG Farben it was agreed that there should be a new production centre for vaccine in Lemberg, that the new vaccine should be tested by Mrugowsky's SS Institute, and that the RKI would increase its vaccine production.<sup>6</sup>

On 2 January 1942 Buchenwald near Weimar was chosen as the location for the tests. Reichsarzt SS Grawitz's strategy was to test vaccines on prisoners, and to produce a powerful new vaccine.<sup>7</sup> The SS sanitary officer, Karl Genzken ordered the setting up of a Station for Typhus and Virus Research in Buchenwald. Genzken's adjutant Hauptsturmführer Ding was in charge. Ding's whole career since qualification was as an SS doctor, training at the SS Medical Academy in Graz, and at Dachau he conducted

castrations and killed the Pastor Paul Schneider with a lethal injection. The second in command was Waldemar Hoven, who had a dual position as the camp doctor (*Lagerarzt*) responsible for general sanitation (and thus eradicating any threats arising from sick prisoners), and *Standortarzt* making him responsible for the health of the SS and camp staff. Hoven used these positions to resource the new research institute, becoming its deputy director despite a lack of academic qualifications (prisoners had to write his MD thesis), and a penchant for conspiratorial intrigues, dispensing phenol injections, sexual licentiousness and corruption that would see him arrested by the SS in September 1943. The convict-supervisor Arthur Dietzsch headed a staff of six prisoner nurses.<sup>8</sup> Ding, Hoven and Dietzsch achieved by mid-April 1943 a clean and sterile block with ninety beds and proper bedlinen.<sup>9</sup>

Ding underwent training at the SS Academy in Graz, and then from September to October 1942 with the bacteriologist Giroud at the Pasteur Institute so he could learn how to replicate a complex mouse/rabbit lung based technique for typhus vaccine for the SS. Ding visited Paris on three occasions to collect samples and learn techniques. Mrugowsky decided in December 1942 that the SS should produce the Giroud vaccine, cultured on rabbit lungs. While rabbits and rickettsia were available in abundance, scientifically it was a complex process demanding considerable skill – hence the involvement of the Pasteurian Giroud and transfer from Auschwitz to Buchenwald of the prisoner Ludwik Fleck in December 1943.<sup>10</sup> The Buchenwald station (later promoted to a Department for Typhus and Virus Research) came under the expansive Hygiene Institute of the Waffen-SS. The Hygiene Institute had a complex, ambivalent role. Its delousing technician Kurt Gerstein made frenetic efforts to inform a Swedish diplomat about the murderous gas chambers. The Institute established research stations at Buchenwald and at Raisko by Auschwitz, relying on prisoner scientists, who could keep their families intact.<sup>11</sup>

Mrugowsky inspected Buchenwald and the installations at Mittelbau-Dora, and corresponded intensively on the ‘experimental material’.<sup>12</sup> But the SS command structure remained contested with the camp inspectorate (with Lolling), and other SS elements seeking to exercise control. Ding and Hoven played off these superiors against each other, and exercised a high degree of local autonomy. ‘Kamerad Ding’ cultivated links to the leading SS doctors Grawitz, Lolling and Poppendieck, the SS pharmacologist Vonkennel concerning a programme of typhus experiments, the professor of hygiene Pfannenstiel, and the camp doctor and pharmacologist Helmuth Vetter. Ding sent advice to Carl Vaernet, who experimented on a glandular ‘cure’ for homosexuals in Buchenwald. Sometimes the SS hierarchy ordered Ding to make a batch of prisoners available: Lolling ordered a batch of thirty prisoners from the typhus research department to be used for an experiment by the SS doctors Ellenbeck and Petersen measuring metabolism.<sup>13</sup>

Ding went directly to IG Farben to arrange experimental trials of their products Acridine, Rutenol and methlyn blue to see if they had any effect in

healing typhus. Ding at Buchenwald forged contacts with pharmaceutical manufacturers, institutes for microbiology such as the RKI, and SS medical installations. IG Farben paid a retainer to Ding in Buchenwald. He collaborated with Professors Lautenschläger, Weber and Fussgänger of IG Farben about the experimental series 'Acridine Granulate and Rutenol'. He also visited Geheimrat Richard Otto and his successor Richard Prigge in the formerly renowned Institute for Experimental Therapeutics in Frankfurt when it had been established for the mercurial Paul Ehrlich. Ding's Diary lists several experimental series of tests on deliberately infected concentration camp prisoners:

24 Apr 1943: Therapeutic experiments Acridine-Granulate (A-GR2) and Rutenol (R-2) to carry out the therapeutic experiments Acridine Granulate and Rutenol, 30 persons (15 each) and 9 persons for control were infected by intravenous injection of 2 cc. each of fresh blood of a typhus sick person. All experimental persons got very serious typhus.

1 June 1943: Charts of case history completed. The experimental series was concluded with 21 deaths; of these, 8 were in Buchenwald, 8 with Rutenol and 5 control.

7 Sep 1943: Chart and case history completed. The experimental series was concluded with 53 deaths.

Copies of each of Ding's official reports went to Mrugowsky of the SS Hygiene Institute and Poppendieck as personal assistant to Himmler, as well as to the IG Farben laboratories at Hoechst.<sup>14</sup>

Rutenol granulate was similarly tested in Auschwitz and Buchenwald. Leo Gries, a Slovak prisoner doctor, retained the experimental records on 30 victims at Auschwitz. All died during 1943 to 1944. One was a 22-year-old Pole, Ceslaus Janczak. The Auschwitz camp doctor Klein signed the autopsy records, which concluded with an observation on the lack of effect of Rutenol (B-3382) on internal organs.<sup>15</sup> These experiments ran parallel to those of Vetter, or were under his supervision.

Eugen Fried was injected at the Auschwitz revier, when he turned up in July 1944. He suffered fever and swelling, resulting in bleeding and pus. His description was consistent with a phlegmon or wound infection experiment. Other Auschwitz prisoners were deliberately infected with typhus (a by no means straightforward process as requiring injection of infected blood) in order to test IG Farben products, notably Acridine: thirty prisoners were given typhus and there were nine controls, who were infected but not treated.<sup>16</sup>

IG executives defended themselves when on trial in Nuremberg by stating that these were clinical trials rather than deliberate experiments. But the scale of these trials, and that often healthy (very much a relative term for prisoners held in conditions designed to destroy health) prisoners were experimentally infected indicated otherwise.

Tests were made for the RKI on the value of Othromin for typhoid. Henryk Mikołajczak, aged around 17, vividly described the typhoid tests and the

experimental Block 46: 'It was surrounded by barb wire again, and windows painted white. You could not have contact with general population of the camp.' Entry required strict hygienic controls: 'Two men in white uniform received us. They made us strip, delousing us, stripping clothes, quick shower, new uniform, then from there to the main hall, 30 beds on either side, tables in the middle. Peaceful, music was playing. I couldn't understand.'

The rickettsial nature of typhus meant that there was no antidote, although extensive tests were conducted to find a means of reducing the severity of the fever.<sup>17</sup> These pharmacological ventures resulted in twenty-two deaths for the Acridine tests and one death for the RKI researches.<sup>18</sup> Ding collaborated with the SS pharmacologist Vonkennel, testing burns produced by poison gas, reputedly resulting in several deaths.<sup>19</sup>

A diary with each page signed by Ding (and from September 1944 under his changed name Schuler) provided details of each experimental series on prisoners from January 1942 until January 1945. At first, the researchers did not know how to infect prisoners, the RKI strain of infectious culture deteriorated, and infected lice escaped. The larger Block 46 became available only from 19 April 1942. Basically the procedure was to vaccinate a batch of prisoners with different vaccines; then a month later to infect the vaccinated as well as an unvaccinated control group; and then see what happened in terms of the severity of the disease and death. The Diary shows that 929 prisoners were experimented on, resulting in 145 deaths. In addition, there were an estimated 200 'Passage persons' as human cultures for the infectious strain. Because keeping stocks of infected lice might be dangerous if they escaped, person-to-person infection was deemed safer.

On 5 January 1942 Ding carried out a pilot study on five prisoners, to determine how best deliberately to infect. One prisoner died. Then, on 6 January 145 prisoners were vaccinated with four different vaccine types and ten were unvaccinated controls; on 3 March 1942 the whole group was infected; five died (including three controls). The inexperienced Ding accidentally infected himself, and had to be treated for typhus in Berlin, so the camp doctor Hoven ran the experiments. Later that year vaccines were used from the Pasteur Institute: seventy-nine prisoners were infected and four deaths occurred among nineteen unvaccinated controls. Tests were conducted on vaccines from the RKI, IG Farben, and the German High Command laboratories in Cracow. This series formed the basis for Ding's publication in which he publicized the deliberate infections.<sup>20</sup> Further vaccines came from the Pasteur Institute, Bucharest, the Behring Institute in Lemberg, Copenhagen, Riga and – indicative of Swiss scientific collaboration – Zurich.

Ding's clerical assistant from 1943 was Eugen Kogon, imprisoned as a Catholic politician concerned with social welfare in the corporate state. Kogon kept Ding's diary account of the different experiments from 1943 until the end of the war. Indeed, Ding and Kogon were increasingly protective of each other. Kogon was engaged in an internal struggle at Buchenwald between the 'politicals' against 'the criminals'. Although the criminals were

often preferred for camp discipline, the political held sway in the research block. German prisoners formed the largest group of research subjects at Buchenwald among a wide range of nationalities: French, Poles, Austrians, Czechoslovaks and other nationals became victims of experiments. Smaller numbers of Jews, political prisoners, and so-called 'asocials' were selected.<sup>21</sup>

Generally Jews and Russians were deemed unsuitable for typhus research. This may have been because of acquired immunity, but there were also racial reasons. Fritz Kleinmann was a Jewish prisoner whose face mask was made at the Prater; he then arrived aged sixteen in Buchenwald. He experienced how Jews were thrown out of the experimental block:

We were selected and put in a barracks that was also behind barbed wire. We didn't know what went on behind there. But a higher commission from RSH [Race and Settlement Office] came down and [noted] six prisoners from Jewish Vienna group . . . Germans were looking for antibiotics to vaccinate themselves. When this commission came they realized that Jews could also be used in experiment: 'but you can't use Jewish blood to immunize German soldiers.' So they threw the six Jews out of the experimental block, and that was lucky for them because all the others in those early experiments died.<sup>22</sup>

Russians were among those used as the 'Passage Persons'. The course of infection of German and Western European test subjects was of greater interest to the perpetrators. Because of difficulties in maintaining infected lice, and fear that any lice stocks could infect the camp, 'Passage Persons' were used for culturing the pathogenic rickettsiae: infected blood was injected from person to person. The prisoner scientist Sergei Balachowsky alleged that 600 prisoners were so used, but a more reliable estimate is about five a month making 120 for the period to March 1945.<sup>23</sup>

Fleckfieber vaccine production was highly competitive as the military and SS became locked in rivalry. None of the German typhus vaccines was a German product as such – the vaccines were French, Polish or American in origin. Supplies were always faltering. The military took over a vaccine developed in the 1930s by Rudolf Weigl in Lwow (once again named Lemberg under the Nazis). Production of the Weigl vaccine by the army in Cracow required thousands of louse feeders, and intricate procedures as lice were clamped in gallows and their infected guts extracted and centrifuged. The SS exploited the Pasteur Institute's rabbit and mouse lung cultured vaccines, in a delicate arrangement that gave the Institute some internal autonomy, while supporting the Buchenwald vaccine production through the imprisoned parasitologist and resistance activist, Balachowsky.

The Behringwerke of IG Farben in Lemberg opted for an American technique of culturing the vaccine on egg yolk from January 1942. The RKI under Gildemeister developed its own vaccine using the egg yolk culture.<sup>24</sup> The RKI President and Vice-President showed no hesitation about running

tests in a concentration camp. Gildemeister cultivated links with Hoven as camp doctor, and the RKI President visited Buchenwald on 3 March 1942 and again two weeks later with his colleague Rose to see 145 prisoners being infected.<sup>25</sup>

This competing situation meant that Reichsarzt SS Grawitz insisted vaccines were tested by means of experimentally infecting prisoners.<sup>26</sup> Instead of a vaccine control station, there was now to be tests on prisoners with efficacy shown by lower numbers of deaths. Deliveries were made from the Behring Institute Lemberg in October 1942, but the infected lice escaped on two occasions posing a threat to the whole camp.<sup>27</sup> The vaccines were compared on three batches of thirty-five prisoners. There were two strengths of vaccine from the Behring Institute Lemberg using an egg yolk culture; a vaccine produced by Gildemeister; and a louse gut based vaccine. Finally ten experimental persons were tested as 'controls'. The test persons experienced fever and headaches. The control persons were injected with typhus serum, but they did not contract the disease. A test on five persons resulted in one death. On 3 March 1942, a further 135 persons were tested. Three of the ten control persons died, and they were then dissected.<sup>28</sup>

Prisoner research subjects were generally aged between twenty and forty years although the eldest victim was aged sixty-two years.<sup>29</sup> 1,654 research subjects can be identified from camp records and post-war compensation claims, suggesting more tests than indicated in Ding's Diary.<sup>30</sup> The victim groups for the Buchenwald typhus research were significantly older than other large cohorts of test persons, as the vaccination experiments by Karl-Josef Gross in Mauthausen. A reason could be the selection of the 'criminals' as research subjects.

In 1943 Ding published his comparative results showing the slight superiority of the Behring vaccine. Other vaccines from Copenhagen, Romania and Italy were then tested. Rose secured the Danish vaccine, and thirty gypsies were to be sent from Auschwitz to Buchenwald. Six deaths were recorded.<sup>31</sup> Other diseases targeted for experiments included yellow fever on Dutch victims, typhoid, paratyphoid, cholera and diphtheria. Tetanus experiments involved Hoven adding the potentially lethal phenol to tetanus serum.<sup>32</sup> Experiments ran nearly until liberation in April 1945.

Ding's Buchenwald diary showed the readiness of the RKI and ministerial officials to use the opportunities of experimenting in concentration camps. Georg Lockemann, head of the RKI chemical department, on the advice of Werner Christiansen, tested Othromin against typhoid in infected potato salad on 10 June 1943 until 5 August on forty persons – there was one death among the non-immunized control group.<sup>33</sup>

Henryk Mikołajczak's narrative can be linked with this typhoid experiment in the block. At first he and his group were well fed:

After 10 days they start feeding us with spoonfuls of pills and eat porridge to swallow them, twice/day for two days. We were told they were

vitamins. Besides porridge we had breakfast and oatmeal, milk. For dinner they even gave us some fruit. The third day food didn't come, they were hungry. Then they brought them cold potato salad. We didn't know that typhoid was the ingredient of that salad. Between the pills and the salad they give us the germ of typhoid. Within two hours I stroke my hair and it hurt, and my forehead, and we start to get fever. Within two hours. We realized that there was a little more to it than a late supper. Each of us started to get angry.<sup>34</sup>

The experience of high fever was traumatic, leading to a sense of impending death:

Other people screamed, had diarrhoea, high temperature. I didn't have the diarrhoea but I had high temperature. I hear music playing in my ears, don't know where it's coming from unless they playing Strauss to keep us . . . when doctor comes I say I want to write letter to my mother and father. He took pencil and piece of paper. I said, 'dear mother and father, I don't feel good, but since I am Catholic, I have turned to my God for help.' He looked at me, 'nein, nein, du stirbts nicht.'<sup>35</sup>

Mikołajczak was then injected with an experimental serum:

Then I see two other white jackets and they give me two injections in my chest. And I felt burning sensation. When they woked me up in an hour or two my health coming back to normal. My temp was going down. They had a serum. They had improved it on animals before. They had never used it on humans. I happen to be one of the humans on whom they performed the serum test for the first time.<sup>36</sup>

He had an acute sense that his chances of survival were limited.

Of the 60 people, how many got serum? I don't know, perhaps all perhaps few, depends on stage of the sickness. Who knows. I young. Maybe my heart strong . . . but out of 60 only 8 of us were leaving through the gate. That number is always on my mind. During the experiment every bowel movement they took samples [of] and sent it to laboratory in Berlin. I said to my friend, 'I hope they serve this to Adolf on a platter.' We were supervised. They developed serum against typhoid on my body.<sup>37</sup>

On 9 January 1943 the economic administration of the SS provided resources for vaccine production in Buchenwald. Instead of situating production at Sachsenhausen, Ding urged that the existing Buchenwald 'Station' become a fully fledged Department for Typhus and Virus Research.<sup>38</sup> The department began to test its own vaccine. This was produced by prisoner-researchers in Block 50 using the French rabbit lung technique for culturing rickettsiae.



The immunologist Ludwik Fleck was transferred from Auschwitz in December 1943 to reinforce the group, as they lacked a specialist experienced enough to work with rickettsiae. The vaccine was called 'Weimar' (the nearby renowned cultural centre) so as not to draw attention to the concentration camp. The first test from 22 to 31 January 1944 was whether prisoners could tolerate doses of the 'Weimar' vaccine in comparison to other vaccines. This was soon after Fleck's arrival, suggesting the intention to validate the new vaccine. Then from February to April there were further comparative tests with one fatality injected with 'Weimar'. On 17 July 1944 there was a comparative test on sixty prisoners, resulting in twenty-four fatalities among those immunized with the Weigl vaccine and the non-immunized controls. The claim is that once the efficacy was shown for prisoners, the group produced a deliberately ineffective vaccine for the Germans.<sup>39</sup>

The resistance and sabotage of the prisoner group, led by the Polish bacteriologist Marian Ciepelski, exposed the poor quality of the German research.<sup>40</sup> The prisoners wished to keep in the good books of the Germans, and exploit the lab resources (such as eating the experimental rabbits). What was important was to produce batches of genuine vaccine for prisoners, as well as fake vaccine for the SS.

Richard Bieling, of the IG Farben's Behring Works, was critical of Ding's research in Buchenwald, believing in field research on naturally occurring cases. In addition to his work on the Radom Ghetto, he inspected vaccine production installations in Russia. He then tested a Behringwerke vaccine. (Four of the ill-fated children selected for Heissmeyer's TB experiments had been deported from the Radom ghetto to Auschwitz.<sup>41</sup>) Typhus research was pursued at other camps. Heinrich Rindfleisch at the Majdanek concentration camp experimented with the typhus immunization, using the chicken egg cultured vaccine produced by the SS in Lemberg.<sup>42</sup> Rindfleisch selected 150 Poles with boils on their skin, divided them into ten groups, and experimented with various treatments for skin boils.<sup>43</sup>

## **The Dachau malaria experiments**

The loss of German colonies, not least with subject peoples as an experimental resource for testing vaccines and therapies, was a matter of much bitterness to imperially minded tropical researchers. National Socialism evoked hopes of reinstating the German colonies. Claus Schilling had researched at the RKI in Berlin from 1895 until retirement in 1936. He then worked at the Wittenau and Herzberge psychiatric hospitals in Berlin, where he became interested in the question, how did persons who once had been infected with malaria respond to a second experimental infection for therapeutic purposes? From 1936 until 1941, he conducted experimental research, infecting psychiatric patients with malaria in asylums in Florence, the San Nicola Hospital in Sienna and Volterra, while collaborating with the state



institute of hygiene in Rome. The introduction of malaria therapy for tertiary syphilis provided some legitimation: fascist Italy did not become involved in coerced research, setting it apart from the Nazi experiments. In 1938 to 1939 Schilling experimented on sixteen student volunteers in Berlin, with the support of the celebrated Sauerbruch, and at least one was later hospitalized. The idea was to immunize by experimentally infecting persons with the malaria sporozites.<sup>44</sup> What Dachau provided was the opportunity for sustained experimentation on a large group of captive research subjects.

In December 1941, a chance meeting with Reich Medical Führer Leonardo Conti at the German embassy in Rome led to discussion of the risk of infection for German troops in Bulgaria and Greece. Conti arranged a meeting with Himmler and Reichsarzt SS Grawitz in Berlin: 'I was asked by Himmler to continue my work and to continue it in Dachau. I was reluctant at first, but after consideration, I agreed to Dachau.'<sup>45</sup>

Schilling weighed the responsibilities of the physician against his view of 'the great importance of the experiments . . . I took it upon myself in the name of science, and above all, in the name of humanity.'<sup>46</sup> Rather than race or military priorities, Schilling referred to himself as a 'free, independent, research man' not under SS authority, and that he himself chose Dachau concentration camp as a location, convenient for family reasons.<sup>47</sup>

The Dachau TB experimental block was re-allocated for malaria. Schilling's 'Malariastation Dachau' reported to Reichsarzt SS Grawitz on 2 August, 9 September and 30 September 1942, and then quarterly next on 1 January 1943 and 1 April 1943 – the last three reports survive. He used the non-fatal tertian malaria strains from Moscow, the Ukraine, Greece, and – the strongest – Madagascar. There were difficulties in making the Northern European strains as 'Ilmensee' (a nearby Bavarian lake, but in reality a locality in Russia) and 'Finland' infect prisoners. Gerhard Rose supplied some strains.<sup>48</sup> In September 1942 Schilling held seventy-six persons in the malaria station, and a further 128 research subjects were under observation in the camp. By April 1943 he had experimented on 332 persons at least 361 times. The aim was to induce immunity by means of cross injections of infected blood.<sup>49</sup> Schilling was convinced that malaria was curable with Atebrine and quinine. The test persons for malaria ranged from 15 to 61 years old with 30–40-year-olds predominating.

The entomologist in charge of the pest control research station at Dachau, Eduard May, refused to support the human experiments at the camp. Schilling was assisted by two SS doctors, Kurt Plötner from 1943 and Rudolf Brachtel, who conducted liver puncture experiments on his own account, much to Schilling's annoyance. Schilling claimed that he was allocated prisoners by the camp medical officer, and assured that they were in good health. However, given the dietary privations and forced labour at Dachau, prisoners were generally weakened. Schilling checked for fever prior to the experiments – his Italian research subjects had previously contracted malaria.

What made his marathon of experimentally infecting prisoners especially dangerous – and at times fatal – was Schilling's testing of new drugs, often in high doses on malaria-infected prisoners. The SS doctor Kurt Ploetner assisted the malaria experiments of Schilling from April 1943 until July 1944 when he replaced Rascher. The research cards retained by the Luxembourgian prisoner clerk, Eugène Ost recorded how he used combinations of drugs – Neosalvarsan, Pyramidon, quinine, Acridine and Atebrine in high doses. The resourceful camp pharmacist Herbert Siggelkow obtained these drugs through the Reichstelle Chemie.<sup>50</sup> One victim Fojt, explained that high doses of drugs were tested. Although tertian malaria was not fatal, it was the testing of toxic therapies in high doses that resulted in fatalities.<sup>51</sup> Schilling dangerously experimented with new synthetic drugs and arsenic based therapies. Pyrazolon had damaging secondary effects. These were high-risk procedures, causing inflammation of the kidneys and liver, and Pyramidon resulted in three fatalities. Chronic cases led to a weakened heart, further weakened by the drugs.<sup>52</sup> At least fourteen of Schilling's research subjects died.<sup>53</sup>

Schilling infected prisoners either by attaching a cage of infected mosquitoes onto them, or by direct injections of blood from one prisoner to another. The idea was to see if immunity could be transferred. What made things worse was that prisoner diets were deficient – one priest, Father Wiecki weighed just 50 kilos – and typhus was raging in the camp, so that inadvertent cross infection of typhus could occur.<sup>54</sup>

After the war Schilling's defence was that he was 'curing' malaria, but in fact he was undertaking dangerous clinical experiments by infecting persons already weakened by the camp conditions.<sup>55</sup> He claimed that thirty research subjects inoculated with malarial infected blood were free from attacks. He regarded this group as showing that immunization was somehow possible – and that his research should be continued.<sup>56</sup>

Large quantities of blood were extracted from victims several times a day during illness. After the war, Schilling at first admitted to just two accidental deaths. He alleged that deaths were due to other infectious diseases in the camp taking their toll. But at least fourteen prisoners died.<sup>57</sup> Seven of the malaria cards show in detail how fatalities resulted. The autopsy records showed a direct link to malarial infection – the causes of death being heart failure and toxæmia. He was concerned to establish the percentage of patients whom he could cure.<sup>58</sup>

Six German priests were selected in August 1942, and four Czech priests were also used.<sup>59</sup> Polish Catholic priests amounted to 172 out of an overall number of 1,084 malaria experiment victims.<sup>60</sup> Father Antoni Gremlewski from Poznań was selected on 9 July 1942. From November 1942 until March 1943, the number of Polish priests in the malaria station steadily rose. During that five months period, 135 Polish priests were experimented on. Father Johann Mado was the last priest to be sent for experimentation on 16 November 1944.<sup>61</sup>

The prisoner nurse Heini Stoehr – who studied medical texts – tried to alleviate the effects of Pyramidon. He and fellow prisoner nurse Stanisław Zámečník illicitly switched drugs in the comparative Phlegmon tests for the young Polish deacon Kazimierz Majdański, who was on the threshold of death.<sup>62</sup>

The Swiss pacifist Wolfgang Furrer was imprisoned in Dachau from August 1941 for protesting against the recruitment of Swiss citizens into the Waffen-SS for combat in Russia. He was shocked by his new status as a human guinea pig to serve as a test object for diseases in Russia. Furrer described his reactions to infection with the Madagascar strain – between bouts of intense shivering cold and his body glowing like a volcano, along with a continuous sense of dizziness and a heartbeat so irregular that he thought it would stop permanently. His infected blood was then injected into eight Seventh Day Adventists, and he was dosed with the deadly Pyramidon. When he refused to take the pills, he was forcibly injected. When a mosquito cage was tied to his leg, he managed to suffocate the mosquitoes under the bed clothes, until Schilling tied a cage to Furrer's hand and wound damp cloths around to create a tropical atmosphere when the mosquitoes sucked his blood and so he became infected. After thirty-three days Furrer was extremely weak and unable to take solid food. Furrer concluded that Schilling was not interested in his recovery – but only in him as a clinical case when relapses occurred.<sup>63</sup>

The Protestant pastor Kurt Hilmes had a wire cage attached to his face which was crawling with predatory insects.<sup>64</sup> The Lithuanian Jew Heinz Reimer found Schilling's conduct towards him as viciously punitive:

This inhuman Nazi shut me inside a glass cage for two hours daily, and I had to bear thousands of anopheles mosquitoes on my body. When I could bear the pain no longer I [tried] to drive the blood poisoned mosquitoes off, thinking that I would not be seen doing so, but the doctor, if such an inhuman beast should still be so called, had in a mirror seen my efforts to drive them off. For that I was put under strict arrest for seven days. Before I was taken away to serve the seven days I received twenty-five strokes with a bloodstained bull-pizzle covered with leather.<sup>65</sup>

Some research subjects were killed as their survival was deemed incriminating: Joseph Lanzer, a Jewish victim, was dispatched to Auschwitz to be killed. The pretext was that of 'heart muscle weakness'.<sup>66</sup> Victims suffered from enteritis, heart and circulatory weakness, and severe debility.

Schilling drew on wider academic networks, indicating that concentration camp experiments were becoming increasingly accepted. Schilling consulted with Karl von Frisch, the Munich zoologist about problems in breeding mosquito strains. He obtained strains from the RKI, the Heilanstalt Grafenberg in Düsseldorf and the institute of public health in Rome. He asked the clinician Hans Eppinger in Vienna for advice and exchanged drugs

with Gustav Giemsa, and the poison gas specialist Henry Albers from Danzig. He requested that the SS authorize the academic dissemination of his results.

Schilling thought of large-scale immunization tests in Greece, through links to the Greek professor of hygiene Gerulanos. He wanted to research in Greece on the children of parents who had malaria, but Gerulanos rejected this.<sup>67</sup> He also intended to send prisoners to Southern Romania and to Southern Russia for tests. The experiments for both malaria and typhus were equally deadly, around 8.5 per cent of the victims died during or after the experiment.

## **IG pharmaceuticals: Auschwitz, Buchenwald and Mauthausen**

The pharmacological department at IG Farben in Leverkusen commissioned one of its former employees, the SS camp doctor Hellmuth Vetter, to test drugs in Dachau. Retainers were paid by IG Farben to Vetter in Dachau, Gusen and Auschwitz.<sup>68</sup> From 29 July 1941 until a move to another work camp in April 1942, Vetter tested sulphonamide drugs for their effects on gonorrhoea, pneumonia and other illnesses on seventy-four Dachau prisoners. At this stage, he was not deliberately infecting victims. Testing drugs in Dachau was for him like being 'in paradise'. Vetter was soon to pursue his career in Mauthausen and the satellite camp of Gusen with periods spent – again drug testing – at Auschwitz-Monowitz. Vetter's clinical trialling of drugs for IG Farben became more extensive as the war progressed. His clinical tests represented a long-running set of experiments from 1941 to the end of the war. Industry found the placement of employees in concentration camps of immense scientific value in the conducting of large-scale systematic tests on research subjects who were available in abundance.

The SS had ambitions to itself become a major producer of new drugs and therapies. Pohl's SS Wirtschaftsverwaltungshauptamt (WVHA) exercised centralized control.<sup>69</sup> Mrugowsky's Hygiene Institute of the Waffen-SS in Berlin assumed responsibility for health conditions in the occupied east. The Institute had satellite institutes at Buchenwald for typhus vaccine research in Block 46 (from late 1942) and at Raisko near Auschwitz with its collection of 30–40 prisoner underlings.<sup>70</sup> The experiments continued to be a terrain for the clash of competing social interests. Different vaccines and therapies represented competing pharmaceutical companies, the army and SS. Himmler set out to establish the SS as a leading manufacturer of pharmaceutical products, while German pharmaceutical companies exploited a new autarky imposed on Europe.

Vetter became a key link between the IG pharmaceutical department at the Bayerwerke and the concentration camps. Late in 1942 he moved to the slave labour camp of Auschwitz-Monowitz. He then became the camp

doctor at Gusen from March 1943. He continued to receive a monthly salary enhancement by IG Farben.<sup>71</sup> Vetter's correspondence describes the type of drug, numbers experimented on, numbers who died, and the date span of these tests. Visits to IG Farben at Leverkusen by 'our Vetter' took place on 19 November 1942, 8 February 1943, 20 May 1943, and 13 December 1943. The IG officials later excused themselves by their thinking that Vetter treated only the SS.<sup>72</sup>

IG's pharmaceutical division at Leverkusen supplied Vetter in Auschwitz with the drug Acridine 3582. He tested this to treat twenty prisoners with typhus, reporting to both Grawitz and IG. He also used preparation 3582-Granulat for tuberculosis experiments, obtaining it from Leverkusen. The Polish prisoner doctor Władysław Tondos had to complete the Auschwitz TB experiments.<sup>73</sup>

Developing Vetter's research, Ding in Buchenwald tested Acridine 3582 as a typhus therapy on thirty-nine deliberately infected cases. He compared it with Rutenol and Nitro-acridine that resulted in 50 per cent deaths. He followed this with tests on fifty patients, claiming success in that only fifteen died.<sup>74</sup>

Remarkably, while later at Mauthausen-Gusen, Vetter continued the series of pharmaceutical experiments back at Auschwitz. For this he had the support of the camp doctor Hermann Wirths and the ethnic German pharmacologist from Romania, Viktor Capesius. Hans Delmotte, a Belgian SS doctor, was involved with typhus experiments, and analysed gastric juices of typhus for his MD thesis.<sup>75</sup> The prisoner doctors Władysław Fejkiel and Stanisław Kłodziński were compelled to become involved, writing the report for experiments from 19 November 1942 until 24 February 1943.<sup>76</sup>

The documentation suggests that Vetter mainly experimented on persons who were already sick, rather than deliberately infecting prisoners.<sup>77</sup> However, the question remains open whether – as was claimed for Spanish prisoners – Vetter also infected the healthy. Victim data shows forty-seven claims for having been an experimental victim of pharmacological experiments,<sup>78</sup> and nine claims for blood extraction and tests. Often details – such as having TB, or red or orange skin patches (a feature of Acridine as a synthetic dye) – link the victim to known features of Vetter's experiments.

At Mauthausen, Vetter experimented on drug therapy for forty-four TB patients.<sup>79</sup> Regarding the experiments with the pharmaceutical products Rutenol and Nitroacridine 3582 on 6 June 1944 IG Farben continued to supply Vetter so that long-running clinical trials should not halt.<sup>80</sup> Vetter ran experimental series at the same time at Auschwitz and Mauthausen.

A Polish victim from Mauthausen, Leon Rydz, was injected several times with an unknown substance, and blood was extracted.<sup>81</sup> Rydz was likely part of the large-scale immunization experiments by SS-Sturmbannführer Karl-Joseph Gross from the Robert Koch Krankenhaus (formerly the Kaiser-Franz-Joseph-Spital) that functioned as a military hospital in wartime

Vienna (after the war Gross was in medical practice in Linz). The paratyphoid vaccine experiments by Gross are in fact one of the best documented experiments of all the hundreds of coerced experiments under National Socialism with extensive documents, naming two thirds of the victims and detailing subsequent blood tests. Two 'Behring' vaccines (produced by IG Farben) were compared to a product of the ASID works on 1,700 prisoners between February and April 1943.<sup>82</sup>

The effects were utterly exhausting and enduring for Rydz.<sup>83</sup> Rydz cited names of others in the group of victims – Maric Velibor (a Yugoslav officer), and Jan Blazik, as well the Blockälteste involved in the administration of the experiments Leon Dolewski. Later, the German authorities denied that 'examinations of blood groups' and 'taking blood' constituted experiments.<sup>84</sup> This response overlooked that immunization and pharmacological experiments did involve blood testing to test immunity, using the standard Gruber-Widal blood agglutination test.

SS Sturmbannführer Karl-Josef Gross had been attached to the Hygiene Institute of the Waffen-SS in Berlin early in 1942; he then engaged in medical work in Vienna; in April 1943 he began a course on bacteriological diagnostics and technique at the RKI in Berlin.<sup>85</sup> His links to Kurt Blome as Plenipotentiary for Cancer Research led to an appointment as bacteriologist at the new Central Institute for Cancer Research – the name carried the significant addition of war biology (*biologische Kriegsführung*) because of germ warfare tests – in Posen-Nesselstedt at the Reichsuniversität Posen from spring 1944.<sup>86</sup>

Whereas Karl-Josef Gross has extensive name lists on 1,105 victims by name, date and various tests (although a further 500 of his subjects can only be partially identified), Vetter only provides details of the drug, type of person selected, and numbers, as well the timing of the experiment. Some victims stated explicitly that they were experimented on by Vetter. Others merely stated that they had tuberculosis, or that both the timing and symptoms match the drug – such as red or orange patches in the case of Acridine, so providing a link to Vetter's researches.

The first and second series of paratyphus immunization experiments by Karl-Josef Gross are well documented by name covering approximately 1,050 individuals from February to April 1943. They were 751 Russians, Poles and Yugoslavs. Just one was a Polish Jew. Gross undertook a third series of experimental vaccinations on 500 test subjects.<sup>87</sup> The vaccines were a TAB type and typhoid-tetanus type, the first and third produced by IG Farben and the second by the ASID serum works. Blood reactions were studied, and tissue samples sent to the Pathological Institute of the University of Vienna.<sup>88</sup> Maršálek appeared in the list of blood tests taken for the Hygiene Institute of the Waffen-SS, with a negative Gruber-Widal reaction.<sup>89</sup> Josef Herzler stated that Gross was responsible for Fleckfieber infections of Jewish prisoners for extracting immune serum.<sup>90</sup> The infectious disease experiments were large scale and long lasting.

## Japanese incentives

Only German and Japanese medical researchers were prepared to experiment in a systematic and sustained manner to the point of death on subject peoples, held captive as laboratory animals. The German infectious disease experiments showed an awareness of the Japanese maiming and murdering thousands of Chinese in occupied Manchuria and Nanking. The scale of the Japanese experiments matched those of the Germans, while the timing suggests that the Japanese had a slight edge in terms of priority over the German researches. Japan supplied a model for coerced research on subject populations, albeit more focused than the Germans without concerns for psychiatry or racial anthropology.

The Japanese germ warfare experiments in occupied China focused on the perfection of weapons for biological warfare. The military microbiologist Shiro Ishii formed the Kwantung Army Unit 731 in 1936 outside Harbin in Japanese-occupied Manchuria under the cloak of 'water purification'. There developed a network of several experimental units with close ties to Japanese universities.<sup>91</sup> Hitler ordered a group of officers led by the military toxicologist Otto Muntsch to study Japan's use of chemical and biological weapons against China during a six-month visit in 1939. Japanese-German cooperation was ratified in an agreement of 2 June 1939, and programmes of scientific cooperation and exchange continued throughout the war. The SS bacteriologist Mrugowsky had Japanese contacts in 1940. Hojo Enryo, a Japanese military expert in biological weapons liaised with the Robert Koch Institute on bacteriological warfare, and lectured on bacteriology at the Berlin Military Academy of Medicine in October 1941.<sup>92</sup> Gerhard Rose of the RKI supplied samples of the yellow fever virus to Unit 731.<sup>93</sup>

The German and Japanese biological warfare programmes exchanged information, samples and equipment by submarine. It is claimed that the last of these submarines actually departed from Japan as late as May 1945.<sup>94</sup> Despite reports by the German army biological warfare expert, Heinrich Klieve on new Japanese biological weapons, on 23 May 1942 Hitler ordered a stop on offensive biological warfare research.<sup>95</sup> No German experiment makes explicit reference to prior Japanese research, but the sustained contacts appear as mutually reinforcing. The Japanese programme of experiments was more focused than the Germans. The Japanese biological warfare research was mainly limited to the military unit 731. There was a second experimental camp at Mukden where Allied prisoners of war were test subjects for experimental infections.<sup>96</sup> The German efforts were more dispersed in terms of locations and research topics, and the Germans used a greater variety of victims in terms of ethnicity, occupation and age.

## PART THREE

# Targetting victims





## CHAPTER ELEVEN

# Psychiatric patients

### Selecting victims

As the Nazi persecution unfolded, a dual process occurred: the research intensified, as ever more victims became available. In some cases the choice of victim group for an experiment was opportunistic, depending on the researcher location and availability. A researcher might suggest psychiatric patients in what had become an exterminatory system of psychiatric care, but Himmler could modify the request to carrying out the research in a concentration camp. This happened to Dohmen's proposed research on hepatitis. In such cases the choice of group was scientifically incidental; but that Dohmen found Jewish children were available for medical exploitation reflects on the dynamics of persecution.

The research on psychiatric patients was relentless. After the centralized T4 killings were ostensibly suspended in mid-1941, former T4 personnel as Horst Schumann selected from concentration camps prisoners for killing in the T4 gas chambers. More decentralized killing structures were implemented, and these ran to the end of the war. During 1941 doctors and technical staff were transferred to the new extermination camps in Eastern Poland – to Belzec, Sobibor and Treblinka. The 'T4' administrative and psychiatric organization continued as it was intended to be reactivated for killing patients at the end of the war. In the meantime T4 served as a research agency. Paul Nitsche, former director of the T4 killing centre at Sonnenstein (near Dresden), now had overall charge of the research division. He liaised closely with the heads of two constituent departments, Heinze at Görden, and the Heidelberg professor of psychiatry, Carl Schneider. The involved psychiatrists maintained an active research network until 1945.

The first T4 research unit was at Brandenburg-Görden, established under Heinze 'for observation and research' in early 1942. Men and women patients were selected for research from nearby institutions. By mid-1943 it had researched on 132 patients.<sup>1</sup> Murderous intentions were indicated that

W. J. Eicke, assistant of Hallervorden, served as histopathologist.<sup>2</sup> The ultimate intention was to establish an Institute for Biological Anthropology.

## Research children

The problem is to determine from the hundreds of thousands of murdered psychiatric patients, how many were utilized for research. Here we move into a world of special administrative arrangements. Carl Schneider, psychiatry professor at Heidelberg, had mobilized Werner Heyde at Brandenburg-Görden to establish more child psychiatric units: here, as Paul Nitsche observed, children could be held for indepth research prior to their 'disinfection' (a euphemism for killing).<sup>3</sup> Rüdin planned research on idiocy from 1942, explaining to the Reich Research Council on 23 October 1942 the need to identify children, who could be eliminated as in the interest of maintaining the health of the German Volk. The research indicates Rüdin's clear recognition of euthanasia as potentially boosting stocks of research material. Rüdin joined with Carl Schneider in a project focused on examining a group of 'idiot' children first as living specimens and then for research on brain abnormalities.

A young psychiatrist Julius Deussen joined Rüdin's Institute in March 1939 remaining until December 1945. In March 1943 he received a military research position as Schneider's assistant in Heidelberg. Here he selected twenty-one 'idiot' children for killing after detailed examination.<sup>4</sup> Between 1 January 1943 and early 1945 Deussen reported regularly to Rüdin. Other doctors involved included: Hans-Joachim Rauch, Schmieder, Friedrich Schmorl, Ernst Adolf Suckow, and Johannes Wendt. Patient files at the Research Department of the Psychiatric-Neurological Clinic record the intensive research on each child. Psychiatrists collaborated with other institutions and offices, as well as with a range of clinicians, in immensely detailed life histories of each patient. The researchers analysed patients in terms of anthropology and psychology. Here was inter-disciplinarity shaped by Nazi ideology and organization. The research used Nazi documentation such as the ancestral passports (*Ahnenpässe*) and genealogical charts (*Sippentafeln*). Numerous clinical tests and diagnoses came from other collaborating departments at Heidelberg. There was attention to teeth and the jaw, with the idea that a so-called 'idiot' had distinctive features, for example a type of jaw structure, deemed an atavistic primitive survival.

Case histories were used to decide on which cases of 'idiocy' would be worth killing for neuro-anatomical purposes. Research to reconstruct victims' life histories shows how case histories reveal a lethal mindset on the part of the clinicians, while allowing lives to be reconstructed.<sup>5</sup> The voice of the vulnerable patient appears not as pathological, but as natural in the circumstances – one girl complaining in Heidelberg, simply 'ich habe heimweh' – I am homesick. The aim of the research was to analyse idiocy as a hereditary condition.<sup>6</sup>

From August 1943 until the end of December 1944, fifty-two children and youths (aged 2 to 22) and one adult aged 35 were examined in the Heidelberg hospital. Seven children were transferred from the Heidelberg children's hospital by Professor Hajo Duken. The children were admitted for examination in the Heidelberg hospital for about six weeks and subjected to intensive examination and observation. Most classified were classified as 'feeble minded' and 'idiots'. Twenty-one of these 'research children' were killed by the drugs Luminal and Morphium-scopolamin in the Eichberg asylum in late 1944.<sup>7</sup> Schneider and his colleague Deussen were responsible for the transfer to the Eichberg asylum. Deussen confided to parents about 'release' (as a euphemism for death) for their children in the Eichberg asylum.<sup>8</sup> Some parents thought that their children would receive additional care and therapy in this special unit.<sup>9</sup> At least three of their brains went to the Heidelberg clinic for further investigation.

At the Wiesengrund special unit at the Wittenau Psychiatric Hospital in Berlin, the psychiatrists Hefter, Gerhard Kujath and Gertrud Reuter diagnosed, researched and killed eighty-one children. Hefter was a young Nazi activist who transferred from the staff of the Reich Health Führer Conti. From November 1939 he was a T4 adjudicator. The children were subjected to comprehensive physical and psychological examinations, and photographed with their whole bodies naked.

Hefter established links to Georg Bessau at the Charité hospital in Berlin. Bessau and his assistant Marianne Salzmann subjected nineteen children to a 'Bessau inoculation' for tuberculosis, using the specially formulated vaccine produced by IG Farben's Behringwerk. The children were mainly orphans or illegitimate. There were two experimental series. From July to September 1942 nine children aged from 10 to 14 years were experimented on. From November 1942 to March 1943 research took place on ten infants aged between 2 and 6, including the 3-year-old Guenther E. The abscesses on the children's legs were researched on by Salzmann. In all, eight of the infants and one 14-year-old died, and Ostertag dissected one of the group.<sup>10</sup>

Hefter had the idea of experimentally testing fever therapy – that sickness can cure. This can be seen with three Reich Committee children. A 5-year-old Down's syndrome boy died from the therapy on 22 December 1942; another died from a fever cure on 20 October 1942, as did one whose cure began in August 1942 and died on 27 August 1942. Hans Klein (the pathologist who later dissected glands from the Bullenhusen children) working under Ostertag, conducted the dissection finding the cause of death to the overdose of Pyrifer. Another infant died after three weeks in the Wiesengrund on 24 October 1942 aged one year.<sup>11</sup>

The Wittenau experiments were followed up by Georg Hensel in Bavaria. Hensel was a newly qualified physician who had already conducted experiments on disabled infants at the Charité Children's clinic in Berlin in 1938, as cited in his Habilitation thesis of 1940. He justified this by declaring that the physically and mentally malformed were of no value to the nation.

One of the infants died.<sup>12</sup> In 1939 Bessau was physician in charge of the children's sanatorium at the resort of Oy-Mittelberg, one of Germany's most progressive sanatoria. Here he began tuberculosis vaccine experiments on what he deemed to be 'worthless children'. Two infants are known to have survived.

Bessau carried out parallel experiments in Berlin with the support of Conti. Hensel then collaborated with the psychiatrist Valentin Falthäuser at the psychiatric hospital of Kaufbeuren in Bavaria from December 1942 to May 1944 on a series of TB experiments with his vaccine made from killed TB bacilli and lanolin.<sup>13</sup> At the same time Hensel developed his academic credentials and profile at the University of Munich.

Of thirteen children known to have been experimented on at Kaufbeuren, nine were mentally disabled, and one was a deaf mute. All the children developed large abscesses. Five of the children were transferred to Kaufbeuren from the Italian South Tyrol. The children were experimentally inoculated in May 1943 but all died over the coming year. They were: Agnes Gschnell, born 22 December 1936 from Gírlan, and died on 29 May 1943; Ida Sailer from Sarntheim died in August 1943, Josef Santer from Unser Frau died on 18 April 1944; Max Platzler from Meran died on 12 March 1943; Rosa Unterweger, aged 11 was inoculated 19 May 1943 and died in June 1943. Johann Hacker, born on 25 August 1934 in Nuremberg, survived the experiment but was killed on 22 May 1944 as a euthanasia victim. It is not known whether three further children survived. Hensel was keen to have the post-mortem reports.<sup>14</sup>

Drug and vaccine testing took place in 1941 at Breslau: in 1941, Hans Voegt infected psychiatric patients from the mental hospital in Breslau with hepatitis.<sup>15</sup> The network of research grew wider during the war. From 1942 experiments occurred in several psychiatric hospitals: Arnsdorf, Eichberg, Günzburg, Marburg, and at Eberswalde by summer 1943. These tested IG Farben drugs. Elmar Türk of the Vienna University paediatrics department killed at least three children at the Steinhof hospital in the course of TB experiments. The psychiatrist Kretschmer at Marburg, renowned for his work on physique and conducted insulin shock treatment tests in November 1944. The wide distribution of such infectious disease experiments suggests that using psychiatric patients as human guinea pigs became routine during the war.

From March 1944 the malariologist Gerhard Rose of the RKI ran the largest set of pharmacological experiments at the Pfafferoode clinic, located near Mühlhausen in Thuringia. First, at Arnsdorf from late 1941, Rose tested the synthetic anti-malarial, Sontochin. This was an IG Farben-produced drug (under the Bayer label). Rose used fifty patients for his tests. One group were infected with malaria tropica, and treated with Sontochin. Sometimes combinations of Sontochin and Plasmochin were tested.<sup>16</sup> Rose, Vice-President of the RKI, had Pfafferoode designated both a RKI research centre and a Luftwaffe research unit with its 1,500 inmates.

In May 1943 Rose lambasted the research at Buchenwald on typhus vaccines as unnecessary, and was scathing as regards Schilling's malaria research at Dachau.<sup>17</sup> But he defended his own research as scientifically justified. The Tropical Medicine Department of the RKI was transferred to the Pfafferode asylum in January 1944, and Günther Blaurock researched alongside Rose with a small team. Rose additionally researched on therapies and insecticides on hospitalized forced labourers, as well as on the 1,500 patients.<sup>18</sup>

From March 1944 to April 1945 Rose conducted malaria research at Pfafferode on the suppressive effect of the drugs Atebrine, quinine and Sontochin, administered for nine days. The patient was infected with malaria from the tertian strain of mosquitoes. The RKI supplied a strain called Greece. For eight weeks each patient was subjected to fifteen mosquitoes, and then observed for up to 400 days. Rose used thirty-five patients as controls – two who did not die had previously had malaria. Eight patients contracted malaria. Overall 150 prisoners were used, and examined for a period of 400 days in all. He also experimented with the drug Sontochin in 1945.<sup>19</sup>

## **At the Spiegelgrund, Vienna**

The Vienna 'Kinderfachabteilung' Am Spiegelgrund opened on 24 July 1940 as part of the Municipal Child and Youth Welfare Institution. It was located on the grounds of the grandiose psychiatric hospital 'Am Steinhof' using nine of its pavilions. It was the second such special children's unit to be founded in the Reich. To make space for it, 3,200 adult patients from the Steinhof were killed in the gas chamber at Hartheim.

The first medical directors was Erwin Jekelius (until early 1942) and Ernst Illing (since 1942), and Heinrich Gross, Margarethe Hübsch, and Marianne Türk ran the 'special children's ward'. From 1 June to 15 July 1941 Gross trained with Heinze at Görden. Until his call-up to the army on 22 March 1943, 336 children died. Gross returned in summer 1944 to resume research and killing.

Clinical examinations were painful and the pneumoencephalography was sometimes fatal. Reports on each child were written for the Reichsausschuß. After the death of the children, the brains and spinal cord were extracted.<sup>20</sup> At the university children's clinic Elmar Türk tested a tuberculosis vaccine on several children previously infected with TB. They were then killed at the Spiegelgrund by starvation, medication or exposure to cold, and their bodies were dissected and the brains and glands were examined by the pathologist Barbara Uiberrak and Türk.<sup>21</sup>

Gross presented 'a case' on 23 November 1942 at the Vienna Biological Society. Günther Pernegger was born on 16 November 1941. Aged six weeks, he was admitted to the 'Kinderfachabteilung' with malformations on

his head and hands. He died ostensibly from nutritional and lung disease on 25 January 1942. The children were exploited as an experimental resource throughout the war, and their brains were retained for research.<sup>22</sup>

## Hereditary pathology

The geneticist Hans Nachtsheim was at the KWI for Anthropology, where he contributed to Verschuier's research programme on hereditary pathology, which was financed by the DFG. He saw no ethical difficulty with an experiment in a concentration camp, or indeed from a psychiatric clinic. He obtained children for a pressure chamber experiment with oxygen reduced gas on 17 September 1943. The six children aged 11 to 13 were supplied from the Görden psychiatric hospital by Karl Brockhausen and Heinze, the latter a member of the KWI for Brain Research's Curatorium. The children were exploited for what was referred to as research for the benefit of other patients.<sup>23</sup>

The pressure chamber was one used at the Aero Medical Institute under Strughold; Klee speculated that it was possibly the one previously used by Rascher: elements from prior experiments could be transposed and combined.<sup>24</sup> Nachtsheim collaborated on the research with Gerhard Ruhenstroth-Bauer at Butenandt's KWI for Biochemistry. One child who served as experimental subject lived on after 1945, but the fate of the other experimental subjects is unclear.<sup>25</sup> Nachtsheim prepared a paper for the *Zeitschrift für menschliche Vererbungs- und Konstitutionslehre* on the experiment in 1944, but it was never published.

The issue was whether the conditions in a rabbit strain with hereditary convulsions were equivalent to 'Hydrops universalis congenitus' in humans. Nachtsheim allowed his expertise to underpin such research to advance racially informed clinical practices, and like his KWS colleagues Hallervorden and Verschuier, he regarded it as legitimate to exploit the killing institutions for human 'material'.<sup>26</sup>

The detailed report by Ruhenstroth-Bauer and Nachtsheim on epileptic children was to form part of a series of four papers on 'Krampfbereitschaft and Genotypus'. Nachtsheim linked work with the pathologist Hans Klein to the experiments with Ruhenstroth-Bauer. The co-authored paper by Ruhenstroth-Bauer and Nachtsheim concluded with a statement of intention to publish further clinical observations on young epileptics. Nachtsheim extrapolated from his observations on cramps in his specially bred rabbit strains with the Pelger gene. The idea was to induce epilepsy by means of low pressure.

The paradigm of Hereditary Pathology (*Erbpathologie*) facilitated links between animal, clinical and concentration camp research. According to the human geneticist Gerhard Koch at the KWI for Anthropology and SS officer, Nachtsheim and the Institute's assistant Karin Magnussen undertook joint

research into genetic anomalies of the eye. This suggests a readiness to undertake human experiments and use body parts from concentration camps for research. An epidemic of septicaemia provided her with hundreds of pairs of rabbit eyes for her to dissect, and allowed her to study the effect of ageing on eye pigmentation. She also circulated the proofs of her paper submitted on 20 February 1944, which drew parallels between rabbit and human development, while remaining silent about her dissections of eyes from Auschwitz. Nachtsheim's involvement with her work indicates how the notion of experimental Erbpathologie supported racial research.

The experiments conducted by Nachtsheim and Ruhenstroth-Bauer can be interpreted in a number of ways. Alexander von Schwerin has analysed these experiments as an extension of a series of experiments on rabbits with a hereditary palsy. He sees this as unethical, dangerous research, arising from rigorous animal experimentation.<sup>27</sup> In contrast, Hans-Walter Schmuhl sees the Nachtsheim research as linked to 'euthanasia' and concentration camp experiments.<sup>28</sup> Nachtsheim's network involved collaborators, who were deeply involved in coercive research. Hans Klein, a long-term collaborator on tumour research, joined Gebhardt at Hohenlychen. He dissected glands of the children killed in the Bullenhusen school cellar after a culture of TB bacilli was injected in the concentration camp of Neuengamme.<sup>29</sup> Nachtsheim was not only breeding rabbit strains but also experimenting on them with such drugs as Cardiazol. Nachtsheim had secured Ruhenstroth-Bauer's release from military service for research on haemopoietese (a hormone presumed to control oxygen in red blood vessels) as a solution to the painful cramps on rapid descent from high altitude. Here were a range of institutions and research practices that showed how Nachtsheim and Verschuer were drawn into coercive, lethal networks.





## CHAPTER TWELVE

# Anatomical victims

### A glut of bodies

From 1933 the flow of bodies to institutes for anatomy and pathology began to increase. Nazi executions from cursory trials and special courts were the main source. Concentration camps and then POW camps provided corpses. Anatomists long had the right to claim bodies of the executed, and an institute would receive bodies from work houses, police cells, hospitals and old peoples' homes, but until 1932 there was just a trickle of executees. As Hildebrandt observes, 'Between 1907 and 1932 an average of 16–19 persons were executed each year. About a fifth were women with just three to four executions of women a year for the years 1928–32. In contrast, it is estimated that more than 4,000 women were hanged between 1939 and 1945.'<sup>1</sup> Some were hanged soon after they had given birth, as the Rote Kapelle resistance activists Hilde Coppi and Liane Berkowitz. In rare cases pregnant women were executed.<sup>2</sup> As the war went on, shootings and impromptu hangings increased: Allied bombing destroyed the guillotine at the Ploetzensee prison in Berlin. Many executees were tortured. Some executees were subjected to medical studies before death, and experimental substances applied. Anatomists wanted their corpses to be as fresh and warm as possible, so that they could obtain perfect specimens. Some worked as close as possible to the executions; some arranged express deliveries of corpses. Students became accustomed to decapitated cadavers.<sup>3</sup> Researchers and students, some from countries sympathetic to Nazi Germany as Sweden, had rich stocks of 'material'.

From 1933 to 1945 there were about 15,000 civilian and 15,000 military executions under the Nazi system of 'justice'.<sup>4</sup> As the war progressed rates of executions increased. Critics of the regime, resistance activists or those deemed complicit in more informal opposition, and racial victims were among the executed. Anatomical, pathological and brain research institutes obtained bodies and brains of psychiatric patients, Gestapo prisoners, deserters and conscientious objectors. In January 1941 an 'Anatomical Research Plan' was to involve fourteen German anatomical institutes.<sup>5</sup>

Minor infringements by forced foreign labourers could earn a death penalty. A person executed for resistance to Hitler might end on the anatomists' slab, as happened to six persons executed in Hamburg on 10 July 1944 who were consigned to the cellars of the Kiel anatomical department.<sup>6</sup> Care, however, was taken in Munich that the Scholl brother and sister – as Hans Scholl was a medical student – should not provoke further opposition by so doing.

Initially, only bodies not claimed by families could be transferred for dissection. Anatomists and brain pathologists demanded a prior right to specimens, as in Hamburg and Munich.<sup>7</sup> The neuropathological department of the KWI for Psychiatry in Munich received occasional brains of executed persons from Stadelheim prison.<sup>8</sup> On 30 June 1933 the Prussian authorities decreed that municipal authorities could transfer bodies of persons who died in hospitals and had no relatives to anatomical institutes. On 6 October 1935 further regulations were issued on the distribution of cadavers to anatomical institutes and other Prussian institutions. The state gave the rights to institutes to claim bodies of persons executed providing they were unclaimed by relatives for the purposes of scientific research and training.<sup>9</sup>

Executions in Hamburg supplied not only the local university but also institutes in Rostock and Kiel. By 1943 it became state law that bodies of Jews, Poles and persons executed for treason could not be collected by their families, but should be sent for scientific exploitation. Reconstructing the distribution of bodies and individual identification sometimes allows precise identification, but at other times just a number of corpses is known. For certain universities as Jena one can link the individual corpses to judicial and execution records. The Gestapo executed and supplied bodies under conditions of secrecy. The Hamburg anatomical museum director Johannes Brodersen obtained an estimated 240 bodies from Neuengamme concentration camp by May 1941. He was proud of his skills in taking casts of 'fresh material' for models of muscles.<sup>10</sup>

In all there were thirty-one departments of anatomy in Germany.<sup>11</sup> In 1946 it was noted that numerous anatomical publications from Berlin, Breslau (twenty-four bodies), Kiel (nine bodies), Leipzig (thirty bodies) were based on executions and camp deaths. The researchers proudly boasted their prowess in the rapidity of their dissections.<sup>12</sup> In 1945 the University of Tübingen divested itself of 632 bodies; it identified 492 of these victims' bodies in the early 1980s, finding that they were East European forced labourers.<sup>13</sup> The Munich anatomical department received bodies of communists executed on 23 June 1944. The Anatomical Museum in Hamburg received bodies of executed persons from Fühlsbüttel prison. For certain universities – Bonn, Cologne, Jena and partially for Munich – there are surviving body registers. The situation became more complex as the Nazi academic system expanded to include the universities of Danzig, Posen and Strassburg. The Reich University of Strassburg still had empty body tanks in 1942. The bodies of 230 Soviet POWs went from Natzweiler to the Strassburg anatomical

institute.<sup>14</sup> Networks of supply were rapidly put in place. This involved both working at the sites of execution and having a staff member, Henry Henripiere, driving a delivery van to collect prisoner corpses. Neuengamme concentration camp supplied the Hamburg anatomical institute.<sup>15</sup> The University of Jena similarly received bodies from the state prison at Weimar, mental and nursing institutions, and occasionally bodies of forced labourers.<sup>16</sup>

The concentration camps of Dachau, Buchenwald and Mauthausen-Gusen built up pathological museums of 'interesting specimens'. There were carefully labelled jars: 'Found in the stomach of prisoner X . . . who committed suicide.'<sup>17</sup> Concentration camp doctors supplied not so much whole cadavers – inmates were too emaciated – but organs and bones. At Mauthausen, anatomically interesting victims were at risk. The Dutch Jewish dwarf, Alexander Katan, was killed by cardiac injection – a specialty of the camp doctor Eduard Krebsbach whose lethal injecting earned him the soubriquet 'Spritzbach'. Katan's flesh was stripped off his skeleton for display and photographic documentation. Krebsbach assembled 286 specimens of human organs at



**FIGURE 12.1** *View of preserved human organs removed from prisoners in Buchenwald concentration camp, 20 April 1945 to May 1945.*

United States Holocaust Memorial Museum, courtesy of Robert Michael Merritt #4885A

Gusen, in collaboration with the SS Medical Academy in Graz. Krebsbach was convinced that he had a duty to kill inmates who were a burden on the state.<sup>18</sup> Sachsenhausen supplied the Kaiser Wilhelm Institute for Anthropology, as a resource of racial types for Abel, and possibly also for Hans Grebe.<sup>19</sup> Rascher's assistant, Neff took five specimens from Dachau to Strasbourg for the anatomist Hirt between 20 and 30 September 1942 – one Flemish Belgian, three Russians and one German.

The Gestapo regularly disposed of executed Poles (both Jews and Christians) in the Posen anatomy institute cremation furnace.<sup>20</sup> On 30 October 1941 Voss, who relished the wholesale extermination of the Poles, recorded on 30 October 1941: 'tomorrow the anatomical institute will get its first bodies. Eleven Poles are being executed; I will take five of them, the others will be burnt.'<sup>21</sup> The executions were so plentiful in Posen that they supplied the needs of anatomists in Königsberg and Breslau.<sup>22</sup> Skeletons and skulls from the Posen institute went to Hamburg, Leipzig and Vienna.<sup>23</sup> In all, the bodies of an estimated 4,500 Jewish and non-Jewish Poles were incinerated in the institute.

The Vienna Natural History Museum obtained twenty-nine Jewish skulls from concentration camp victims, and fifteen Polish skulls of executed resistance fighters from the anatomical institute of Hermann Voss at what he called his 'pseudo-university' of Posen in 1942. The Posen institute supplied plaster casts of Jewish heads to the Vienna anthropologists. The chief dissector, a Baltic German, died from typhus from the lice on a 'Jew corpse' on which he was working.<sup>24</sup>

The routine allocation of bodies of the executed to medical students meant that this confrontation with the headless corpse became a significant rite of passage into a scientifically detached view of death; students accepted the murderous practices of the regime. But establishing what research was carried out is by no means straightforward. The two largest centres of anatomy were Berlin and Vienna: they contrasted in terms of ideology and practices. The anatomist Hermann Stieve at Berlin was not a Nazi Party member. He used bodies selectively for his research interests in anxiety and the womb, extracting only the ovaries. Hildebrandt has analysed the 181 identified female victims, suggesting that Stieve's research amounted to the totality of the university department's consumption of bodies of the executed. While Stieve focused only on ovaries, he did not discriminate as regards reasons for execution. Some, like Elfriede Scholz (the sister of the pacifist author Erich Remarque), were executed at Ploetzensee prison.<sup>25</sup> Stieve was interested in the effect of stress on the reproductive system.

Vienna had the highest rate of bodies available compared to any German university – 5,341 in all. The anatomist Eduard Pernkopf's institute was a focal point of Nazi activity even before the annexation of Austria to Germany in 1938. Under the professors Carl Toldt, Ferdinand Hochstetter, and finally Pernkopf, the University of Vienna's second department of anatomy had a continuous history of pan-Germanism, antisemitism, and

political extremism among students and staff that dated back at least to the 1890s. By contrast, the first department, under Emil Zuckerkandl and Julius Tandler, was populated by Jewish, liberal, socialist and foreign students.<sup>26</sup> Political differences were paralleled by variations in scientific orientation, with narrow morphological and systematic anatomy prevailing at the second department under Pernkopf, and topographical, clinical and physiological approaches at the first. It was not merely Pernkopf who joined the Nazi party in 1933, but a whole set of assistants, technicians and anatomy painters. In 1937, the lecturer Alexander Pichler, the Nazi party organizer at Pernkopf's institute, paved the way for the funding and career advancement in Nazi Germany of Konrad Lorenz. In 1942 another professor, Wilhelm Wirtinger, lent his expertise to the dissection of a disabled child, murdered under the 'euthanasia' programme. At least 1,377 bodies of executed persons were delivered to the University during the Nazi times. In all, these bodies were used for at least 800 of the vividly detailed images of the atlas. Among the anatomical draughtsmen were Nazi Party members: Erich Lepier added a swastika to his name on the anatomical plates; Karl Endtresser slipped SS runes into his signature, and Franz Batke turned the year 1944 into an opportunity for similarly using SS symbols.<sup>27</sup>

Scientists moved to the sites of execution. The Leipzig anatomist, Max Clara had doses of vitamin C administered to fifteen prisoners before their execution around early 1942, so that he could dissect their organs to study the effects of the vitamin on metabolic function.<sup>28</sup> The physiologist Gotthilft von Studnitz in Halle had prisoners blindfolded before their execution. He was researching to increase the sensitivity of the eye to low intensity of illumination by using a plant extract. He dilated the eyes, and prisoners were blindfolded immediately before execution. Their eyes were compared with light-adapted eyes when they were extracted immediately after execution. On 19 June 1944 he was involved in nineteen executions at Halle of persons condemned by military courts; he took part in a further sixteen executions. By treating the eyes before execution, Studnitz claimed to have developed a substance assisting night vision.<sup>29</sup>

Johann Paul Kremer, an anatomist from Münster University, was in Auschwitz from 30 August until 18 November 1942. Previously, his research subjects had been starving amphibians, Alpine newts and grass frogs. He took a Lamarckian view of pigmental changes in the tissues of liver and spleen.<sup>30</sup> He was heavily attacked by the University Rector Mevius for the publication as (he later claimed) not in keeping with the NSDAP's racial programme.<sup>31</sup> Using Auschwitz specimens of the liver, spleen and pancreas, he researched on muscle tissue and starvation. As Kremer went on rounds in the Auschwitz camp hospital, he selected prisoners for killing with a phenol injection. He recorded details of prisoners' weight and asked about their weight before entering the camp. He often photographed the patients, and they were killed to order.<sup>32</sup> He obtained 'living fresh material' on at least six occasions. On 15 October 1942, he noted 'Living-fresh material of liver,

spleen and pancreas taken from an abnormal individual.' Kremer referred to the victim as an 18-year-old Jewish boy, giving the camp number 68030. This identifies him as Hans de Jong, born on 18 February 1924.<sup>33</sup> Kremer referred to another victim only as a case of jaundice; on the other occasions, they are just 'material', at most of interest for their muscles and spleen. He used the specimens to study the effects of starvation on tissues, linking his human dissections to prior animal studies.<sup>34</sup> The Auschwitz pathologist Miklós Nyiszli was astonished at how he was confronted with a plethora of bodies and this contrasted to an institute previously struggling to obtain enough bodies for teaching and research.<sup>35</sup>

Robert Herrlinger was similarly an anatomist in search of a Habilitation topic. From August 1941 he became Oberassistent for anatomy at Posen, then Prosektor, and added 'history of medicine' to his competence under Hermann Voss. Anatomists had a huge appetite for 'Lebenswarmen Organen', as Herrlinger at Posen. In early 1943 he studied the splenic vein in eight male corpses, aged 18 to 48. He wrote quite openly in a publication of 1947 that these were available for research within 40 to 80 seconds after death. Herrlinger rapidly extracted the spleens and analysed the blood – he concluded that the spleen had a storage function for the red and white blood cells. The research formed the basis of his Habilitation on 6 May 1943, and the granting of the right to teach on 17 November 1944; he published these researches in 1947.<sup>36</sup>

At the Danzig Anatomical Institute under Professor Rudolf Spanner, an SS officer, the soapy grease left from making anatomical preparations was utilized on a small scale and experimental basis from 1943 to 1944; but the claims made by the Soviet prosecutor that these were 'semi-industrial experiments' let alone that Jews' fat was used, have been shown to be unfounded. The fat was a by-product of maceration procedures carried out at the Institute. The maceration grease could be further refined as a product for cleaning purposes – something to which Spanner admitted. The production within the institute using the waste-product from corpses was small, and at a time when the Institute had more bodies to process than it was able to. It did not mean that the bodies were used for soap making, but that – as at other anatomical institutes – the supply of bodies exceeded what the institute could in fact process.

In May 1945 an investigating commission at the Danzig anatomical institute found 148 corpses; 82 were decapitated and there were a further 89 heads, some female. There was just one ape corpse, showing how human research had replaced that on animals. Taking a wider view of Nazi victims and looking at the more transitory research, the soap initiative casts important light on Nazi anatomical research procedures. The professor of hygiene, Gerhard Wagner used corpses of POWs.<sup>37</sup> What is also revealing is that such an institute preferred the standard source of psychiatric patients (from the Conradstein asylum) and decapitated persons from prisons. The institute rejected certain categories of bodies. The bodies of Poles who had been executed by shooting were found to be difficult to preserve. On one occasion four Russian bodies came from Stutthof concentration camp but

they were rejected as unsuitable for students because of the atrophy of fatty tissues and muscles. Gestapo victims who were beaten or shot were also deemed as substandard for dissection and preservation. Above all, emaciated, starving and diseased Jews were rejected as of too poor quality for anatomical study; but their skeletons were regarded as worth preserving.<sup>38</sup>





# CHAPTER THIRTEEN

## Gypsies

### Research for destruction

The first phase of gypsy research was to identify the diverse ethnic groups, whom the Germans stigmatized as 'Zigeuner', and those inter-married with them. They were to be measured, studied as to their behaviour and diseases, their genealogies were constructed. The findings provided rationales for their detention and destruction. The significant research was by Ritter, assisted by Ehrhardt and Justin. Himmler was indecisive: in 1938 he considered that pure gypsy blood lines should be protected as offering a possible link to ancient Indo-Germanic Aryans. He remained sporadically interventive, halting a sterilization experiment at the Lackenbach gypsy detention camp in the Burgenland.<sup>1</sup> He was interested in whether a distinction existed between gypsy 'pure breeds' and 'mixed breeds'.<sup>2</sup> Then Himmler ordered the extermination of the Roma in 1942. Gypsies were variously held in segregated and secure camps, exploited for forced labour, and gassed.<sup>3</sup> They became readily available for experiments.

Eva Justin trained as a nurse and turned her attention to the anthropology of the Roma. She worked under the auspices of Ritter at the Reich Health Office, who was encharged with identifying and registering Sinti and Roma. The anthropologists Eugen Fischer, Richard Thurnwald and Wolfgang Abel agreed in March 1943 to examine her doctoral dissertation, on the 'life history of alien-raised gypsy children and their descendants'.<sup>4</sup> This was a study of 'Gypsy Mischlinge', who were half-Roma or Sinti children taken from their parents and raised in orphanages and foster homes without any contact with Romani culture. Justin studied children at the Catholic orphanage at Mulfingen, near Stuttgart. She regarded them as 'racial primitives' who were among the 20,000 gypsies living among the highly civilized Germans.<sup>5</sup> Amalie Schaich found the experience of being Justin's research subject degrading. In order to obtain a photo, Justin offered sweets: 'I had the feeling that they wanted to degrade us in front of the others with their experiments. This Dr. Ritter and Eva Justin, they didn't treat us like normal human beings. It

wouldn't fit into their heads that Sinti children are just as intelligent.<sup>6</sup> Justin concluded that the children were 'primitive' asocials and mentally defective. After the completion of her observations, the thirty-nine children were deported to the 'Gypsy Family Camp' at Auschwitz on 9 May 1944. Only four survived. In some cases elder children who could work survived although they were sterilized. Justin's research contributed to the identification, arrest and extermination of the Roma.<sup>7</sup>

## Racial immunology

Racial experiments took place in Sachsenhausen. In 1942 the RKI serologist Werner Fischer researched on how different 'races' withstood various contagious diseases, as related to different blood types. Fischer proposed in May 1942 serological research on fifty gypsies in Sachsenhausen, supported by Reichsarzt SS Grawitz.<sup>8</sup> Fischer ran a serodiagnostic department at the RKI. On 15 May 1942 Reichsarzt SS Grawitz approached Himmler for permission for the research in Sachsenhausen in the hope of obtaining insights into racial differences. The blood draining and vaccination was not to impair the ability to work. Himmler's Secretary, Rudolf Brandt conveyed permission.<sup>9</sup>

Werner Fischer liaised with Karl Horneck concerning the research. It involved potentially dangerous blood serum transfusions from different racial types, and analysis. Himmler suggested extending the experiments to Jews, and he asked to be kept informed about progress. It is known that the experiments began, but once Horneck was transferred to the Eastern Front, they were not continued.<sup>10</sup> The procedure shows how Himmler frequently intervened in the conduct of the research. The research represented a new phase in centralization of concentration camp experiments. Ernst Rodenwaldt, professor of hygiene at Heidelberg, encouraged Horneck in his research on the serological basis of race, and he was awarded a DFG grant of 2,500 marks in 1942. This shows an early initiative for racial experiments, opportunistically using captive racial inferiors as if laboratory animals.<sup>11</sup>

Despite inexperience in the pathology of infectious disease, the Auschwitz camp doctor Heinz Thilo conducted malaria experiments in the gypsy camp Revier in autumn 1943. He infected twenty male gypsies with blood from other patients.<sup>12</sup> As other experiments on the Auschwitz gypsies, this was opportunistic. A survivor, Hegyaljai Lajos also known as Ludwig Hohberger, remembered how blood was taken for immune cultures.<sup>13</sup> Indeed, the wholesale destruction of the Gypsy Camp has meant that just a handful of Auschwitz gypsy experiment victims can be identified by name.

Research was carried out on the inheritance of typhus among the newborn. A prisoner doctor Jan Cespiva testified that eighty-six mothers were infected, and their progeny then tested to see if the placenta acted as a barrier against infection. None of the mothers or newborn survived.<sup>14</sup>

## Gypsy twins

Mengele had been assistant to Verschuer in Frankfurt from 1937 completing research on the genetics of cleft palate, and as a young researcher was well integrated in clinical genetic research networks.<sup>15</sup> He joined the SS in 1938 and volunteered for service in the Waffen-SS in 1940.<sup>16</sup> From November 1940 to the end of January 1942 he worked at the Race and Settlement Office, including at the remigration centre on ethnic Germans at Posen.<sup>17</sup> After frontline service with the Waffen-SS Wiking Division (manned by volunteers from Nordic lands), Mengele had a brief sojourn in Berlin from January to the end of May 1943. He remained attached to an SS infantry battalion. He used the opportunity to visit Verschuer, now Fischer's successor at the KWI for Anthropology. Mengele was transferred from the Waffen-SS to the main SS administration, and was appointed doctor in charge of the Auschwitz gypsy camp. While this overcrowded and underresourced camp posed immense medical problems, here was also a scientific opportunity for the ambitious racial researcher.<sup>18</sup>

Gypsies were sent to Auschwitz from February 1943. From the end of May 1943 until the liquidation of the gypsy camp, Mengele was the gypsy camp doctor, overseeing ever larger gypsy numbers (over 20,000) in ever worsening conditions of overcrowding and deteriorating diet. It has been suggested that



**FIGURE 13.1** *Emaciated gypsy boys in Auschwitz.*

Courtesy of Centre de Documentation Juive Contemporaine, Paris

13,600 perished due to the appalling starvation.<sup>19</sup> The gypsy camp hospital had a large medical and nursing staff of prisoner doctors and nurses.

The experimental research was threaded into a much larger set of operations concerning containment of infections. While mainly engaged with typhus eradication, Mengele conducted research on 'Noma', a disfiguring form of malnutrition-induced gangrene that broke out in June 1943. The cheeks of the children were bloated with putrid ulcers.<sup>20</sup> Mengele ordered the Jewish prisoner Berthold Epstein, formerly professor of paediatrics in Prague, to carry out research on possible treatments with sulphonamide drugs and vitamins. Another Czech doctor, Rudolf Weisskopf assisted from June 1943. Mengele commissioned drawings to be made of this disfiguring condition. Medication and dietary therapies were tested, and Mengele experimented with injections from Noma sufferers to the healthy.<sup>21</sup> In April 1944 special dental investigations were carried out on gypsy twins, as Noma ravaged the soft tissue of the cheeks and gums. Models were made of their mouths.<sup>22</sup> A boy's head was to be dissected, and such specimens were sent to the SS Academy at Graz.<sup>23</sup>

Mengele's researches on gypsies are less well documented than on the Jewish twins and dwarves, because the earlier dissolution of the gypsy camp meant survival was exceptional. A survivor stated that Mengele conducted anthropological investigations of sixty gypsy twins; then (possibly after an attempt to keep them alive was refused) he killed them and had them

Hyg.-bakt. Unters.-Stelle  
der Waffen-SS, Südost

29. Juni 1944  
Auschwitz Gb., am 29. Juni 1944.

Anliegend wird übersandt: (12-jähriges Kind)

Material: Kopf einer Leiche entnommen am  
zu untersuchen auf Histologische Schnitte

Name, Vorname:

Dienstgrad, Einheit: siehe Anlage

Klinische Diagnose:

Anschrift der einsendenden Dienststelle: H.-Krankenbau  
Zigeunerlager Auschwitz II, B II e

Bemerkungen: Der 1. Lagerarzt  
K.L. Auschwitz II  
Mengele  
SS-Hauptsturmführer.  
(Stempel, Unterschrift)

FIGURE 13.2 Order by Mengele to have brain sections made on a gypsy child.

Courtesy of Państwowe Muzeum Auschwitz-Birkenau Oświęcim

dissected.<sup>24</sup> Twenty-four gypsy twins can be identified with certainty as research subjects. There were in fact seventy-nine pairs of twins and two sets of triplets as potential research subjects in the camp.<sup>25</sup> The anthropologist Georg Wagner studied gypsy twins for Abel and Eugen Fischer in his dissertation of 1943 on the racial biology of gypsies and gypsy half-breeds; he actually based this on research on 490 gypsy twins in several concentration camps including Mauthausen.<sup>26</sup> In January 1941 Eugen Fischer outlined his plans for a 'hereditary biological central collection' to be based at the KWI for Anthropology, including the organs of children and grown ups, and especially of twins.<sup>27</sup> This was indicative of the scientists' appetite for body parts. Certainly, the Auschwitz gypsies were prey for specimen-hungry research institutes, as shown by the killing of Mechau family, a Sinto family because of their different eye colours. Others were also hunted down for their eyes. In contrast to the skeletons, the interest was driven by the genetics of hereditary pathology.<sup>28</sup>

Mengele initially used the Kindergarten in the Gypsy Family Camp for twin research. When the camp was liquidated in early August 1944, he attempted to retain his stock of gypsy twins. When this proved impossible, he killed and dissected them. In effect, these gypsies formed a pilot study for a far larger cohort of Jewish twins. But while women, children, the sick and the elderly were gassed, the Germans retained a large stock of adult male gypsies. They were used for further experiments at Buchenwald, Dachau and Natzweiler.

Over time (the evidence suggests that it was primarily from May to November 1944), Mengele built up his own research installation with a staff of prisoner pathologists, and other specialists; Verschuer included him in a grant from the DFG for research on hereditary pathology, focusing on blood proteins. Although Mengele was in formal terms not attached to Verschuer's KWI institute in Berlin, there was informal and sustained collaboration, not least because of a declared intention to habilitate with Verschuer.<sup>29</sup> Allegedly, there was a form deriving from the KWI for Anthropology that had to be completed for each twin.<sup>30</sup> Mengele injected his patients with infective agents to compare their effects, and cross-injected spinal fluid. He would sometimes order the killing of a victim, so that internal organs could be analysed. He assisted in obtaining blood and body parts for Berlin colleagues.

Under this project, Mengele assisted in supplying the heterochromic eyes of the Sinto family. The eyes were sent to the geneticist – and Nazi activist – Karin Magnussen at the KWI for Anthropology in Berlin, who was carrying out serial research on iris structure of schoolchildren. The DFG funded the project on 'eye colour' with large-scale population screening. The geneticist Hans Nachtsheim conducted linked research on rabbit eyes. When anomalies in the iris of the family of Otto Mechau from Oldenburg came to light, she examined them in August 1943 before their deportation to Auschwitz. She then requested photos through the SS anthropologist Siegfried Liebau in Auschwitz, and later contacted her KWI associate, Mengele to secure the victims' eyes. This killing to order happened sometime before the final gypsy killings in Auschwitz on

2 and 3 August 1944.<sup>31</sup> It is likely that the selected group underwent colour experimentation with some chemical eye drops, and Hans Hesse estimates that forty pairs of eyes from gypsy and Jewish children were sent from Auschwitz; the Mechau family were killed between May and August 1944.<sup>32</sup> While it is said that Mengele wished to change eye colour, more likely is an investigation to isolate and determine genetic factors.<sup>33</sup>

From arriving in Auschwitz in April 1943 Mengele built up extensive research facilities. Despite his determination to create a research structure that could yield a Habilitation thesis as the passport to a university career, arranging matters took considerable time. Mengele achieved this by being ruthless in carrying out his duties as camp doctor – he selected on the ramp; he weeded out the chronically sick for gassing, and conducted delousing and anti-typhus measures that left hundreds naked in the cold for protracted periods.<sup>34</sup> He thereby gained the support of his superior, Wirths, and the camp commandant Hoess. He was eventually rewarded with the twin block, and holding facilities for hundreds of human specimens of scientific interest, and he assembled a large research staff. This was scientific opportunism on a grand scale. He drew on research skills learnt under Verschuer, and shown in his MD on the genetics of cleft palate. Ironically, all was in place for only a few months (between June and December 1944) before the evacuation of Auschwitz. Mengele thus fits into the pattern of experimentation on high numbers late into the war.<sup>35</sup>

## Seawater drinking and water purification

The Luftwaffe was faced by the problem of evaluating two desalination methods to make it possible to drink seawater when stranded at sea. The survival problem arose from retrieving dehydrated pilots, shot down at sea, and was raised at the distress at sea conference at Nuremberg in October 1942.<sup>36</sup> When the Germans found out that the US physiologist Andrew Ivy had devised a method of desalination, Himmler exerted pressure for devising and testing a similar German product.<sup>37</sup> The Luftwaffe commissioned a new desalination product from IG Farben. A rival technique was devised by the Technical University Vienna. At the same time, Maximilian de Crinis, the dark eminence in administering medical research, put the problem to his friend and colleague Hans Eppinger in Vienna. Eppinger, an obsessive experimenter of international distinction, had expertise in clinical aspects of nutrition, liver disease, and specifically the metabolic effects of salt. He in turn contacted the renowned pharmacologist Hermann Rein in Berlin.

Tests were carried out in 1943 on German female volunteers but only for seventy-two hours, far less than the coerced experiments planned for twelve days without drinking water, a known fatal length of time.<sup>38</sup> The airforce chief of research Becker-Freyseng (peripherally involved in the Dachau pressure experiments) authorized experiments in Dachau in spring 1944.<sup>39</sup>

The DFG made funds available. As the air force and army would not allow protracted tests on military volunteers, an application was successfully made to Himmler in May 1944 for thirst tests on concentration camp prisoners.<sup>40</sup>

Eppinger nominated Wilhelm Beiglböck, who was first assistant in his Vienna clinic for internal medicine, to conduct the tests in Dachau. Beiglböck's political pedigree was that of an 'illegal' Austrian Nazi having joined the NSDAP in June 1933; he ran a Nazi cell in the university clinic, and was SA Obersturmbannführer. The Vienna NSDAP commended his Nazi activism. From July 1942 he was on active service with the airforce on the eastern front, and then in Italy. Just as the experiments were being prepared, on 23 June 1944 Beiglböck was promoted to the status of Professor at Vienna.

One method merely took the salty taste from the water, by means of adding citric acid. 'Berkatit' was devised by the Austrian engineer, Eduard Berka, who had observed that tomatoes masked the taste of salt. Another more costly and laborious method was being developed by IG Farben by the engineer Konrad Schäfer and actually reduced the salt content. Significant amounts of silver zeoliths were needed. Despite apparent effectiveness of 'Wofatit', the cantankerous Eppinger denigrated it in favour of the less costly but ineffective Viennese method.

Berka first conducted tests on himself. Then in association with the Technical University in Vienna, and after taking out a patent, he conducted tests on twenty volunteer soldiers over ninety-six hours in a Vienna military hospital.<sup>41</sup> The progression from self-experiment to volunteers routinely led to coerced experiments on prisoners.

Gluecks suggested using Jews as experimental subjects, but Nebe considered gypsies from Auschwitz would be better.<sup>42</sup> Forty gypsies for seawater drinking tests were duly dispatched from Buchenwald to Dachau on 7 August 1944.<sup>43</sup> In fact, at least thirty-four of these gypsies had undergone traumatic and intense persecution in Auschwitz. This was shortly after the end of the Gypsy Family Camp in Auschwitz with the horrific mass gassing on 2 August 1944, preceded by the traumatic separation of men deemed fit to work (ironically classified as 'work-shy') from their families.<sup>44</sup> Karl Höllenreiner illustrates the Auschwitz origins: after arrest on 29 May 1944, he was a prisoner in Auschwitz from June 1944, and then without his wife and child who were killed, he was sent to Buchenwald. From there he was dispatched to Dachau for the seawater drinking experiments. In Dachau four further prisoners (including three Russians not identified as gypsies) were added to the group: they 'volunteered', but from a punishment company.<sup>45</sup>

The use of gypsies for the experiment was incidental – it had no special scientific relevance, but the dynamics of genocide meant that there was a surplus of gypsy males after the mass gassings of older gypsies, women and children in Auschwitz. Other gypsies were dispatched for Haagen's vaccine experiments in Alsace. By nationality, the test group consisted of: four Czechoslovaks, twenty Germans (including two former Austrians), eleven Poles, seven Russians, and one was stateless. They were born between 1895



and 1927, so that the youngest was aged seventeen. The separation, killings and transports meant that the gypsies had undergone a series of traumatic events before the experiment.

Eppinger visited Ploetner in Dachau to obtain better facilities for the experiment, and exercised scientific scrutiny. He inspected the experiment in September 1944, tasting the different preparations, and condemned the IG product as 'filth'. The subjects received half a litre of seawater daily. Beiglböck made blood tests for a red cell count, measured urine secretion, and conducted X-ray studies. The airforce supported the research with three chemists.

In preparation Beiglböck conducted a self-experiment for four days. There were four groups of research subjects. Group one endured hunger and thirst, here the survival was from four to six days. Group two were meant to survive on just 500 cl seawater daily, but they consumed fresh water illicitly. Group three had Berkait and emergency rations, and again survived five to six days. Group four had Wofait treated water: the longest period endured was twelve days.

Beiglböck claimed that the experiment caused no fatalities, and that he conducted checkups on the research subjects ten and twenty days after the experiment. The victims became so weak that they could not get up from their beds to reach latrines. They developed cramps and some became delirious: one had to be X-rayed in a straitjacket.<sup>46</sup> Former prisoners accused Beiglböck of causing at least one death. Beiglböck claimed that victims were seen shrouded on stretchers but that they were weak rather than corpses. Opinions differed as to what happened to three carried off on stretchers. One victim alleged two suicides ensued. The victims were dispersed on completion of the experiment. Ernst Metzbach was sent to Mauthausen on 9 September 1944 (rather than as alleged 'freed' with two others).

The experiment had severe effects. Victims became fearful and experienced cramps – Jakob Bamberger described how he endured twelve days drinking nothing but half a litre a day of water with 4 per cent salt.<sup>47</sup> The experiment began by the research subjects being photographed naked. They were tattooed, and their mouths were taped, apart from a small opening for water. There was disruption: when a prisoner nurse fell asleep, some research subjects secretly left the experimental station, and others drank cleaning water, sucked from filthy floor rags.<sup>48</sup> Their views of Beiglböck varied from regarding him as a tormentor, to some stating that he behaved correctly. Those who complained received painful liver and lumbar punctures. A tattooed number on each subject's chest provided identification in event of death to identify bodies. Dizzy spells continued after the experiment ceased.

Karl Höllenreiner recollected that 'the Airforce Doctor' said we would become extremely thirsty. A veteran of freezing experiments at Dachau refused to participate but Beiglböck threatened to shoot him.<sup>49</sup> Höllenreiner said the experiment lasted nearly three weeks. By the end, the group was down to thirty-six in number, as three were removed at the end of the first week, and one was involved in the experiment for only a few days. Höllenreiner



**FIGURE 13.3** *A gypsy used for seawater experiments in Dachau to test methods of making seawater drinkable, September 1944.*

United States Holocaust Memorial Museum, courtesy of National Archives and Records Administration, College Park W/S #78688

was dismayed how Beiglböck disappeared after the experiment and that he took no more interest in his research subjects.

## From live typhus vaccine to yellow fever

Himmler approved dangerous live vaccine research for typhus at the Alsatian camp of Natzweiler.<sup>50</sup> This required hundreds of experimental subjects to be infected, and then vaccinated with experimental live typhus vaccine. Funding for experimental virus research, hepatitis and typhus research came through the Reich Research Council from May 1942 until August 1944.<sup>51</sup> Eugen Haagen was a former Rockefeller foundation employee, a specialist in virus research, and a supporter of US-based Nazi organizations. Internationally, efforts to promote disease eradication increased during the 1930s with new techniques in virology. The Rockefeller Foundation provided important training for Haagen. Returning to Germany, he joined the Nazi Party in May 1937. He was on the Luftwaffe research establishment. Although never an SS officer, he placed the order with Oswald Pohl (the head of the economic office of the SS) and his subordinate in the office D III Enno Lolling (medical inspector of the concentration camps) to supply the experimental subjects. A sealed block was provided for the Ahnenerbe research at Natzweiler by November 1942.<sup>52</sup>

Here, the situation was of large groups of mainly French victims, and then gypsy victims predominating. The typhus experiments began in May 1943 on twenty-eight Polish victims comparing two sets of vaccines, resulting in two deaths.<sup>53</sup> Toledano has established the dimensions of Haagen's experiments as follows: for epidemic typhus on 27 January 1944 between 80 and 88 prisoners, and then on 80 Roma, with overall 200 victims. There were a very few hepatitis research victims; pneumonia experiments were sabotaged.<sup>54</sup>

Haagen was intent on developing a new live vaccine for typhus. Rather than utilize French prisoners, who were regarded as valuable slave labourers, for the research, he arranged for a hundred Roma from Auschwitz to be sent to Natzweiler. This was just at the time of the destruction of the Auschwitz gypsy camp. Haagen visited Natzweiler at least ten times (his notebook recording these). He expressed dissatisfaction at the physical condition of these Roma who had endured Auschwitz and transport across to Alsace – indeed eighteen died on the journey from Auschwitz: moreover, that they were starving meant that they could not equate to soldiers. Having been condemned as useless for research, apart from twelve of them found suitable, their fate is uncertain.<sup>55</sup> Haagen ordered a new batch of one hundred (in fact eighty-nine Roma arrived), specifying that they be aged between 20 and 40 years. They were registered at Natzweiler between 8 and 14 December 1943. On 27 January 1944 Haagen divided them into two groups of forty, vaccinating each group either by scarification or by an intramuscular method. At least twenty-nine detainees died. Karl Eberle (originally from Salzburg) remembered the strong hallucinations from the experiment.<sup>56</sup>

On 9 May 1944 Haagen asked Hirt to obtain a further batch of 200 Roma from Auschwitz. He then intended to research on fifty non-vaccinated controls – but by this time the bombardment of Strasbourg from September 1944 prevented the production of trial vaccine.<sup>57</sup> Haagen claimed to have vaccinated thirty women at the nearby detention camp of Schirmeck against flu, and the same number of men against yellow fever.<sup>58</sup> Yellow fever was a mosquito-borne viral disease. By 1940 there were competing vaccines. Although not of immediate operational relevance to German forces, it was recognized as having potential for germ warfare. Haagen conducted research at Strasbourg on yellow fever on 9 June 1942 on twenty to thirty subjects. He maintained links with Japanese virologists: on 7 March 1944 the Naval Physician Dr Grunske at the Hygiene Institute Strasbourg contacted Haagen regarding samples of yellow fever cultures and data on yellow fever for a Japanese military physician. Haagen wrote on 8 April 1944 to the Chief of the Luftwaffe Medical Service about a visit from Japanese Navy Surgeon Kobayasi to discuss questions regarding influenza and yellow fever.<sup>59</sup>

Sievers insisted that the vaccine research was funded by the military and the Reich Research Council. Sievers (who visited the mustard gas research installations at Schirmeck/Natzweiler and Strasbourg on 24–25 January

1944) claimed that all the experimental subjects had volunteered in line with Himmler's stipulations that prisoners would receive a pardon, and no deaths resulted from Haagen's experimental typhus research in Natzweiler.<sup>60</sup> Again, the Auschwitz gypsy camp supplied hundreds of male research subjects.

## Nerve gas

Otto Bickenbach researched at Natzweiler on forty prisoners to assess the preventive effects of his discovery, Urotropin against phosgene poisoning, to establish what constituted a lethal dosage. Helmuth Ruehl and Fritz Letz were also involved. The experiments ran from 14 June to 9 August 1944. Most research subjects were from the gypsy camp in Auschwitz. All had severe lung oedemas from the gas. On 16 June, four gypsies died from the experiments: Zirko Rebstock (prisoner no. 6516), aged thirty-seven; Andreas Hodosey (no. 6587), aged thirty-two. Two days later, Adalbert Eckstein (no. 6545) aged twenty died, and on 9 August 1944 Josef Reinhard (no. 6564) died. Bickenbach arranged rapid dissection, with the results photographed in both black and white and colour. Willy Herzberg deliberately slowed his breathing; other survivors were Rudolf Guttberger and Herzberg's companion, Serynek. Florian Schmaltz points out that the deaths of the Sinti and Roma indicate racist criteria for the experiments.<sup>61</sup> On the basis of these fatalities, Bickenbach was able to calculate safe limits for phosgene doses; he duly reported these to Karl Brandt.<sup>62</sup>

## Sterilization

Percival Treite was a talented obstetrician with a position at the Berlin Charité obstetrics clinic where he completed a higher dissertation in 1943. He was transferred from Sachsenhausen to Ravensbrück in September 1943, avoiding a posting in Auschwitz. With his superior Richard Trommer he carried out sterilization experiments at Ravensbrück on gypsy women. The accusation was levelled that Treite was involved in Clauberg style intra-uterine injections, although evidence suggests a rather different technique.<sup>63</sup> Although Clauberg appeared in January 1945 at Ravensbrück, there is no certainty as to the sterilization technique used before then. Victim accounts suggest Treite used an unconventional technique to sterilize. In one case: 'claimant states that a large hook shaped needle was forced into the Bartholin glands; as a consequence the thighs became swollen and the entrance of the uterus completely blocked.'<sup>64</sup> When Clauberg arrived in Ravensbrück in 1945, he conducted chemical sterilizations with devastating efficiency on large numbers of gypsy women: the experimental technique became routinized.

Overall, the research on gypsies involved at least 610 victims, exploited for their physique, diseases and 'racial' specificities. In addition came the large-scale researches of Ehrhardt in East Prussia with over 1,000 victims and Ritter's comprehensive efforts to survey German Sinti and Roma, eventually covering at least 16,000 persons by 1943.<sup>65</sup>

## CHAPTER FOURTEEN

### Jews

#### **Schumann and X-ray sterilization**

The taking of Jews for medical experiments on any scale came late – from early 1943 in Auschwitz. Until then it had been either anthropologists taking measurements and face masks, or sporadic but lethal research on Jews as by Rascher. The arrival of Jews at Birkenau for the selections for forced labour and extermination meant large batches of men, women and children were subjected to experiments. The experimenters took whatever nationalities were streaming into Auschwitz. Clauberg took many Greeks, Dutch and Slovaks as Block 10 opened in March 1943. Mengele began experiments on Jews around June 1944, a year after his arrival in the camp: he held mainly Hungarian twins as Hungarian Jews were arriving in Birkenau in ever greater numbers from mid-May 1944. At first, Mengele ran parallel studies of gypsy and Jewish twins. Mengele then needed replacements for his gypsy twins after the gypsy camp liquidation in early August 1944. Researchers preferred new arrivals as they were better nourished. Death was always intended – for some death was part of the scientific work, and for others, the understanding was that they were to be killed after the experiment, or be worked to death. The irony was that because the experiments and investigations of Clauberg and Mengele occurred late, they could not necessarily be completed.

One large-scale investigation brought to a conclusion was that of Horst Schumann on X-ray sterilization. Viktor Brack of Hitler's Chancellery hoped to devise a system for mass X-rays of Jews. He took the view that Jews should be rendered infertile but exploited as labour. In spring 1941 Brack raised with Himmler the possibility of mass sterilization of Jews by means of X-rays at the simple flick of a switch:

A practical method of [sterilization] procedure would be to compel people who are to be treated to approach a ticket counter where they would be asked to answer certain questions or to fill out certain forms for

a period lasting two or three minutes. The person sitting behind the ticket window would manoeuvre the [X-ray] apparatus in such a way that a switch would set in action two lamps simultaneously [radiation must be given from both sides].

With a two lamp installation, 150 to 200 people could be sterilized each day and consequently, with twenty installations of this type, 3,000 to 4,000 people could be sterilized.<sup>1</sup>

Brack had previously recruited Horst Schumann, who transferred from public health work, to take charge of the psychiatric killing centres of Grafeneck and Sonnenstein. Schumann first came to Auschwitz in July 1941 to select 575 prisoners, who were killed by poison gas at Sonnenstein. He visited all the larger concentration camps as part of the 14f13 'euthanasia' programme selecting prisoners to be gassed. In summer 1942 Brack revisited the sterilization issue, and Himmler authorized the mass X-ray experiments. From November 1941 to April 1942 Schumann was in Minsk. Some effort was made in January 1942 to retrieve Schumann for 'neurological-psychiatric research'. Due to Brack's intervention, Schumann transferred to Auschwitz and in November 1942 he began the X-ray experiments in Block 30 at Birkenau.<sup>2</sup> The actual experiments lasted until November 1943; Schumann was then involved in evaluating the irradiated testicles and ovaries, and compiling a final report.

Schumann cut a distinctive figure in the camp in his blue airforce uniform, and with a prominent scar – a duelling 'Schmiss' – across one cheek. Working under Brack of Hitler's Chancellery, he stood outside the normal hierarchies of command. That he remained with the SA rather than joining the SS, reinforced his detached position. He declined to carry out selections for the gas chambers on the ramp. He claimed not to have killed in Auschwitz (although the high radiation doses caused severe and in some cases lethal burns, especially for female victims). Schumann's series of grim tasks meant that he enjoyed a leisurely war. He later stated that he spent the years of 1942 to 1944 largely hunting and fishing.<sup>3</sup> (Schumann's application for a hunting gun triggered an arrest warrant after the war.) The Block 10 pharmacist, Goebel confirmed that Schumann would spend his mornings fishing. While sterilizing and castrating, he set about fathering a second family. He was not a trained radiologist; he worked by trial and error, albeit on a systematic basis, and made little effort to engage with academics in the camp and beyond. He needed support with the surgery and had to find a location for his stockpiles of extracted testicles. The sterilizing effects of X-rays were in any case long proven.<sup>4</sup>

The support of the camp physician Eduard Wirths, appointed to Auschwitz on 6 September 1942, was important for developing research initiatives. There had been the momentous test gassing of 600 Soviet POWs and about 250 sick prisoners, with Zyklon on 3 September 1941, and Kremer's opportunistic anatomical research.<sup>5</sup> But medical research on Auschwitz

prisoners only began when Schumann and then Clauberg arrived in late 1942.<sup>6</sup> Wirths had the confidence of the camp commandant, Rudolf Hoess, who allowed the medical researchers much autonomy. Schumann started to sterilize in November 1942; from the start Wirths provided assistance. Wirths managed to reduce the outbreaks of typhus that could be lethal for the SS in Auschwitz. He also secured the role of SS medical officers in the gargantuan task of undertaking selections for the gas chambers. This devotion to duty meant in turn that he had licence to support medical research, and that Jewish prisoner physicians could be enlisted in camp medical services. Research intensified, while the killings also increased.

Schumann had an X-ray 'bomb' – a special machine used to irradiate cancer tumours – sited in Block 30 in the desolate Birkenau camp. He invited the Siemens technician from Gleiwitz, Ludwig Gehr, who was frequently in Auschwitz, to observe the first batch of 'a few hundred' sterilizations.<sup>7</sup> Schumann tested the effects of X-ray exposure for different lengths of time. He subjected primarily Polish and Greek Jewish men, and some women (mainly Dutch and Greek) to X-rays from his Siemens X-ray machines for different amounts of time. The men were young Jewish slave labourers offered a day without work. Some were in Birkenau, and others (like Yaacov Skornik) were from a group of bricklayers in Auschwitz. They had to place their scrotum on a shelf; many were unaware of X-rays and of their likely effects. They were sent straight back to their barracks for work the next day. The skin on the genitalia soon reddened; then there was a sense of burning, and deep wounds oozed pus. Despite Schumann's reassurances that they would not be killed, many indeed died (eighteen persons, at least) exhausted, distressed that they were sterile, and in pain as they still had a full day's forced labour to complete. The effects contributed to depression, trauma and anxiety.<sup>8</sup> Schumann well shows how prisoners were sterilized for forced labour. When the brothers Abraham and Szyja Zaks were sterilized, they were transferred to Flossenbuerg concentration camp where they worked for Messerschmidt and then at the Janina coal mine. Schumann claimed that it was Brack who instructed him to take testicular tissue.<sup>9</sup> Joseph Jakobsohn, a carpenter from Bedzin, remembered Moshe Brunner who died from the effects of the operation in great pain. The prisoner saw the operation in a mirror overhead, and then saw his extracted testicle in a glass jar of formalin.<sup>10</sup>

Schumann exposed batches of women from Block 10 (he also had space there when the experimental block was made available in the main camp) to radiation; some had to come repeatedly. Afterwards, Schumann ordered extraction of their ovaries. The irradiated women, some Dutch, Greek and Polish, were allowed rest for several days.<sup>11</sup> At first they thought nothing had happened, just that they stood in front of curious metal plates. But soon they felt pain and burning. Some women were irradiated repeatedly, and they found out that they were sterilized.

Schumann was technically clumsy in judging X-ray doses and as an operator. The prisoner doctor, Adelaïde Hautval, was shocked at how he let



excessively high X-ray doses burn round the genitalia.<sup>12</sup> His first victims died from the burning and scarring effects of the radiation. In fact, after interrupting researches because of the typhus epidemic, Schumann could not locate any of his first victims from 1942. Resuming the work in 1943, Schumann wanted to ascertain the effectiveness of the exposure. He recalled male prisoners and ordered a wooden club inserted into their rectum. He extracted sperm – none too gently – by massaging the prostate gland.

The final stage was to extract testicles, first the left and then the right. Schumann insisted on a control group. He operated on a very few prisoners as on Chaim Balicki, who was already seriously burnt. Again, the motive was to assess scientifically the effects of the radiation. There were at least 200 male victims of Schumann.<sup>13</sup> After some months Schumann had the research subjects recalled. At least 180 cases are known from the operations journal of the surgical block.

All – or possibly very nearly all – of Schumann's X-ray sterilization victims were Jewish. Most were male. There was possibly a female pilot group of thirty women, and certainly a small number of Greek females aged 17 to 18 years, who were later operated on to have their ovaries removed. Boris Boehm stated that most men were aged between 20 and 24, and the youngest was 16.<sup>14</sup> Mainly, Schumann hunted for Jewish men to sterilise. Fifty-four known victims were Greek Jews, and eighty-two were Polish Jews (eight of these were deported from Belgium or France). Schumann allegedly also carried out testing of X-rays to treat the disfiguring facial Noma effects on the faces of gypsy children.<sup>15</sup>

Analysis of the Auschwitz surgical register for Block 21 shows that on one day alone, 16 December 1943, ninety operations were conducted. Between 16 October and 15 December 1943, another ninety castrations were performed. A control group of non-irradiated men were among these.<sup>16</sup> Schumann aimed to compare the tissues and residual sperm. In all, 190 operations were performed on 136 male prisoners.<sup>17</sup> However, the register only refers to operations performed during the above mentioned times. (Again, the prisoners did not know why.) The men had one testicle extracted by surgery. Later, possibly months or even a year on, Schumann ordered the second testicle to be extracted. The testicles were sent for analysis to the forensic medicine department of the University of Breslau. Schumann spent time in Breslau in spring 1944.

The question arises how many of the men survived. Joseph Jakobsohn, a carpenter from Bedzin, said many died in his group, weakened by the operation but still having to undertake forced labour, one such being Moshe Brunner from Bedzin.<sup>18</sup> Records compiled by the former prisoner clerk, Hermann Langbein, and by the Auschwitz archives, indicate that at least ninety of the men survived.<sup>19</sup> Added to this, ITS cards and other information show the majority of the men survived, albeit with the loss of one or both testicles.

Schumann's main victims were male, and he focused exclusively on Polish Jews (a few had been resident in Belgium and France), and Greek Jews,

mainly aged sixteen to twenty-four. Many had no prior experience of being X-rayed, and so did not understand the consequences of being placed in a curious drum. Skornik (later Jack Oran) was tricked with the promise of no work, and a day out of the cold. Part of a large group of bricklayers aged between eighteen and thirty, about sixty men volunteered:

One day, they came and they selected me and other young people. They told us that we wouldn't have to work. They took us to the women's camp, to the hospital. They hooked us up to a sterilizing machine, and we were sterilized at that time. It didn't hurt and we got some bread.

We didn't have to work, so it was a sort of furlough. Little did we know what would happen later on.

As regards what was being done, Yaacov was in a state of 'complete non-understanding'. The cunning Schumann did not appear harsh or cruel – at least at the time of the sterilization. Yaacov compliantly placed his penis and scrotum on a board, which was then irradiated.<sup>20</sup>

Eight months later Schumann interrogated Yaacov, asking whether he had nocturnal emissions, erections, and so on. He then thrust a metal (others recollect wood) stick into his anus in order to gather sperm. He examined the specimen under his microscope.<sup>21</sup> There followed an ordeal of two operations: 'We were called in one by one. We were castrated on one side. The castration was performed under very very primitive conditions.'<sup>22</sup>

One of the Polish Jews remembered,

They asked me how old I was and I said I was 27. Then, I was taken to Block 10. I never got to work. There they operated on me. First they examined me to see if I was normal. Then they operated and removed one of my testicles. After this operation my other testicle got infected. I spent 15 days recovering. There were about 15 men in Block 10. Some of them went through other operations.<sup>23</sup>

Fortunately he was never taken back to the Block, and he fathered two children of his own.

Schumann carried out just a handful of operations, but most surgery was carried out by prisoner surgeons: Maximilian Samuel carried out a few operations, but weakened by the camp conditions he lacked dexterity. Dr Samuel was formerly a Cologne gynaecologist, and the sole Jewish doctor in Block 10.<sup>24</sup> Gustl Nathan was operated on by him, just two days before Samuel was killed. Other surgeons were non-Jewish Poles: the skillful Władysław Dering, Jan Grabczyński and Zbigniew Sobieszczanski, and sometimes the younger surgeon Zenon Lawski. Some prisoners remember the pain of the operation and hearing viciously anti-semitic remarks. In two cases these were attributed to Dering.<sup>25</sup> But the surgical diary of Block 21, a document carefully preserved by a prisoner and then donated to the camp

archives in the 1950s, shows that Grabczyński rather than the infamous Dering actually carried out brutal operations.<sup>26</sup> Dering appears to have been more competent. One testimony was that Jaakov Katan died from the operation. According to one view, Schumann had caused a potentially



**FIGURE 14.1** *Carl Clauberg and Horst Schumann in Auschwitz.*

United States Holocaust Memorial Museum W/S #67417

cancerous condition that could be prevented by Dering's operation.<sup>27</sup> The other view is that Dering was brutal, anti-Semitic, and unhygienic in not changing his instruments, and compliant with the Germans to secure his release.<sup>28</sup> He boasted about his speed of operating, but his competence prompted Clauberg to secure his release for the City of Mothers scheme.

Dering extracted the ovaries from ten of Schumann's female victims. The prisoner doctor Alina Brewda observed that Schumann was partly present. She noted that gloves were not changed between the operations and unsterile instruments were used. One of the girls, Bella died within an hour of the operation from internal bleeding, and on the next day another young victim Duena/Buena Bitran died. Brewda accused Dering of callous haste, and a lack of post-operative care.<sup>29</sup>

Schumann finally admitted failure in early 1944, as surgical castration was more rapid (taking seven minutes) and reliable than using X-ray sterilization.<sup>30</sup> X-ray sterilization was neither cost effective, nor more rapid, nor practicable. Werner Blankenburg (Brack's assistant) duly wrote to Himmler on 29 April 1944 that operative sterilization took only six to seven minutes, so that X-ray sterilization had no clear advantage. Schumann's brief report without clinical or statistical information of April 1944 on the topic was sent to Himmler,<sup>31</sup> and he terminated his experiments that month.<sup>32</sup> After some visits to Breslau where he had his repository of testicles and ovaries, Schumann left Auschwitz in September 1944, when he returned to Sonnenstein, now a military hospital.

## Sealing wombs

On 30 May 1942 the persistent Clauberg again petitioned Himmler, that he now preferred to conduct human experiments on sterilization in Auschwitz. For this he required accommodation for women research subjects, and special X-ray equipment, instruments and materials. Clauberg suggested this be called the 'Research Institutions of the Reichsführer SS for Biological Propagation', as a personal initiative of Himmler. Clauberg outlined an ambitious scheme for research. This involved intensive treatment of infertile women; evaluation of how to sterilize women unworthy of children by means of a new method not involving an operation; a lab for animal research; an experimental farm for researching agriculture and fertility; and nutritional experiments on female prisoners.<sup>33</sup>

Himmler transformed Clauberg's efforts to set up a grand reproductive research clinic to enhance fertility into sterilization research on Jewish women at Auschwitz. On 8 July 1942, at a conference with SS surgeon Gebhardt, and concentration camp inspector Richard Glücks of the WHVA, Himmler promised Clauberg experimental facilities in Auschwitz.<sup>34</sup> In the event Himmler only sanctioned the sterilization experiments on an initial 200 research subjects.<sup>35</sup> The planners of the Generalplan Ost – who imposed

the deportation of Poles from the central Zamosc region – also resourced Clauberg.<sup>36</sup> Himmler's penchant for homoeopathic remedies prompted an interest in Clauberg's theory on the negative effects of fertilizer on the female fertility rate in Germany (the antidote was hormone enriched vegetables). Himmler promised Clauberg a research centre on reproductive biology as soon as the war was over.

Clauberg devised a syringe 30 cm in length to inject a special sealing liquid into the womb. The substance spread over the next 24 hours to ulcerate and thicken the Fallopian tubes so as to seal them. He then X-rayed using the contrast substance to assess the effect.<sup>37</sup> There was continuity of Clauberg's medical experiments in Auschwitz and his prior hormonal research, when it came to the contrast substance.<sup>38</sup> The Auschwitz camp doctor Wirths visited Clauberg (coincidentally, his former examiner) at Königshütte in September 1942, and Clauberg then visited the camp commandant Höss in Auschwitz. On seeing Birkenau, Clauberg was shocked by the wooden hut, a converted stable – Block 30 – where just two rooms were on offer for his research – and by the starving inmates.<sup>39</sup>

Slovakian Jews were among the first transports that began to arrive from 26 March 1942, bringing the first females to Auschwitz. Clauberg found nursing staff among the Slovak women. Sonja Fritz maintained Clauberg's confidence while helping inmates. (She is pictured along with Clauberg and Schumann.) Clauberg would arrive by car from his private clinic, and spend only limited time in the camp, wearing civilian clothes, his white medical coat and a hat with a feather.

From late autumn 1942 Schumann, and from December 1942 Clauberg took up their allocated rooms in their Birkenau block, and Siemens X-ray machines were installed. Schumann's pair of machines was designed to sterilize with strong X-ray doses while the subject was standing. At first, Clauberg had only a military X-ray machine, obtained through SS Brigadeführer Blumenreuther. Clauberg set about taking X-ray contrast pictures and uterosalpingographies. He kept just eight women in Birkenau in Block 30, so as to test the contrast fluid.<sup>40</sup> Eventually, Clauberg obtained a special X-ray machine that would work on women lying down (in contrast to Schumann who needed his targets to be standing) to show the contrast substances in the uterus.<sup>41</sup>

Clauberg held his female 'research specimens' for long periods – sometimes exchanging them for potentially more interesting cases, but often holding onto women from their arrival to the dissolution of the camp. Clauberg aimed to develop a surgery-free sterilization method using new X-ray contrast substances to assess the efficacy of his sterilization injections, sealing the Fallopian tubes.<sup>42</sup>

Clauberg demanded a far larger experimental block. Block 10 in the main camp was ready from April 1943.<sup>43</sup> Here, he began the sterilizing injections. Wirths, responsible for most selections for Block 10, selected well-nourished women, who had given birth. By July 1943 there were 200 women in

Block 10, and by September there were 300.<sup>44</sup> Numbers would reach over 600. The conditions in the Block are mainly known through survivor testimony. Clauberg's research notes were scrutinized by a British medical officer who failed to detect criminality, and then the notes disappeared. The survivors were mostly infertile and had painful complications. According to Danuta Czech the number of victims who went through Block 10 was approximately 550, and on 28 November 1944 there were 273 left in the block.<sup>45</sup> It is possible to identify ca. 530 persons to date, with reliable evidence for 411 persons. All the females in Block 10 were Jewish. What is harder to know is how many died: here there is data on 48 deaths. Certainly, victims were subject to many hazards which could mean being sent to labour and likely death in Birkenau.

Greek Jews as Sephardic and culturally distinctive were of special medical and racial interest. The first Salonika transport arrived in Auschwitz on 20 March 1943, and just Bienvenida Pardo eventually came to Block 10. The ninth transport from Salonika arrived on 17 April 1943, just when Block 10 was ready. A Greek prisoner had to ask the women whether they were married and had children. That way, 99 young women from Salonika were consigned to the refurbished block.<sup>46</sup>

A group of around 100 Jewish women from Belgium were similarly channelled to Block 10. Then on 30 April 1943 65 Jews arrived from Berlin – and uniquely one child, the blond haired Peter Dattel on 20 July 1943. On 20 July 1943, seventy-five women arrived from France, and on 2 August a further fifty-five women from France. Then three further transports came from the Netherlands, when married from unmarried women were separated.<sup>47</sup> Block 10 was by now crowded and multilingual – ‘a combination of hell and a lunatic asylum’ in the words of the Jewish prisoner doctor Dora or Sława Kleinova (later Dorota Lorska).

Block 10 at the Auschwitz main camp was a complex structure: secure and (to stop the women inside attracting attention in an otherwise all male camp) with blacked out windows. It housed two major sets of sterilization experiments, each very differently organized. The Block contained only Jewish women, none Polish. Life in Block 10 involved being woken for Apell that might last hours at 5.30 am (later it was 4 am), and then light work, perhaps sewing or gathering herbs in the woods.<sup>48</sup> Various experiments ran concurrently. Clauberg and Schumann were the main experimenters. The lackadaisical Schumann would poach Clauberg's research subjects. Hanna Ajasch, from Greece, protested that she belonged to Clauberg, so escaping from Schumann's X-rays.<sup>49</sup> Those Greeks seized by Schumann were very young, aged fifteen to eighteen. Severely burnt from radiation, then suffering an invasive operation for removal of ovaries, they were left injured, in severe pain and psychologically demoralized over their infertility. Others in Block 10 were shocked by seeing ‘Greek girls saying “no more babies” bent up ... we saw sores and hole in the back ... told us they make experiments ... they burnt those girls with Roentgen.’<sup>50</sup> Many died.

The SS doctor Hans Muench opportunistically used Renee Duering for his own experiments, in addition to her being subjected to those of Clauberg. Racial research was carried out in Block 10 with skull measurements being taken – indeed, the Block was the source for the women taken for the Jewish skeleton collection. The SS bacteriologist Weber carried out immunization experiments in the Block. Wirths the camp doctor helped himself vicariously to research subjects for cancer research, involving removing tissues from the womb.

The Polish prisoner surgeon Dering declined to undertake the injections of the caustic fluid. Clauberg then relied on a boorish SS nursing orderly and barber, Sanitätsfeldwebel Bühning. He carried the injections out until spring 1944, when the pharmacist Goebel arrived from Berlin.<sup>51</sup> Renee Duering found Bühning clumsy in his procedures:

When I was called back to have the other ovary destroyed it was a different doctor and not even a doctor. This Nazi tried inserting the device the same way but it didn't work. He pricked my uterus a lot, which made me scream. He told me if I didn't stop complaining he would have me gassed. Again he tried but he wasn't happy with his results. Finally he put down his tools and said to me: 'I don't even know what I am doing. I am a barber!' Then he gave up performing on me. But I knew if I lived after the War, I would never have children.<sup>52</sup>

The women were told it was a contrast substance. But one account shows that the victim was convinced she was sterilized. One day in July 1944 Clauberg appeared with Goebel, and two nurses. She was questioned about her marriage, menstruation, etc. After a large injection in her uterus, there followed an X-ray. The injection was accompanied by pain in her lower body. She discharged blood for a day. Then the procedure was repeated, and often repeated several times.<sup>53</sup>

Clauberg required that a woman should have had children, and when selected on entry to the camp, they were healthier. Once they moved to the new block in the main camp in April 1943, numbers rose into the several hundreds. The selected woman still had to maintain her menstrual bleeding. Women who stopped menstruating were no longer useful for experiments and were sent away from Block 10.<sup>54</sup> Nora Keizer wondered why she was asked on arrival at Auschwitz 'Frau oder Fräulein?'<sup>55</sup> Her turn to lie on the 'slaughter slab' for the experimental inter-uterine injection of caustic liquid came when someone who had a prior abortion was required. Asking the question what was the liquid being injected earned her a slap in the face.<sup>56</sup>

## Goebel and Schering

The Schering Company supplied Clauberg with the contrast agent (Barium sulphate) with the patent name Neo-roentem, and at least some of the



chemicals for the injection.<sup>57</sup> Initially and importantly, Clauberg gave the impression that he was conducting research at his Königshütte clinic. Deliveries of chemicals to Carl Clauberg were addressed to Königsghütte: one example was on 5 November 1942.<sup>58</sup>

It is suggested that deliveries of chemicals by Schering ceased at the end of 1942.<sup>59</sup> Against this view was that the Auschwitz address was subsequently given 'to save time' for deliveries: senior figures at Schering, notably Hans von Behring and Walter Hohlfeld, realized the true location of the experiments. Behring had part Jewish ancestry and there had been high level intervention to recognize him as fully German.<sup>60</sup> Yet Goebel worked in Auschwitz until early January 1945, and remained an employee of Schering until at least 31 March 1945.

Clauberg's research had hitherto been to remedy infertility by opening the sealed Fallopian tubes. In Auschwitz he attempted the reverse – his new research on a means of sterilization by sealing a woman's 'tubes' did not involve hormones. The Schering scientists knew that the research was on sterilization when Clauberg explained it to Drs Jungmann and Goebel.

Clauberg needed a qualified pharmacist, in the shape of Goebel to mix a substitute substance for Iodipin, an iodine and sesame oil preparation to render the body parts visible when X-rayed.<sup>61</sup> Goebel described his transfer to Clauberg as that of an 'external employee' of Schering. At a later point – in early 1944 – Goebel had a heart attack and was a semi-invalid. It was at this point that Clauberg secured Goebel as a 'gift' or semi-permanent 'loan' from Schering: on 1 May 1944 Goebel joined Clauberg in Königshütte. At this time, Clauberg received new purpose-built Block 1 in Auschwitz.<sup>62</sup> Goebel came to Block 1, finding new women swelled the ranks, providing ample experimental fodder.<sup>63</sup>

Schering came increasingly under government control, because of the need to allocate increasingly rare resources for the war effort. Karl Brandt set a target for increased pharmaceutical production in 1944, as well as storing six months' worth of production of the firm's fifty pharmaceutical products.<sup>64</sup> The Schering factory remained doggedly in Berlin despite being bombed on 23 and 26 November 1943, prompting Goebel's preference to move to Auschwitz. Fathoming the firm's attitude to Clauberg is by no means straightforward: despite senior figures having reservations, Goebel remained on the firm's payroll.

There had been some surprise at Schering that the ambitious Clauberg had moved to the clinic at Königshütte in Silesia, where he was visited by Walter Hohlfeld in October 1940. It seemed as though Clauberg had ceased hormone research and turned his back on a university career, although Schoeller was interested in the scheme for 'sterilization without an operation', discussed on 10 March 1941. What was not realized was that the move enabled him to keep a clinical post while overseeing the Auschwitz research. The retainer payment from Schering apparently ceased, but resources in kind were offered. A shipment of chemicals was made in late 1942. It must



be stressed that the firm might not at first have known of Clauberg's dealings with the SS, and of the Auschwitz location.<sup>65</sup>

In June 1943 Clauberg requested a second X-ray machine from Himmler. He needed one that could allow the female subject to lie flat. Clauberg alleged that the Schering firm in mid-summer 1943 contributed 15,000 marks towards the costs of an X-ray unit as a gesture of personal support. Hans von Behring confirmed this amount as a possible loan.<sup>66</sup> However, Clauberg still gave the impression that the research was conducted at his new clinical post in Koenigshütte rather than Auschwitz.

By far the most substantial benefit that Clauberg derived from Schering was in terms of technical assistance. Dr pharm. Johannes (also known as Hans) Goebel had trained as a pharmacist, and worked as a chemist with Schering-Kahlbaum since 1924. Goebel collaborated with the head of the research department, Walter Schoeller on patents and publications.<sup>67</sup> Clauberg had joined the Nazi Party and SA in 1933, while Goebel had joined the Nazi Party in 1936. Schoeller had already recommended Goebel to Clauberg as an appropriate specialist in 1940. Officially from late 1943 until April 1944 Goebel was on sick leave in the Tyrol due to heart disease. Goebel then came to Auschwitz around May 1944 to assist Clauberg. A new contingent of women arrived in the Block from Hungary. Although the injections ceased in autumn 1944, Goebel remained at Auschwitz until 29 January 1945 preparing the transport of the women from the experimental block, and remained employed with Schering until April or possibly 31 May 1945.<sup>68</sup>

Goebel's employment status with Schering, along with what was known at the company, and the extent that Schering sent supplies require clarification. Goebel maintained that he worked in Auschwitz only from early June 1944 to 28 September 1944, but seems dubious.<sup>69</sup> In all Goebel claimed that he officially spent 244 days during 1944 in Auschwitz, although he was absent some of the time negotiating about the City of Mothers. He later claimed that he only worked in Auschwitz for forty-five days because of absences and transport delays.<sup>70</sup>

Goebel staunchly maintained that he was ordered by Schering to transfer from Berlin to Clauberg. Clauberg had to renew the permission for Goebel's secondment on a monthly basis.<sup>71</sup> What is not fully clear is whether he was ordered to work at Clauberg's clinic at Königshütte rather than at Auschwitz. Schering continued to pay Goebel's salary: the payments ran to late 1944 or to early 1945 – Goebel stated that the employment ceased in April 1945. Clauberg certified a series of monthly extensions. It might have looked as though Goebel was working with Clauberg at Koenigshütte. But in May 1944 Goebel visited Hans von Behring at Schering to request materials, asking that they be sent directly to Auschwitz 'to save time'. Von Behring was perturbed that the research was not on clinical cases at Clauberg's clinic but instead at Auschwitz. Moreover, Goebel boasted that he was carrying out injections of the substance. Von Behring became keen to terminate Goebel's employment, but this remained in place.<sup>72</sup> (Behring was in fact half

Jewish although exceptionally declared by Hitler a full Aryan; despite this, the Auschwitz location was a sensitive matter to him.) According to Walther Hohlweg (formerly assistant to the sex hormone researcher Eugen Steinach in Vienna), Schoeller became aware of the experiments, and realized the need to distance the company.<sup>73</sup>

Goebel claimed that he was caring in his treatment of prisoners, citing that he produced cosmetics for the women and provided entertainments and even makeup for a show. Goebel stated that from July 1944 he was in charge of the herb-collecting party of forty-five persons.<sup>74</sup> Victim testimony instead shows that Goebel in fact swung between being personable and viciously vindictive cruelty.<sup>75</sup>

Goebel mixed his specially concocted sealant with 10 per cent formalin. Clauberg devised the sterilizing fluid. He then added a contrast fluid to make the uterus visible. The mixture was supplied by the Schering works. Clauberg maintained the sterilizing fluid remained constant in composition with Novocain or cocaine later added to reduce pain. Goebel later provided details of composition – Fondin 1–2 per cent; water 25 ccm; Novocain 1–2 per cent; Contrast preparation 50 per cent; Nipasol solution 5 ccm. In fact, Goebel referred to five different compositions as the amounts were constantly adjusted.<sup>76</sup> Certainly, there was a high level of pain, inflammation and on occasions death.

Marc Dvorjetski (a doctor who survived the Vilna Ghetto) made detailed study of Clauberg's procedures, based on clinical examination of victims as well as documentation. The first stage was to see if the womb was normal by means of injecting Iodipin as an X-ray contrast substance, and to see that it was not closed due to an existing infection. The sterilization injection into the womb and ovaries was only a later procedure. The difference between the pre-examination with Iodipin was that the second time around a caustic substance was used to sterilize. The victim could not necessarily feel a difference between the first and second injections. The sterilization injection was usually scheduled after the woman's last menstruation. In comparison to the olive oil-like contrast substance, the sterilization agent was white in colour. Historian Ruth Weinberger notes that some women recalled seeing different coloured substances, though the meaning was not known to them.<sup>77</sup> The sterilizing substance was injected several times. A few weeks later, an injection was made into the female victim's breast. Rosalinde Spiero described how Goebel gave painful injections in the breasts of a group of women, and that she had twenty-nine injections over two days. What made it worse was not giving any explanation. What was injected and for what reasons remains unclear.<sup>78</sup>

Weinberger explains that these injections sealed the Fallopian tubes, which would later be tested by yet another X-ray. This time around, the X-ray contrast solution, an oily brown liquid that was injected into the woman's body, enabled Clauberg to see the extent of penetration. If the X-ray showed potential shadows, Clauberg considered that the ovaries were still penetrable. If the contrast substance could not penetrate the Fallopian tubes, and the

liquid remained at the beginning of the Fallopian tubes, the sterilization was successful. If the results were inconclusive and the substance was able to slightly penetrate the Fallopian tubes, another X-ray was ordered with Iodipin and/or Lipidol being used. This procedure took place four to eight weeks after the injection of the caustic substance. The experiments caused great pain, a sense that the stomach was about to explode, bleeding, infection, accompanied by fever and shivering.<sup>79</sup> In one case when a woman did give birth after the war, it was because Goebel had injected the fluid into the urinary tract, causing immense pain and lasting injury.<sup>80</sup>

One of the women from Salonika recollected,

He took us each to an examination room and they gave us injections in the uterus. They gave us no explanations. As they continued to examine us, we understood their purpose was to sterilise us. Some had been bled to provide blood for German soldiers. Others had their intestines burned . . . then we realised that they were trying to dry the internal organs in order to learn how to make mummies. Many died from the operations . . . they needed us to be in acceptable health to do the experiments.<sup>81</sup>

Clauberg misled Himmler on 7 June 1943 that his aim was to sterilize by means of a single injection. He stated that his method was ‘as good as ready’, but with just a few aspects still to check. He considered that a doctor with ten assistants could sterilize up to one thousand persons a day. He hoped to develop positive population policy for dealing with Czechs and Poles as well as Jews, and hoped that Himmler would visit him.<sup>82</sup>

## Dr Samuel

‘There was one Jewish doctor there. His name was Dr Samuel . . . my sister in law . . . Dr Samuel operated on her and left her with one ovary without letting her know.’<sup>83</sup> Samuel removed only one ovary and one half of the uterus instead of everything for several women. One of the women had a child later.<sup>84</sup> How far Dr Samuel collaborated with Schumann and Wirths to survive, or used his position to subvert orders to fully sterilize has remained a matter of considerable debate. Vaginal researches were undertaken at Wirths’s instigation by the prisoner doctor, Maximilian Samuel, who is associated with the development of colposcopy.<sup>85</sup>

One of Samuel’s research subjects stated, ‘The Jewish doctor entered in the morning. It was my turn. I asked to be let outside for 1 minute to pray to God. He let me do this . . . it was supposed to be a series of 4 operations but they only did 3. I woke up after 4 days in great pain.’<sup>86</sup> She remembered that a German doctor inserted a needle in her spine and withdrew fluid. Renee Kraemer remembered Samuel, who in turn recalled how he had saved her life at birth years before in Cologne.<sup>87</sup>

Victims explained Dr Samuel's fate in varying ways – one was that Dering betrayed him. Aliza Barouche stated that Dering 'told the Germans that Dr Shmuel had sabotaged their plans, and did not operate the way they had wanted him to. This is why the women who were operated on had to be operated on again. Of these women who were operated for a second time only 1 survived.'<sup>88</sup>

Another view was that Samuel was condemned as superfluous, having completed cancer research for Standortarzt Eduard Wirths. Wirths's brother Helmut, who visited Auschwitz in March 1943, had developed a method for diagnosing cancer of the womb with Hans Hinselmann from Hamburg-Altona. Lang has correlated victim accounts that during 1943 Samuel worked to produce a text on cancer diagnosis for Wirths, who then had him executed.<sup>89</sup>

Opinions among victims have differed sharply over Samuel. He was required to excise a part of the ovary, a painful procedure. It appears that for reasons that remain obscure, he extracted different amounts of ovary tissue. For some the operation was painful and in some cases he closed the ovary opening completely, and there could be complications.<sup>90</sup> He took intravaginal photographs, something that was painful and could take over an hour for purposes of colposcopy.<sup>91</sup> He also declined to operate on Renee Duering.<sup>92</sup> There were multiple complications of infection arising.<sup>93</sup>

Coincidentally Wirths' brother Helmut assisted Hinselmann, so establishing a link between Auschwitz and the gynaecological clinic in Hamburg-Altona. Samuel made observations on the womb, large numbers of photos, and carried out operations and X-rays. The procedures were intrusive and painful.<sup>94</sup> Hinselmann developed colposcopy as a method of early diagnosis of cancer.<sup>95</sup>

In some cases Samuel subverted Schumann's orders as he tried to ensure that one ovary was preserved so that a woman ultimately could have children. It meant first ensuring that only one ovary was burned by the X-rays, and then extracting only the damaged ovary. Schumann had to be convinced things were otherwise to the total sterilization ordered. The prisoner nurse Felicja Pleszowska testified that Dr Samuel said to her that he had to hurry his operations as only one ovary had been destroyed, and he wanted that the girl should keep her good ovary.<sup>96</sup>

Witnesses agree that in the autumn of 1943, Dr Samuel was murdered. Weinberger notes discrepancies in doctors' recollections of the execution. The SS doctor Münch stated that Samuel died as a result of orders from the camp physician Dr Wirths, who ordered him to be shot.<sup>97</sup> The prisoner doctor Kleinova/Lorska stated that Dr Samuel was sent to the gas chambers: 'Because he knew these experimental operations were being carried out.'<sup>98</sup> Adela Olsanska noted that Samuel was paying the price for having advised Schumann.<sup>99</sup> The Polish Jewish doctor, Alina Brewda felt that Samuel perceived her arrival as rendering him superfluous.<sup>100</sup> Weinberger notes that one of Clauberg's sterilization victims, Frieda Heumann, heard shots the day

after she was operated, and was told that Dr Samuel had been shot together with nine other inmates. She thought that he was condemned for having only removed part of the cervix and not the whole.<sup>101</sup> His killing stands as a contrast to Dering's dutiful assistance to Schumann, that earned him release from the camp to assist Clauberg.

## Jewish skeletons

Bruno Beger was an SS anthropologist at the SS Race and Settlement Office. He was a veteran of the SS Tibet expedition of 1938. He was expert in taking facial measurements, and plaster casts from the faces of the living. Beger collaborated with another SS anthropologist Hans Fleischhacker in researching Jewish skin colour and hand prints. Fleischhacker had trained at the Munich anthropological institute of Mollison where Mengele had also completed a dissertation. Here physical anthropology included study of soft tissue. The Institute was leading in the making of plaster face masks of living persons. Beger now focused on 'races in struggle' on the eastern front and the Balkans.<sup>102</sup> The SS radiologist Hans Holfelder supported using X-rays for racial studies, and they planned a complete X-ray and anthropology of the total Norwegian population.<sup>103</sup>

Beger recognized that the attack on the Soviet Union was an opportunity to make good the lack of Jewish skulls in anthropological collections. In summer 1941 he suggested that Jews should be captured, photographed, measured by a military doctor, and details taken regarding birth and origins. Then the doctor could package and dispatch the head in a tin container sending it to an appropriate institute.<sup>104</sup> These suggestions coincided with plans to kill Jewish political commissars.<sup>105</sup> In 1942 Himmler, ever mindful of war as a research opportunity, ordered a 'Sonderkommando K' of SS scientists to undertake the 'total research' of the Caucasus. A particular target was so-called 'Mountain Jews'. The Ahnenerbe planned an expedition – but the military hold on the Caucasus was partial and tenuous. Even so, some Jewish skulls were obtained.<sup>106</sup>

Sievers met Hirt at the inauguration of the Reich University Strassburg on 23 November 1941, when research on 'vermin' (human, rodent, insect and microbial) was contemplated. On 10 December 1941, Beger (at the time attached to Race and Settlement Office or RuSHA, which had a major role in executing racial policy) convinced Sievers of the need to collect 120 Jewish skulls – after all here was a race on the brink of total extermination.<sup>107</sup> Sievers contacted Hirt on 30 January 1942 when the possibility of research on 'prisoners condemned to death' (a standard euphemism) was raised. On 9 February Hirt wrote to Himmler proposing research on brains of 'Jewish Bolshevik commissars', a scheme also backed by Sievers.<sup>108</sup> Hirt, Sievers and Beger developed the skull collection scheme into a more ambitious skeleton collection. Sievers made arrangements with Richard

Glücks of the WVHA and Adolf Eichmann in November 1942 regarding access to Auschwitz.<sup>109</sup>

Hirt agreed with Beger a trip to Auschwitz on 8 September 1942. But the scheme was delayed by an epidemic of typhus. Adolf Eichmann informed Sievers in May 1943 that Auschwitz was clear for research, and that the Jews currently there were of especial interest. It meant that several research projects were implemented in earnest in Block 10.<sup>110</sup> Sievers suggested transfer of the Caucasus research team of Ruebel, Endress, and Fleischhacker (formerly at the 'external office Litzmannstadt' of RuSHA) to Auschwitz. In the event, only Beger was sent along with Fleischhacker to Auschwitz to select Jews for the proposed collection, and to take their measurements. Fleischhacker's route to Auschwitz was more circuitous. He went first to Tübingen to present his Habilitation on the hand lines of ca. 240 Litzmannstadt Jews on 8 June. In fact, he had worked from June 1941 to October 1942 at Litzmannstadt at the External Office of the SS Race and Settlement Office. Sophie Ehrhardt provided him with prints taken from the ghetto Jews.<sup>111</sup> Fleischhacker travelled on to Auschwitz, arriving on 11 June, where he joined Beger. Together they began measuring 115 Jews.

Equipped with passes obtained from the Ahnenerbe administrator Wolf-Dietrich Wolff (who resourced the skeleton collection by providing defleshing equipment), Beger arrived in Auschwitz on 7 June 1943, and Fleischhacker (armed with his higher doctorate) on 11 June. They spent just a few days until June measuring the bodies and heads of 115 Jews. The prisoner doctor Władysław Fejkiel observed how the anthropologists selected and measured naked prisoners.<sup>112</sup> Beger's aim was to demonstrate that the Jewish race was racially complex. He was fascinated by the wide range of Jewish types in Auschwitz. Beger took special interest in Greek Sephardic Jews, who were abundantly available in Block 10. Alice Simon was German and Protestant – although tragically a victim of the Jewish skeleton collection. At least twenty-nine women were selected from the Block.<sup>113</sup> The women referred to the victims as being turned into 'mummies' (in the sense of embalmed corpses), when the selected group disappeared one night.<sup>114</sup>

Beger was disappointed in finding so few of the central Asian types that he prized in connection with his Tibet researches. Combing Auschwitz for specimens, he came across just four Russians with Turkmen characteristics and two Poles with Mongoloid expressions, whom he measured for his own personal research collection. Fleischhacker worked together with Beger on documenting the selected victims. The anthropological technician, Willi Gabel made forty facemasks from the group of 109 Jews, and he remained in Auschwitz for a month.<sup>115</sup>

The next step was for the selected Jews to be held in quarantine in preparation for their transfer to Natzweiler where preparations were made to install a gas chamber supplied with Zyklon. A few managed to obtain their release, or were deemed unfit for transfer. Two escaped, assisted by the

Slovak Block elder Magda Blau, who was punished for her act of mercy. She recollected:

They wanted to claim that the Jewish brain was not as developed as the German brain; they made masks of the faces, and then they kept 20 or 30 women in one room, they were supposed to go to Germany. There was a doctor – who wanted to do experiments in another camp. One woman who was working there as a nurse . . . Mila Portashinski; Magda they must kill us first to do the research; I just opened the door . . . Two were missing when they arrived at the train.<sup>116</sup>

Magda Blau consequently lost her position in Block 10 although Wirths gave her some support in the ensuing furore.

In the event only eighty-six prisoners were transferred. Arrangements had to be made in Strassburg – with the ordering of a flesh reducing oven, and at Natzweiler with the preparing of a gas chamber (the ‘G-Zelle’) by Camp commandant Kramer in April 1943. The group left Auschwitz on 30 July, arriving in Natzweiler on 2 August 1943. Beger arrived by 9 August in Natzweiler to X-ray the eighty-six victims. His intention was also to make plaster casts of the whole bodies first.<sup>117</sup> This was held up due to the war. Given that a Jew’s bones were no different to any other human’s, the masks were essential to capture the Jewish distinctiveness.

The camp commandant Josef Kramer oversaw the killing of the eighty-six Jews in a specially improvised Struthof gas chamber on 17 and 19 August 1943. Wolff provided Hirt with hydrocyanic acid. One victim was shot on refusing to enter the chamber. The anatomical assistant at the institute Henry Henrypierre secretly noted the numbers of the victims.

Hirt wanted to take further casts, and continue soft tissue studies. Bodies languished in different states of processing with the heads removed. The casts of the faces that had been made at Auschwitz went to the Ahnenerbe anthropologists at Schloss Mittersill. Hirt widened the project to the whole skeleton and to include the use of soft tissue, notably the testicles. The heads were removed, as well as the testicles from at least one body.<sup>118</sup> Hirt’s able assistant Anton Kiesselbach supported – by preliminary animal experiments – the mustard gas experiments.<sup>119</sup> Just when the Jews were killed, Hirt looked for someone to research on a collection of about sixty testicles. Kiesselbach is reputed to have examined the left testicles of thirty prisoners from Natzweiler in order to study the processes of the formation of sperm while in fear of death. He later said it was the left hand rather than the left testicle – although removing the hand would have damaged the skeleton.<sup>120</sup> After the war the French histologist Christian Champy found that the men had been injected in their testicles.<sup>121</sup> Hirt had attempted to interest a student to research the testicles.<sup>122</sup>

Hirt was given successive research tasks on poison gas. These became more urgent as the military situation worsened, and so held up the preparation of the skeletons. It was important for Hirt to be able to link the



characteristics of the soft tissue to the skeleton. A difficulty was the idea of a 'Jewish skeleton' was in practice no different from any other skeleton – so linking it to the physical form of the body was crucial. On 23 November 1944 the Allies found storage tanks with seventeen intact bodies and 166 body parts belonging to at least sixty-four persons.<sup>123</sup>

## Jewish twins

Mengele arrived in Auschwitz in May 1943, having visited his mentor the geneticist von Verschuer in Berlin. But while he plunged into sanitary duties in the gypsy camp, the evidence indicates that Mengele's Jewish research began in earnest only in spring 1944. The camp doctor Wirths supported the retention of medically qualified Jews for sanitary and research work. Mengele wanted the meningitis researcher Koblenz-Levi and his brother to work with him. They found the tasks barbaric and committed suicide.<sup>124</sup> The pathologist Miklós Nyiszli arrived only in June 1944, suggesting that it took considerable effort for Mengele to put the facilities for his deadly research in place.<sup>125</sup> Given that the Red Army liberated Majdanek on 23 July 1944, it became clear to Mengele that he had only limited time to complete his research on twins, and lay the foundations for a post-war career in medical research. The twin research changed from being sporadic to becoming systematic and large-scale. In August 1944 he benefited from promotion attaining overall responsibility for medicine in the extermination camp of Birkenau.

Constantly scouring for expertise to exploit, Mengele found three assistants for Nyiszli: Jozef Korner of Nice, a dissection assistant from Prague Adolf Fischer, and an anthropologist Dénes Görög. He also found two more anthropologists Martina Puzyna, née Gryglaszewska formerly assistant at Lwow, and Erzsebeth Fleischmann. They were supplied with Swiss precision measuring instruments and began work in May 1944. Puzyna measured about 250 pairs of twins.<sup>126</sup> The first analysis of twin blood by the Hygiene Institute of the Waffen-SS is dated 7 June 1944.<sup>127</sup>

Mengele employed two young artists from the Theresienstadt family camp, both Czech Jews. He noticed the quality of their children's drawings. One was Marianne ('Mausi') Hermann. Mengele found an architect's drawing kit for her, so the terrified artist could draw twins.<sup>128</sup> The other was Dinah Gottliebova. During 1944 Gottliebova made drawings of individual body parts of twins, dwarves and of the experimental subjects, Jews and gypsy. Mengele wanted her to capture the skin colour, as colour photography was inaccurate. Mengele wanted also ten twins from the Theresienstadt family camp. Seven of her meticulous paintings of gypsies have survived.<sup>129</sup> A Czech Jewish dwarf Lajos Bacsí housed among the twins also impressed Mengele with his artistic talent.<sup>130</sup> Vladimir Zlamar, another Czechoslovak was also assigned to paint portraits of Noma sufferers. The children's heads were then sent to the SS Medical Academy in Graz.<sup>131</sup>



Mengele continued collecting a large staff. Gisella Perl, a gynaecologist by profession from Sighet, could pacify a viciously irate Mengele by offering him a foetus of scientific interest. Nyiszli survived by an intense focus on his research. Mengele improvised by utilizing the camp structures and its operations, not least the selection procedure for the hundreds of thousands arriving on the ramp. He ran multiple lines of research until at least 8 December 1944. He was ambitious to gain a Habilitation but the research was only partially completed by the time he had to flee in mid-January 1945.<sup>132</sup>

Remarkably, Mengele's pathologists were attached to the Sonderkommando, the Jews who were forced to clear the corpses from the gas chambers. Mengele operated his research establishment in Auschwitz as parasitic on the procedures of extermination. Locating the pathological lab by the gas chambers and tapping into Sonderkommando resources shows how Mengele carved out resources in the camp. Mengele ran other resources like his twin block as linked to the rudimentary Birkenau block for women's infectious diseases. From the selection of research subjects to the point of dissection, Mengele astutely used the procedures of extermination. Identifying research subjects was an incentive to his role in selections to which he brought a clinical detachment. Mengele fits the pattern of a racial policy that was transient and uneven in its operations.

From May 1944 the Jewish twins were held partly on the terrain of the camp clinic (Abschnitt B Ia) in Barrack 22 of the Women's Camp in Birkenau. In July 1944 Mengele expanded the research, and most twins were transferred to the Wooden Block 1. Only mothers with twins aged up to two remained in Block 22. Older male youths and men were in Barrack 15 of the men's clinic in Birkenau (B IIf). Here was also Mengele's laboratory with facilities for radiology, dental surgery and ophthalmology. Locations included barracks B IIe 29 and 31, barracks B Ia 22 and 1 and barrack B IIf 15.<sup>133</sup>

Mengele was known to be interested in dwarves, giantism, club foot, hunch back, and other abnormalities. He not only selected, but he received reports when twins and others with what he deemed pathological anomalies appeared. Perlach Ovitz recollected the selection, when the dwarves were ordered, 'don't move until I return with Dr Mengele'.<sup>134</sup> On occasions he selected a child specimen for racial features, irrespective of not being a twin, as was the case with Aleks Dekel for his 'Aryan' features.<sup>135</sup>

Mengele figured in the DFG funding of hereditary pathology obtained by Verschuer for the KWI for Anthropology.<sup>136</sup> The funds covered human genetics and pathology, focusing on blood proteins. Auschwitz solved all the difficulties of locating twins that posed difficulties for human geneticists since the 1920s. Mengele's approach was rooted in the phenogenetics of the KWI for Anthropology. Here a focus was on blood proteins, using precipitin reactions for racial diagnosis. A body's physical characteristics and diseases were to be explained in terms of the genetic mechanisms. Mengele was thus working within Verschuer's paradigm of the doctor oriented to hereditary

health – the ‘Erbarzt’. For this reason he sent 200 blood samples of different races to the KWI for Anthropology in 1943.<sup>137</sup> There was a sense that disease was racially specific – as shown by Noma among gypsies. Jews were regarded as susceptible to specific diseases such as diabetes.<sup>138</sup>

How many twins there were is subject to varying estimates. One is of 900 and another of 1,500 pairs of twins (so 3,000 in all) with less than 200 survivors.<sup>139</sup> Even if the twin block could hold only 350 twins, Mengele had other caches of twins and interesting cases elsewhere in the camp – the elder male twins, Czechoslovak twins in the Family Camp, and the Ovitz family of dwarves were held separately. Zwi Klein remembered some dwarves held in the twin block.<sup>140</sup>

The sources for the twins are fragmentary. There is an anthropological listing with 111 named pairs of Hungarian twins, and a list of 125 Czech and Hungarian twins.<sup>141</sup> Mengele sent orders to the Hygiene Institute of the Waffen-SS that it conduct laboratory tests on named twins. Post-war sources include compensation records, interviews and biographical accounts. The Candles survivor organization Twins Listing identifies 397 ‘twins’, including a set of triplets (and several dwarves).<sup>142</sup> This means that the twins have to be reconstructed person by person, in order to gain a sense of overall numbers. Most were Hungarians, including many from annexed Transylvania, as the opening of the twin block in June 1944 followed on from the first mass transports from Hungary, from late April 1944.

In all, 598 Jewish twins can be identified by name or number to date, plus 24 gypsy twins, so giving an overall number 622 (although sifting of the documentation is liable to bring in further twin names and numbers).<sup>143</sup> But the definitive and most plausible number is given by Lucie Adelsberger, the bacteriologist and prisoner doctor in the Auschwitz Gypsy Family Camp, in an unpublished section of her memoir on Auschwitz. Adelsberger, who stressed the importance of factual accuracy, cites the number of 732 pairs of twins (‘Zwillingspaare’), mainly Jews and some gypsies, and a very few non-Jewish Poles and Russians. This would mean 1,464 individual twins, although if interpreted as persons who were twins it would mean just 732, a number more in keeping with the evidence of documented individual research subjects.<sup>144</sup> The capacity of the twin block was reputedly 350 pairs of twins. Maria Zombirt, a medical clerk in Birkenau, recollected a capacity of 700 individual twins in the Birkenau twin block.<sup>145</sup> Abelsova “Liza” recollected that her twin block was not overly full. Nyiszli offered Mengele a capacity of making sections on four bodies a day. Given that he began work for Mengele on 27 June 1944, and Mengele ceased research around 5 December 1944, giving a period of 162 days, and a capacity for research on 648 bodies. The figure of 1,464 twins is half the 3,000 widely cited in the literature. The lower figure of 732 would accord well with identified individuals, meaning that of approximately 500 survivals, a further 232 were killed.

The assumption has often been that many more twins were killed than survived. While Mengele killed for science, the evidence of victims known by

name or by survivor accounts, the pathologist Nyiszli's memoirs, and twin numbers suggest that the research on Jewish twins was conducted primarily after the liquidation of the gypsy camp. This is confirmed by the twin numbers. Mengele had only a few months to complete his researches on the Jewish twins, between the time just prior to the liquidation of the gypsy camp, and the dismantling of Auschwitz. The camp numbers indicate that the twins were either Czech Jews from the 'family camp' established in September 1943 and a source of twins and their mothers, or the Hungarian Jews who since mid-May 1944 arrived in ever greater numbers. Mengele's research staff of doctors and anthropologists was also appointed only in mid-1944. Mengele appears not to have had a specified role between the liquidating of the gypsy camp hospital (B IIe) in August 1944 and from October or November as physician in charge of the men's block (B IIc) at Birkenau. Again no cards or other documents meant that it was possible that although Mengele regularly killed twins, the numbers killed for scientific purposes were fewer than the hundreds who survived. Documenting those killed is harder than the survivals – for example it is alleged that although newborn children were generally killed, Mengele retained some infant twins as of research interest. The twins' 'mother', Hanni Schik, explained that all infant twins of one year old and under died within six to ten weeks. Her own children, Josef and Hedi, died from the massive extraction of blood.<sup>146</sup> Mengele certainly was a killer, for example injecting dangerous pathogens designed to kill, but his killing of twins was serial and in line with his scientific interests rather than in mass batches.

Of the identified Jewish twins, at least 234 were Hungarian Jews, many from annexed Transylvania, making them by far the largest group, and representing the one major group of experiments experienced by the Hungarians. The twins were – in the majority – aged from one and a half to thirteen. There were older twins – Magda and Ernst Czvi Shpigel, aged 29 – who looked after the younger twins. In certain cases, Mengele studied the mother with her twin daughters.<sup>147</sup> Older twins were held, although Mengele was clearly most interested in the children. Boy twins were separately housed, cared for by 'Twins' Papa' Czvi Shpigel.<sup>148</sup> The twins were known to be special, as if a protected species: young Lipot Loevi escaped a beating from guards by declaring himself a Zwilling.<sup>149</sup>

Eva Mozes (later Kor) was marched around Birkenau for days to be minutely examined physically and psychologically, and then for three days in the blood labs at Raisko.<sup>150</sup> Twins underwent anthropometric, morphological, serological, and psychiatric evaluation. They were X-rayed, photographed, and drawings were made. There were hearing and dental tests with the taking of casts of their mouths. Finger prints and sole prints were taken. Ears and eyes were meticulously compared in each twin pair against charts. Sometimes the tests were painful. Brain fluid was extracted.<sup>151</sup> Eva experienced the testing procedures and being naked for hours in front of guards as dehumanizing. Similarly, Liza Abelsova

remembered the constant measuring of their ears and nose, intrusively but not painfully.<sup>152</sup>

Mengele asked older children about their families and home life. The Heilbrunn sisters felt they were Mengeles's 'insects'.<sup>153</sup> Mengele injected his prisoner guinea pigs with infective agents to compare their effects, and cross-injected spinal fluid, causing immense pain. He caused fatal lameness by a brain operation on the twin brother of Moshe Offer. Eva Mozes underwent the dangers of an injected infection, representing a lethal danger for her and her demoralized sister.

Mengele would help himself to body parts, a testicle or a penis.<sup>154</sup> He would order the killing of a victim, so that internal organs could be obtained and analysed. When one twin was killed, the other was vulnerable to being deemed superfluous. Eva Mozes felt 'We were replaceable. Disposable'.<sup>155</sup>

Mengele continued eye colour experiments. Irena Zisblatt remembered how

they put drops in our eyes . . . they closed the door, it was pitched dark:

She had no idea how long she and her fellow prisoners were in the dark:

we were under experiment . . . later on we found . . . experiment to change the colour of our eyes . . . All kinds of injections, examinations, measuring, blood extraction . . . reactions heat, dizziness.<sup>156</sup>

Some younger female twins could keep their hair.<sup>157</sup> Careful study was made of eyes, matching them to anthropological charts. Vera Grossman recollected how her mother brought her to a laboratory to compare eye colours: 'we had brown eyes, my mother blue . . . I saw a wall filled up with children's eyes of all colours . . . I told mother a wall full of eyes was staring at me.'<sup>158</sup> Mengele was fascinated by skin tone and eye colour.

Prints of the hands and soles of the feet were taken. Pearl Herskovitz, selected with her brother as a twin in 1944, Liza Abelsova recollected,

We would have to sit motionless for hours' measuring everything, ever finger, every nail. I didn't know there were so many things on my body to analyse. But the shots made me sick . . . But even that wasn't as bad as the shots we received. Our whole body would ache. We didn't know how to find a spot to cool, same with the freezing. A half-hour or hour after getting a shot we would be violently sick. Sometimes we would burn up with we would think 500 degrees with fever, other times we would freeze or feel like ice . . . We wanted to find out what substances he had injected us with.

Again, Pearl recollected: 'We lost so much weight from all the drawing of blood that our flesh was almost gone. We were like skeletons, skin covered skeletons.'<sup>159</sup>

The examinations were intrusive and humiliating:

For 5 months we were taken for a daily examination whatever could be done to us they did. One day they turned my eyes and I could not see for two days. We were photographed naked . . . SS people came in and just saw us naked without any shame . . . My eyes were checked by a German specialist and she gave me drops and checked my eyes all the time.<sup>160</sup>

Pearl Herskovitz recollected how,

Mengele needed pictures of the twins . . . taken from the camp to the town of Auschwitz for photographs . . . in a studio. They took pictures of us from every conceivable angle. We were naked of course, different angles, from the side, back to back, sitting down, bending down, they did studies of every minute detail of our bodies. He was taking all kinds of shots every day. Teeth, the tongue, the eyes were a little different, pupils.<sup>161</sup>

The twins underwent a series of detailed observations – hair, hand palms, and soles of feet. The prisoner laboratory assistant Mieczyslaw Kieta described jars of gypsy eyes in formalin.<sup>162</sup>

The taking of blood was frequent and extensive. Blood extraction left the victims, as Vera Grossman experienced, very weak.<sup>163</sup> Another twin remembered, 'They took blood every day. I could not believe how much they took.'<sup>164</sup> Lipot Loevi remembered his blood being transfused to a German soldier leaving him very weak.<sup>165</sup>

The records of the Raisko Hygiene Institute record the reasons for tests, and who was tested and when. Normally the Institute provided routine diagnosis for sexually transmitted diseases and infections such as malaria and typhus, sputum for TB, and analysed excreta for infections and worms. The SS doctors still referred to these tests by the names of Jewish medical scientists like Wassermann (for syphilis), Weil and Felix (for typhus), and Aschheim and Zondek (for pregnancy). The tests on twins stood out as exceptional as they were mostly not diagnostic. Some twenty twins were only known by their camp number, and some were unnumbered. The test records marked whether the person was a 'twin' or 'dwarf', and they indicate the timing of the research, on whom the research was carried out and when. The tests show a clear transition from the research on gypsy children to Jewish twin research in early July 1944. Generally samples were taken from batches of eight or ten twins. Blood proteins were analysed, and multiple tests were ordered on urine to check kidney function. Levels of albumen, and Takata Ara, sodium (Rest N, and Na CL), and vitamin C tested liver functioning. The Gruber-Widal tests were carried out on dwarves on

18 August 1944 were recorded from analysed blood samples. Similar tests were carried out on twins.<sup>166</sup> But what was not indicated was the amount of blood extracted – by all accounts the amounts drained were so large as to be debilitating and on occasions deadly.

Mengele (who fathered a son in 1944) tolerated some play. A high-spirited twin remembered: 'I was not well behaved and not afraid of Mengele . . . I had OK relations with Mengele – symbiotic, he got information and I got food, symbiotic . . . I gave Mengele trouble any way I could.'<sup>167</sup>

The experiments became painful and, indeed, lethal. Injections in the throat caused lifelong incapacity to speak for Ephraim Reichenberg. Mengele was interested in his brother Laszlo and his different vocal capacities: Laszlo, who had a fine singing voice, became weakened from painful throat injections, and died soon after the war; Ephraim has suffered from severe breathing and vocal impairments.<sup>168</sup> Conditions deteriorated, Moshe Offer recollected:

One day, my twin brother, Tibi, was taken away for some special experiments. Dr. Mengele had always been more interested in Tibi. I am not sure why – perhaps because he was the older twin. Mengele made several operations on Tibi. One surgery on his spine left my brother paralyzed. He could not walk anymore. Then they took out his sexual organs. After the fourth operation, I did not see Tibi anymore.<sup>169</sup>

Mengele's twins were to him living specimens of a pathological race – his extracting of internal organs was calculated and brutal.

Mengele set about amassing a vast human museum of racial pathology. The Ovitz family (spellings were various as Ovicz) were deported from the Maramures region of Transylvania. They were the largest family of dwarfs ever recorded. Twelve family members from a 15-month-old baby to a 58-year-old woman entered Auschwitz on 12 May 1944 and survived intact. Mengele realized just how unique and exceptional the family was. He was interested in how the family included both dwarfs and taller members. Eleven other prisoners claimed to be their relatives, and Mengele moved all of them together, so that he could study the complete family group.<sup>170</sup>

Mengele obtained hygienic living quarters for the extended family, so they could be monitored, as well as providing them with better rations to keep them healthy. The Ovitzes were subjected to various tests, by having bone marrow extracted, teeth pulled and hair analysed to find signs of hereditary disease. They poured hot and cold water in their ears and blinded them with chemical drops. Eighteen-month-old Shinshon Ovitz was exhaustively examined, and blood was drawn. All the twins confirm that large amounts of blood were taken twice weekly. It is known that some blood samples were sent to the KWG. Here researchers like Verschuer and Butenandt showed indifference to using body parts and fluids supplied from concentration camps.



**FIGURE 14.2** *The Ovici/Ovitz family, as the Lilliput troupe of entertainers, at Antwerp, ca. 1949. They had arrived in Auschwitz on 12 May 1944.*

United States Holocaust Memorial Museum W/S #59968

Nachtsheim at the KWI for Anthropology was interested in dwarfism as a genetic anomaly. He cooperated with Hans Grebe who registered 118 ‘Sippen’ or ancestral lines of dwarves and documented them in his *Habilitationsschrift* (published only after the war). After being wounded in 1942, Grebe returned to the KWI for Anthropology as Verschuer’s assistant in 1942. Concentration camps replaced clinics. Grebe allegedly had to abandon his research by 1943 because of a diminishing stock of dwarves, but he was compensated by Mengele sending specimens from Auschwitz.<sup>171</sup> Such tracing of research subjects with growth anomalies and of the disabled placed their lives in jeopardy. Nachtsheim’s human experiments profited from the ideological atmosphere and structural possibilities of National Socialism, as well as killings at Auschwitz.

Paradoxically Mengele had declined having a tattoo of his blood group, something that was standard for the SS. The question arises whether the twins were being exploited for German – and possibly SS – blood banks for routine transfusion purposes. The amount of blood extracted left prisoners enfeebled. Worse still was when the Germans decided to inject the blood of others. The twins were in pain from the constant probing and injecting.

Block 10 was also the scene of blood agglutination experiments: on orders from the director of the Waffen-SS Hygiene Institute in Raisko, Bruno Weber, women of specific blood groups were given dosages of drugs, and how the blood reacted after malaria infected blood was injected.<sup>172</sup>



Mengele regarded the human streams channelled to Auschwitz as containing rare material of scientific interest. His surviving victims provide a coherent and consistent account of his research procedures. The scale and calculated cruelty of his Auschwitz activities have made Mengele the researcher most known to have exploited and supported the Holocaust. Despite such notoriety, efforts to fathom out Mengele's rationales have been speculative, and the sifting of the sparse documentation has produced more questions than answers.

Nyiszli speculated that Mengele wished to find out the cause of the propensity to have twins. The taking of blood was to provide genetic and racial markers. Mengele amassed vast material for a series of specific studies on the genetics and racial pathology of the Jewish body, looking at reproduction, growth, physical features such as hair and eyes, the effects of malnutrition and infections. Here would have been a comprehensive study of body and metabolism as shaped by race and heredity. The research remained incomplete, as Mengele had ever increasing duties as the doctor in charge of Birkenau. He continued a regime of preventive medicine that involved the sending to the gas chambers of whole blocks, and selecting for death from the camp hospital.

## Blood research

The bacteriologist Hans Muench appeared from the Waffen-SS department at Raisko to oversee the serological laboratory in Block 10. From August 1943, a small laboratory ran by the Hygiene Institute of the Waffen-SS conducted serological analyses.<sup>173</sup> The laboratory was staffed by Jewish scientists – remarkably Fleck, Anna Seeman (her husband working as lab technician, and son Bruno, one of the three Block 10 children) and the Umschweif husband and wife, Seeman, Owsiej Abramowicz, and the bacteriologist Jacques Lewin from Paris.<sup>174</sup> SS Sturmbannführer Muench similarly maintained that the experiments were life sustaining.<sup>175</sup> He assiduously collected blood samples for use as test sera, trialling a tetanus serum on Block 10 inmates. The injection in the breast after chemical sterilization could have been for Muench's research. He also worked on an injection against rheumatism, as well as a project on teeth as a foci of infection.<sup>176</sup> When Sławka Kleinova said that moving the small serological laboratory out of Block 10 would mean the deaths of the women, Muench continued there with immunization experiments against rheumatism with streptococci from teeth granuloma. He began pulling prisoners' teeth, Ucia Heidemann testifying to the removal of eight teeth at once without anything to numb the pain.<sup>177</sup> The laboratory was run by Anna Seeman, one of three bacteriologists from Lemberg and eventually transferred to Buchenwald.

Muench's experiments were very much opportunistic and an individual sphere of activity.<sup>178</sup> Whereas for Schumann, the X-ray sterilization



experiments were executed as an order from above, for most Auschwitz scientists the experimental agenda was self-generated. Even in Schumann's case how he carried the task out was left to him, and he insulated himself from camp hierarchies. Opportunism and allegiance to science were prominent motives.<sup>179</sup> Muench retrospectively presented experiments as assistance. He maintained the small Block 10 serological laboratory, where some prisoner researchers survived, and that he recruited patients in the Revier to save their lives.

Bruno Weber came as head of the Waffen-SS laboratory that began to be established from early 1943 (it opened in May 1943 just as Mengele transferred to Auschwitz). It was located outside the camp at Raisko (possibly because of the dangers of the pathogens). Weber organized experiments involving the interaction of different human blood types. Weber had wider activities across Silesia; even so Auschwitz was a vast human reservoir of specimens and substances for the Raisko laboratory.<sup>180</sup> He also conducted experiments using barbiturates and morphine derivatives for mind-control purposes.<sup>181</sup>

All women in Block 10 had a blood test from August 1943. The small lab on the upper floor had autonomy from both Clauberg and Schumann. Muench said the blood research was to raise immunity against infections. Small and large amounts of blood were taken from Block 10 inmates by Muench and Weber. The aim was blood group experiments by determining blood group antibodies or titres.

At least 200 blood samples were sent by Mengele for research in Berlin. There has been much speculation concerning these, as whether linked to the developing of a method of determining race from blood by means of an immunological reaction, or whether the research was linked to TB diagnosis.<sup>182</sup>

Muench and Weber questionably portrayed themselves as saviours of prisoners with diverse streptococcal and sulfa drug tests. Muench studied subcutaneous reactions. Some victims had seventy or so injections in their back for this. Muench also tested spit. The prisoner Lewin suggested to Muench this spit be mixed with blood as an anti-typhus vaccine. Inmates fondly remembered the 'spit commando'.

## Infectious diseases

Auschwitz dispatched not only gypsies for experiments, but also in four cases batches of Jews to Majdanek, Sachsenhausen, Neuengamme and Natzweiler. The Majdanek camp doctor Heinrich Rindfleisch conducted unofficial experiments on treatment of infectious diseases. He carried out therapeutic experiments on 300 female Jews (originally from Salonika), aged sixteen to twenty, transferred from Auschwitz to Majdanek, because they had malaria, in May 1943. They died by September.<sup>183</sup>

The second case concerns the hepatitis researcher Dohmen, who went to Auschwitz from 23 to 26 June 1943, and joined Mengele on the ramp to select new arrivals. He asked boys from a transport from Bedzin and Sosnowicz in Upper Silesia whether they were healthy and had ever before had jaundice – pointing to their yellow star to make them understand about the yellowing of their skin that the disease entailed. This was something that one of the boys, Saul Hornfeld understood. Dohmen selected initially eighteen Jewish youths, the youngest aged eight. In the event eleven were sent for hepatitis experiments to Sachsenhausen. They joined the Jewish watchmakers and counterfeiter in the camp.

The experiment was delayed as Allied bombing of the RKI destroyed Dohmen's test specimens. Dohmen then had to find new infectious samples in order to isolate the causal virus. After a military medical conference to co-ordinate hepatitis research held at Breslau, Dohmen visited the virologist Haagen in Strassburg on 15 July 1944; Haagen wanted – but did not obtain – Dohmen's hepatitis culture for Ahnenerbe research.<sup>184</sup>

With rising pressure from military medical experts, from September 1944 Dohmen finally began the Sachsenhausen experiments. This meant strict isolation and quarantine. Dohmen wore army uniform; but his first act was to take off his revolver and give it to Hirsch, one of the boys.<sup>185</sup> Saul Hornfeld explained that after being X-rayed, and blood being taken, unknown liquids were injected. Dohmen was in fact injecting virus cultures into the boys' guts. (This is a case when the victim could later discover what the unknown substance was, and verify that an experiment was indeed taking place.) From a medical orderly Bruno Meyer there is a detailed description which correlates to later reminiscences. Meyer noted that the boys were frightened, while Dohmen appeared unfeeling.

After three weeks, Dohmen returned, and injected four of the boys resulting in fever. Saul and the youngest, Woelfchen Silbergleit had stomach tubes inserted into their mouths for infectious germs. Saul and Simon Rotschild also endured painful liver punctures eight days later. They were told to lie absolutely still, but the operation left them weak and enfeebled. Dohmen now had confirmation that he had indeed isolated the causal pathogen.

The third batch from Auschwitz concerns the twenty Jewish children selected in Auschwitz for a TB experiment. Their deportation had its roots in the spring of 1944, when a conference was held at Hohenlychen.<sup>186</sup> Gebhardt invited Heissmeyer to join Reich Health Führer Conti, and Reichsarzt SS Grawitz for an informal evening; the discussion turned to the rising numbers of TB patients. Heissmeyer outlined his ideas on a new therapy. When he explained that experimental animals could not be used, Grawitz suggested experiments on concentration camp prisoners. Heissmeyer then met Oswald Pohl to obtain adults and children for the experiments. That Heissmeyer had treated Pohl's children meant previous informal contacts. Gebhardt located a batch of serum with Meinicke in Berlin, and facilitated contacts to the SS. Gebhardt wanted to boost the reputation of Hohenlychen as an elite institution. For this reason he

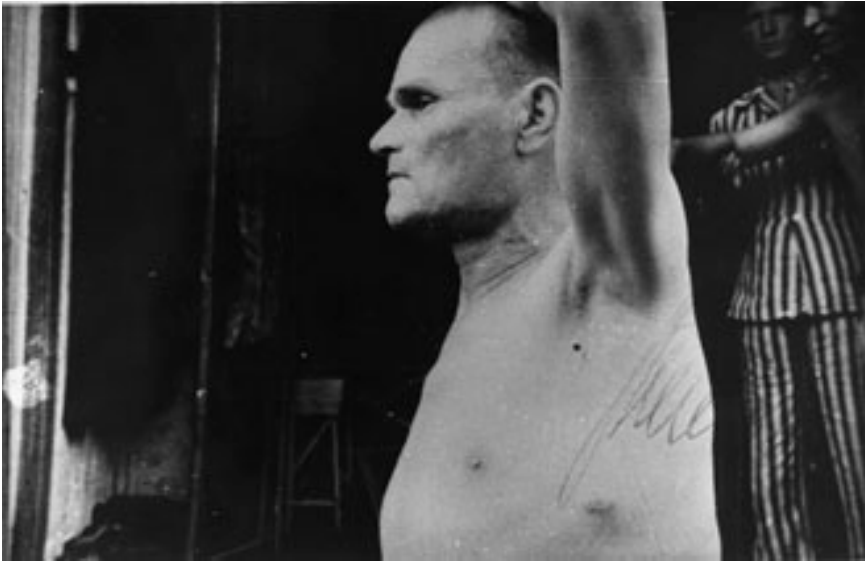
established a 'Pathological Institute' with animal labs there. Nachtsheim's collaborator Hans Klein moved from the Virchow Hospital in Berlin to the Hohenlychen labs.<sup>187</sup> Heissmeyer's planned experiments ignored Hitler's-instituted research structures under Karl Brandt and Rostock.

Heissmeyer had joined the NSDAP in 1931 and took a racial view that medical care should be provided on a racially selective basis. His idea was that a second TB infection could have immunological benefit and act as a cure. He conjectured that pulmonary tuberculosis could be combatted by inducing the disease in the skin. This would augment the resistance of the organism and fight off the invading infection. His writing on TB shows a profound belief in racial ideas, with benefits of cure denied to groups of lower racial value. In 1943, Heissmeyer wrote a paper entitled, 'Principles of Present and Future Problems of TB Sanatoria'. He argued that racially inferior patients, like Jews, were less resistant to diseases such as tuberculosis, than racially superior patients. He counselled physicians to base their treatments on the race of the patient. He considered that Jewish subjects would be more useful for his research due to their inherent weakness.<sup>188</sup>

Heissmeyer had connections to the SS through his high-ranking uncle, and because he was, from 1934, senior physician at the TB sanatorium for women at Hohenlychen. He lived in one of the towering mock medieval bastions at Hohenlychen, as a neighbour of Gebhardt. His aim was to obtain a habilitation, a higher doctorate to qualify him for a university career. Gebhardt advised Heissmeyer to carry out the experiments in a concentration camp, because of the danger.<sup>189</sup> Heissmeyer claimed that he chose persons who had TB and children with a positive tuberculosis reaction.

Heissmeyer was restrained from experimenting in nearby Ravensbrück: Pohl objected that the Allies knew already of experiments there. The concentration camp of Neuengamme was offered as an alternative location. The Neuengamme camp set up a sealed compound, called the 'Sonderabteilung Heissmeyer' in April 1944. Apart from security, he insisted on a secure location to protect his research subjects from camp infections. In Ravensbrück, the lack of a special compound had enabled the victims to resist and evade further experiments.

Heissmeyer asked for volunteers from the prisoners – thirty-eight can be identified. Three groups of prisoners either were suffering from tuberculosis, or had the disease previously; a fourth group were healthy. Aleksandr Iwanowitsch, a Ukrainian, described his selection in Gross-Rosen as opportunistic. They were mainly 'Russians', at least five were Poles and one who was Dutch. They were offered better food. The group was intensively studied with analyses of blood, urine and stools. The prisoners were infected by scarification of the skin with infected sputum, and injections of infected blood. They had a tuberculous fluid pumped into them through a stomach tube, and the lungs were X-rayed. The group were under close surveillance. After two weeks of injections, Aleksandr was operated on to extract his axillary lymph nodes, an operation that took a long time to heal. He felt like an experimental animal. After the experiment four Russians were shot on 8 November 1944, and subsequently dissected by



**FIGURE 14.3** *A Soviet POW on whom tuberculosis experiments were conducted at Neuengamme, showing the spot where a lymph node was removed.*

United States Holocaust Memorial Museum, courtesy of Günther Schwarberg W/S #17041

Heissmeyer. Three are known to have survived and of these only two of the Russians returned home.<sup>190</sup>

In July 1944 a special children's block was opened in Auschwitz – complete with fairy tale pictures of Little Red Riding Hood and Snow White (the artist Dinah Gottliebowa spoke of how these impressed the SS doctors, leading to work for Mengele). Although the allied invasion was pressing into France, Belgium and the Netherlands, the preparation of the experiments was continuing. Between July and November Mengele selected the children, so that in the end there were twenty. They were X-rayed and blood was taken.<sup>191</sup> The group consisted of ten boys and ten girls, all Jews, aged between six and twelve. The children were: Georges-André Kohn and Jacqueline Morgenstern (both from Paris); W. Junglieb, Leelka Birnbaum, Eduard and Alexander Hornemann, Marek Steinbaum, Eduard Reichenbaum, Bluma Mekler, Ruchla Zylberberg, Sergio de Simone, H. Wassermann; Surcis Goldinger, Lea Klygerman and Riwka Herszberg (all from Radom, arriving in Auschwitz on 3 August), Roman Witonski, Marek James (from Radom, arrived in Auschwitz 1 August), Eleonora Witonska, and Mania Altmann. In all, fourteen were Polish; two were Dutch, two French, one Italian and one Yugoslav.

The deception was that the children were to go to a special children's home – they received milk, and during the journey chocolate. Apart from SS

guards, there was the Belgian doctor Paulina Trocki and three Polish prisoner nurses, who were killed on arrival on 15 December 1944. Women clearly had no place at Neuengamme. The prisoners were astonished at these children in a non-Jewish camp. For Christmas they prepared sweets and presents.

The fourth tragic batch were the Jews (one actually Protestant) dispatched to Natzweiler for the Strasbourg Jewish skeleton collection.

## **Malingering and feigned wounds**

Emil Kaschub conducted dermatological experiments on malingerers. On the instructions of the Wehrmacht, from August 1944 healthy Jewish prisoners were subjected to applications of toxic substances and injections. The subsequent wounds, often festering and blistered, were documented for 'scientific' enlightenment.

In the late summer of 1944, the Wehrmacht sent Kaschub, a physician with the rank of officer cadet and not involved in the SS, to Auschwitz in an effort to unmask the various methods of malingering that were becoming widespread among German soldiers, especially on the eastern front. These methods included self-inflicted wounds, abscesses, fever and infectious hepatitis. Kaschub undertook burn wound studies from 24 August to 25 October 1944 on Jewish prisoners in Room 13 of Block 28. Kaschub inflicted burns on prisoners. Pieces of burnt skin and fluid from burn blisters were also dispatched to Breslau for analysis. He rubbed various toxic substances into their skin or injecting them into their limbs, and giving them oral medicine (Atebrine) in order to provoke the same symptoms being presented by German soldiers. A petroleum-like serum was injected into about thirty victims. After one to two weeks a pus-oozing phlegmone opened, and the fluid was sent to the army sanitary centre in Breslau.

Kaschub additionally researched the faking of jaundice by means of picric acid, again on camp inmates. He was successfully awarded an MD in April 1945 by the Friedrich-Schiller-Universität Jena albeit without an oral examination.<sup>192</sup>

The Auschwitz experiments show that – apart from the trial gassing – only Jews and gypsies were used, if not exclusively then very nearly so, indicating a decision on this by the camp administration and chief physician. Auschwitz was also exceptional in that Jewish prisoners were involved in the camp's medical services, although the execution of Dr Samuel shows they were disposable. The experiments continued to require elaborate resourcing, as in the case of the Jewish adolescents sent to Sachsenhausen and the twenty children to Neuengamme. Pohl's concern that the experiments were becoming known to the Western Allies indicated the intention to kill all research subjects, removing all traces of experiments.

## CHAPTER FIFTEEN

# Prisoners of war and forced labour

### Racial types

As the Nazi hegemony expanded, efforts increased to gather racial types from conquered territories. Anatomists and anthropologists screened POWs, forced labour and concentration camps for racial types. SS anthropologists from Ernst Schaefer's Sven Hedin institute in the Alpine Schloss Mittersill used POW camps as a resource. Rudolf Trojan looked for Turkamen types to make casts from prisoners in the POW camps of Munich, Freilassing and St Johann im Pongau.<sup>1</sup> Anatomists were keen on POW bodies.

Wolfgang Abel's activities bridged the KWI for Anthropology (he became Eugen Fischer's successor as the professor of anthropology) with the Race and Settlement Office of the SS, and he adjudicated on racial identity for the Reichssippenamt. The KWI provided training for SS officers in genetics and racial anthropology. Abel conducted anthropological surveys in Russia; the Ahnenerbe anthropologist Trojan researched on Central Asian prisoners of war.<sup>2</sup> Beger and Abel planned joint research on Soviet POWs in Sachsenhausen during 1944.<sup>3</sup> Beger preferred frontline research. However, Sievers favoured Beger collaborating with Abel, who pressed Sievers on 23 July 1943 concerning his scheme for 40,000 photos of racial types.<sup>4</sup> He wished to examine concentration camp inmates in Sachsenhausen. Abel had ambitious plans for his research on Russians in terms of selecting vast numbers for deportation – here Sachsenhausen was a potential resource in determining the criteria for selection.<sup>5</sup> Beger finally turned to research on Race and Struggle to study races under combat conditions – researchers remained steadfast under the increasing military pressure.

The case of Schilling finds a parallel with that of the eminent and aged Paul Uhlenhuth: he was a noted conservative nationalist who joined the NSDAP in 1934. He signed on 11 April 1933 the order for dismissal of Jewish

colleagues – including thirty-nine from the medical faculty of Freiburg University. Uhlenhuth was a central figure in military medical efforts to reinforce defences against infectious diseases. On 2 August 1944, he asked that all African-American prisoners of war be made available to him so that he could conduct research on the makeup of their blood. On 5 September 1944 he was informed that 150 ‘black and coloured’ prisoners of war were available in the vicinity of Munich. He may have intended injecting blood from blacks to whites to produce antibodies.<sup>6</sup> Whether he availed himself of the opportunity remains a matter of controversy. What Uhlenhuth shows is that eminent scientists regarded POWs as racial objects for research.

## ‘Russian’ POWs

The military doctor Schmitz-Formes conducted experiments on Soviet prisoners of war, and then autopsies on those who died.<sup>7</sup> Between February and March 1943 Felix von Bormann, director of the Bremen Tropeninstitut and a military bacteriologist, carried out a comparison between convalescent blood injections, and serum therapy on fifty-nine ‘condemned Russians’.<sup>8</sup> Hermann Gildemeister, a researcher on bacterial dysentery at the RKI, tested a new vaccine on ‘250 Russians’ who were POWs at Rovaniemi in Finnish Lapland. He acted in a double function as military medical officer and RKI researcher.<sup>9</sup>

Karl Schulze conducted experiments with Acridine on POWs at Lemberg.<sup>10</sup> A battery of drugs such as scopolamine and the anti-malarial drugs Atebrine, Prontosil and neo-salvarsan were tested by military doctors. This prompted the criticism of ‘wild’ experiments as ‘statistically ill-disciplined’.<sup>11</sup>

Gerhart Panning, consultant in forensic medicine at the Academy for Military Medicine, ordered Russian prisoners of war to be shot with Russian ammunition to assess the results.<sup>12</sup> At Shitomir in August 1941 a group of Jewish Soviet soldiers were shot with captured Red Army dum-dum bullets, so that German military doctors could accurately observe, and write up, the effects of these munitions on the human body.<sup>13</sup> Another instance of ‘Aktion Kugel’ (Action Bullet) was on 11 September 1944 when Albert Widmann of the Criminal Technical Institute (KTI) tested bullets poisoned with aconite at Sachsenhausen. Partisans had used poisoned bullets, and Himmler was interested in the bullets for an eventual assassination of Stalin. Mrugowsky (whose Institute had supplied poisons to the Criminal Technical Institute) and Ding, the camp doctor Alois Gaberle, and the chemist Widmann observed the deadly proceedings.

‘Russians’ – the term was derogatively applied to Soviet prisoners of many nationalities – underwent particularly lethal medical experiments. Rascher used Russians for the low pressure and freezing experiments. The SS doctor Heinrich Berning, Associate Professor at Hamburg, killed twelve prisoners from *Stalag 310* while performing experiments on their digestive systems.<sup>14</sup>



Four hundred and sixty-one 'Russians' (the largest group) were experimented on with paratyphus vaccines by Karl-Josef Gross at Mauthausen. There were at least seventy-two Soviet prisoners forced around the Sachsenhausen shoe track.<sup>15</sup>

As so often, the eventual victims described as 'Russian' might have come from varying nationalities, and whether they were POWs or 'Ost-Arbeiter' is unclear, not least as Soviet POWs could be transferred to forced labour. What is clear is that the five poison bullet victims resisted and tried to escape; they were held down and shot in their legs. Three died in great pain as the poison took effect. For two of them, the bullet went through the body so they were deemed useless, and killed immediately. Mrugowsky monitored their pulse, and tested reflexes, keeping details of time taken to die. Tissue samples were taken from the dead, and Mrugowsky compiled a detailed medical report.<sup>16</sup>

POWs continued to be exploited for experiments as on the Sachsenhausen shoe track. POWs might be used also for forced labour: British POWs had to work at the Danzig Anatomy Institute with its overflowing vats of bodies, but that institute also used bodies of POWs for dissection.<sup>17</sup> The factories at Auschwitz-Monowitz consumed vast numbers of POW forced labourers, making them vulnerable to other types of abuse.

## Forced labour

The underside of Nazi research was the use of coerced labour. Hospitals and research institutions increasingly relied on forced labour to function. Botanical institutes had squads of labourers working in the fields. SS researchers harnessed prisoner medical assistants for research, as did Ding at Buchenwald and Mengele at Auschwitz. Indeed, Pohl accepted the need to deploy prisoner scientists for German research and armaments technology in association with the Ahnenerbe.<sup>18</sup> As the labour shortage increased, so by 1944 prisoner assistants became essential. Regarding victims of the experiments, some were forced labourers, vulnerable because of incarceration in a psychiatric hospital or, because of infringing draconian restrictions, in a concentration camp. Walter Menk from the Hamburg Tropical Institute conducted experiments infecting patients with malarial mosquitoes and then testing with Sontochin at the Hamburg Langenhorn psychiatric hospital on forced labourers in 1944.<sup>19</sup> Forced labourers were a substantial proportion of patients used by Rose at Arnsdorf/Pfaffenhofen for malaria experiments.

The SS built up the Dachau herbal plantation, using mercilessly abused labour squads. In the first year of preliminary work on this 'Experimental Station' from April 1938, there were 107 deaths; later, priests were a staple labour force. The labour force at times exceeded 1,500 prisoners who worked to produce herbs and vitamin powders. Ernst-Günther Schenck used these products in iron rations devised for the Waffen-SS in 1943.<sup>20</sup>



Labour was harnessed for vaccine production with louse feeders to breed swarms of lice whose minute guts could then be dissected for vaccine production in locations such as Cracow and the Behringwerke Lemberg. In an economy increasingly short of materials and labour, the use of humans for experimental purposes became routine and rapidly increased from 1942.<sup>21</sup> For the experiments, victims' bodily functions, reproductive organs and fetuses, hair, and bodily tissues and fibres were research targets. Hospitalized forced labourers were favoured for experiments.

At the Smolensk Trial, the Soviets publicized experiments on their territory at the German Military Hospital No. 551 that functioned from September 1941 to April 1943.<sup>22</sup> The defendant accused was Rudolf Modisch, an assistant surgeon in the facility. 'Untried biological and chemical preparations were first tested on Soviet war prisoners, and as a rule, those subjected to these experiments were exterminated.' Although likely, the numbers allegedly killed – up to 200 a day – make the allegation look exaggerated.<sup>23</sup> At Orel 17 workers were poisoned by Germans with pyrites to test medicines. The Soviets cited experiments and operations on healthy prisoners of war.<sup>24</sup> A clear pattern emerged of major SS-supported experimental research with the chimerical aim of achieving vaccines for typhus, malaria and yellow fever at the cost of the health and lives of thousands of prisoners.

Food and diet research were sponsored by industry, the army and the SS. There was extensive vitamin research by pharmaceutical companies, notably by Merck. One hundred East European workers were test subjects at a labour camp in Berlin.<sup>25</sup> The new vitamin preparation Nicobion was tested on Russian forced labourers.<sup>26</sup>

In June 1942, twenty-five forced labourers were tested by the KWI for Physiology of Work.<sup>27</sup> Ernst Wilhelm Baader, consultant for the Hitler youth from August 1933 and then for the German army on the Western front, advocated a type of medicine based on self-sacrifice and struggle.<sup>28</sup> He was responsible for medical provision at the Fort Breendonk concentration camp from 1942 in occupied Belgium.<sup>29</sup> The chief military doctor, Handloser commissioned tests at Baader's Berlin research institute on occupational health at the Kaiserin Auguste Viktoria Haus with Nicobion (a patent product of Merck) for gingivitis (swollen gums) on a hundred eastern workers or *Ostarbeiter*.<sup>30</sup>

Ruhr industrialists complained about the poor performance of forced labourers, blaming poor nutrition. Heinrich Kraut of the University of Münster and deputy director of the KWI for the Physiology of Work ran a mass experiment on 6,802 forced labourers, of whom 4,908 were Soviet POWs from May 1942. Known as the 'Krautaktion', the research fed directly into the Reich Ministry of Nutrition policies. The workers increased productivity out of fear of losing their additional rations. The norms provided a basis for civilian rationing policies.<sup>31</sup>

## Reproductive research

Gynaecologists were mesmerized by rendering the foetus visible with X-rays. Karl Ehrhardt, the gynaecologist at Graz, both an NSDAP and SS member, extracted the foetuses of Russian forced labourers from 1943. His method was deeply invasive with the aim of obtaining an intact foetus. Ehrhardt carried out preliminary research on corpses in Vienna. A change in legislation, decriminalizing abortions on non-Germans from 1943, made the large number of abortions possible. He extracted the foetus from around 350 Russian, Ukrainian and Polish female forced labourers in the Graz clinic. He injected radioactive contrast substances. Thirty-two women were subjected to surgery usually only used for a cancerous womb. Eighty-five women were experimentally used for inserting a spring-like device into the womb for two days and also experimented in using formalin and other poisons as abortive substances. Other doctors at the clinic also carried out such operations, but fewer: Hoff performed 200 operations, the Polish Ukrainian Wladimir Pruc 10 formalin abortions, the Spanish doctor Garcia Martin 55, Karl Tritthart 13, and assistants between three and thirteen each. Some of these procedures were fatal as for 23-year-old Ukrainian Julie H, who died from an especially painful procedure using an instrument called a Metranoicter, which could cause tears and internal wounds. Ehrhardt reached a peak in June 1944 when fifty experimental abortions were carried out.<sup>32</sup>

Ehrhardt previously researched on X-ray contrast substances, closely following the work of Clauberg. He was since 1941 professor of gynaecology at Graz. Ehrhardt spoke to the Medical Society of Styria in March 1944, on how he injected over fifty women, and carried out terminations in the fourth and fifth month of pregnancy.<sup>33</sup> Nazi abortion was racially selective in that there were draconian penalties when carried out on Germans, but non-Germans were a target for invasive research. The prisoner physician, Gisella Perl in Auschwitz carried out abortions to save lives of pregnant women – admitted to the Revier on such pretexts as pneumonia. Perl recounted how she ‘had been ordered [by Mengele] to interrupt a two month-old pregnancy and conserve the embryo in formalin’.<sup>34</sup>



## PART FOUR

# Experiments in perspective



## CHAPTER SIXTEEN

### Relentless research

#### **To the bitter end**

A new Department for Medical Research and Science was launched by Karl Brandt in April 1944. Brandt already held wide-ranging powers over sanitation, hospitals and medical supplies. The Medical Research Department was placed under the direction of the Dean of the Berlin Medical Faculty (and Brandt's former chief surgeon), Paul Rostock; Kurt Blome liaised as heading a committee for chemical warfare camouflaged as cancer research. The aim was to remedy the ever greater fragmentation of research with all its institutional pluralism and personalized petty rivalries, not least the antagonism of Conti against Grawitz, effectively the NSDAP against SS medical interests. Rostock attempted to monitor the very diverse research underway. Feuding factions were at play, between those hoping for a rapid programme of deadly chemical experiments yielding a knock-out wonder weapon on the one side; and the cautious realism of Karl Brandt and his ally the armaments supremo Albert Speer. It meant a further tussle over chemical weapons as the Ahnenerbe sought to out-manoeuvre Brandt. A year after achieving stellar omnicompetence, in April 1945 Brandt would be under arrest and sentence of death.

The final year of the Third Reich saw a new landscape of grandiose research institutes emerge. These were to undertake deadly and destructive human experiments. The evacuation of institutes and laboratories from Berlin provided an opportunity for establishing rural bastions of research. It was a vision of a new research landscape that was only to be realized on a very fragmentary basis, but was to find an echo in the academic decentralization of post-war Germany. The sporadic sets of experiments that occurred until the close of the war were in keeping with these visionary dreams. The displacement of academic institutions from Berlin allowed opportunistic academics to develop new initiatives. Vonkennel developed pharmaceutical ambitions in Leipzig, and continued deadly experiments on sulphonamides in association

with Schuler (formerly Ding) at Buchenwald; Clauberg founded his planned City of Mothers at Bad Königsdorff in Silesia; and Gebhardt further expanded the vast research complex at Hohenlychen, covering both animal and human research. The Central Institute for Cancer Research at Posen found a counterpart in a scheme for a Reich Virus Institute at Sachsenburg near Chemnitz. Clauberg made frenetic efforts to intercept Himmler to have the blessing of the Reichsführer SS for his scheme for a City of Mothers with its Institute for the Study of Reproductive Biology. These new bastions of research revealed a mentality that German science must be defended at all costs.

The momentum of research on bodies living and dead proceeded on into 1945. In 1945 the shoetrack at Sachsenhausen remained in operation. The shoetrack testees found the research was relentless. Cycles of new experiments were initiated in Sachsenhausen, Buchenwald and Neuengamme. Whatever shortages there were, bodies were in plentiful supply. In the first few months of 1945, some 800 people were executed, over 400 of them being German citizens. Transfers to anatomical institutes continued.<sup>1</sup> Scientists were indignant at the lack of laboratory animals. In Göttingen the physiologist Rein laconically blamed the shortage of cats and dogs on the voracious Eastern workers.<sup>2</sup> Nachtsheim's prized stock of specially bred rabbits, held in Dahlem, were stolen and eaten. At the same time there was an abundance of human 'material' in concentration camps and clinics, still to be exploited.

Scientists rallied to fighting for the survival of German science. They still expected unique results from the unrivalled research opportunities represented by the human experiments. These would secure their post-war careers. The continuing of experiments to the end of the war indicated a calculated opportunism to exploit these opportunities. In March 1944 Hitler armed Karl Brandt with an order to implement experiments on prisoners with chemicals for armaments research.<sup>3</sup> The centralization of science research administration facilitated such initiatives. Ambitious researchers, such as Clauberg, Schilling, Gins, Hirt and Haagen, intensified their experimental endeavours in a quest for accolades and recognition. The final year of the war saw intensification of research, but their banal variety shows the fragmented chaos of the Nazi medical research effort. There were efforts to develop wonder weapons, to cure homosexuals, to staunch bleeding, and to find a truth drug, as well as the continuing of longer-term endeavours on the shoe track or in epidemic eradication.

Younger researchers collected data for a habilitation qualification for a university career. The SS Ancestral research organization redoubled its research initiatives. Georg Wagner, working for the Ahnenerbe, based in East Prussia and researching in Finland, had his research pass renewed in January 1945, stating that he was researching 'an urgent cultural task', which was the Indo-Germanic roots of the gypsies. Himmler still wished to resolve whether 'pure gypsies' were in fact Aryan.<sup>4</sup>

Dissertations were urgently submitted, notably that of Erich Wagner at Jena. Articles were rushed to journals. The Waffen-SS bacteriologist Schuler

(formerly Ding) at Buchenwald was preparing publications on Atebrine experiments and tests for a new treatment of phosphor bomb burns, and Magnussen prepared a paper on eye colours.<sup>5</sup> These were in proof, but work was delayed by sanitary problems requiring attention: as the Allies swept into Germany they found laboratories hastily abandoned, body tanks full, and among collections of research papers, articles in proof but never published. The research machinery for scientific processing of bodies was frozen in time.

## Staunching blood

SS interest in natural products meant a constant search for medical applications. Pectin and sugar beet were the basis of a search for a way of preventing blood loss. Kurt Ploetner replaced Rascher in this endeavour: he worked with the chemist Robert Feix, Rascher's prisoner assistant from 1943 on a substance to stop bleeding, called Polygal. Its basis was sugar beet, and it could be taken orally by troops to prevent bleeding or used clinically to stop bleeding. The scientifically competent Ploetner (in contrast to the floundering Rascher) joined the SS-Ahnenerbe, and his department P increasingly took over research after Rascher's arrest in March 1944. From 31 May 1944 Ploetner directed the Ahnenerbe Institute for Applied Military Research.<sup>6</sup> Ploetner became a fearsome experimenter on multiple projects in the final year of the war. His scientific understanding was superior to Rascher's, and in avoiding the gratuitously cruel and deadly experiments, the research was scientifically more productive.

Feix was a successful chemist, half Jewish and founder of the pectin producer Opekta, for which the father of Anne Frank worked. Feix devised a sugar beet based substance to staunch blood. Feix offered Rascher the possibility of a medically and commercially successful product that could impress Himmler. By August 1943, Rascher had shot four Russians to test how bleeding should be stopped.<sup>7</sup> As indicated by a paper on Polygal in 1944, Rascher attempted to profile his experimental approach on the basis of this new product. Rascher arranged that the blood coagulant be tested by Breitner the Innsbruck surgeon in his clinic, by Denk at the surgical university clinic in Vienna, and by the surgical section of the SS hospital at Dachau. Breitner wrote from Innsbruck on 25 January 1945 endorsing the value of the new product.<sup>8</sup> It was now renamed 'Styptoral', so that links with the disgraced and imprisoned Rascher be erased.

Dachau camp prisoners were deceived into volunteering for an experiment on the Polygal blood styptic. Henri Entine, imprisoned for the resistance network Francs Tireurs, recollected:

After 5 or 6 days we learned that French prisoners of war had been wounded by the Allies' bombing. A few days later, the Kapo asked for us



to donate some of our blood for the wounded. I spoke to my friend and we decided to volunteer. For a few days we were very well fed. They would take blood from us every day. A few times a day they would inject something into us in order to make blood coagulate in order to use it for German pilots. We found out about this on our way out, through the doctors that were prisoners as well. We had been tricked.<sup>9</sup>

Rascher and Feix looked for a manufacturing site near Bregenz on Lake Constance. In April 1944 Plötner continued the search, and improvised a camp at Schlachters near Lindau. Although sited in a wooden shed, the plan was to commandeer a textile works in the vicinity for manufacture. Ploetner ran experiments on prisoners to see how pectin could prevent bleeding. Rascher visited Feldkirch and Dornbirn with Feix, the curious Anton von Pacholegg and Joachim Bromm to look at the Haemmerle factory, Weberei Hofer or the Weberei Gebhard Fritz.<sup>10</sup> The lawyer Gottfried von Riccabona, whose monarchist son Max was from 1942 one of Rascher's prisoner assistants, was to be involved in manufacture. Finally, they settled on Lochau between Lindau and Bregenz, and where an 'external camp' of Dachau began to function from March 1945 in a commandeered brewery.<sup>11</sup>

The product was tested on SS casualties. On 27 February 1945 Ustuf. Dr Hans Eckert, who was born in Buffalo, New York in 1917 and having graduated in medicine at Munich was assigned to the SS hospital at Dachau in November 1944, reported favourably on a clinical trial. When he operated on hernias for the military, he gave Styptoral to two patients but not to a third.<sup>12</sup> This shows how clinical trials were conducted on soldiers and the SS, although the results were not harmful.

## Hallucinogenics

The strange ransacking of nature's closet of herbs and natural products led to experiments with the hallucinatory cactus extract, mescaline. On 2 and 6 October 1944 Ploetner reported to Sievers and the Ahnenerbe about mescaline experiments on prisoners at Dachau. The aim was a truth drug. The Belgian prisoner nurse and the head of the infirmary at Dachau volunteered himself for a mescaline experiment. His main motive was to protect a sick prisoner from being utilized, but he was also curious to experience a truth drug from a political point of view. In the event, he found the experience 'very hard': he felt his head about to explode, his brain bursting from the visions. He never knew anything so bad could exist. Henryk Casior, another prisoner nurse, was also a mescaline test subject.<sup>13</sup>

SS Hauptsturmführer Bruno Weber and the pharmacist Viktor Capesius similarly experimented at Auschwitz on the use of psychotropic drugs during interrogation. Wirths ordered the prisoner Bruno Fischer who had been a psychiatrist from Prague to advise. The camp doctor Rohde became involved.

Jews and Russians were reputedly the targets. On one occasion three prisoners died.<sup>14</sup>

## Curing homosexuals

Himmler saw homosexuality as a plague, menacing national reproductive capacities, and to be eliminated.<sup>15</sup> He loathed the unmasculine and oppositional traits of homosexuals. The sustained onslaught on homosexuals culminated in 1944 in efforts to discover a medical cure. In a 1937 speech to the Reich Committee for Population and Racial Policy, he prioritized the reproductive strength of the nation, and condemned fake marriages. He imposed the incarceration of homosexuals in concentration camps, had them marked with a pink triangle, and they were often castrated. Eugenicists like Astel and Lang avidly compiled genealogical databanks on homosexuals. In 1941 Hitler also spoke of how he wished to stamp out the 'plague of homosexuality', and the need to purge Nazi institutions.<sup>16</sup> Homosexuality was to be eliminated.

German prisoners classified as homosexual, and bearing a pink triangle were favourites for experiments, as at Buchenwald and Sachsenhausen. They were among the victims of the typhus experiments. One proposed typhus experiment involved nineteen homosexual prisoners, but Hoven then broke off the experiment, deeming lice a threat to camp health. At Sachsenhausen, six homosexuals were among thirty prisoners used for testing Pervitin, a type of amphetamine.

Homosexuals were targeted in a series of experiments by the Danish doctor Carl Peter Vaernet, who had been developing an artificial male sexual gland as a 'cure' for homosexuality. In 1943 he decamped from Copenhagen to Berlin, as his Nazi sympathies meant he was losing patients among the patriotic Danes. In Berlin he contacted the SS hierarchy – first Conti, then Poppendieck and Grawitz, and finally Vaernet met Himmler to offer a drug to cure homosexuality. Himmler now had ambitions that the SS become a major manufacturer of pharmaceutical products. The pharmaceutical concern set up by the SS, the Deutsche Heilmittel GmbH set out to add to its pharmaceutical portfolio and manufacture such a cure. Vaernet joined the firm in Prague where he researched on the hormonal 'cure', artificial insulin, and rejuvenation therapies.

Vaernet proposed experiments on hormones as a means of reversing homosexuality by implanting in the right side of the groin, a tube that slowly released testosterone.<sup>17</sup> In November 1943 Himmler agreed to support his research, and he was then enlisted in the SS. Vaernet was authorized to conduct experiments in Buchenwald, and he was awarded 1,500 marks monthly from SS funds. At Buchenwald homosexuals, routinely placed on labour detachments where the work was dangerous and exhausting, were selected for the deadly typhus vaccine experiments.

Vaernet was first at Buchenwald on 26 July 1944 when he selected five prisoners on whom he operated on 16 September. He reported to Grawitz that the operations were performed on 13 September 1944 on five homosexual camp inmates: 'Of them 2 were castrated, 1 sterilized and 2 not operated. All 5 had the artificial male sexual gland implanted in different sizes.'<sup>18</sup>

Vaernet visited Buchenwald six times between June and December 1944, working in collaboration with the camp doctor Gerhard Schiedlausky, who had been involved in the Ravensbrück wound experiments. At least seventeen prisoners – some homosexual, some criminal and some neither – were used for the research. One died from post-operative infection. Of the 13 September cohort, three patients out of five were operated on. Two were castrated, one was sterilized at the Buchenwald camp, and one died as a direct result of the operation causing a phlegmose/tissue-inflammation. Eleven more prisoners died shortly thereafter.

On 8 December 1944 Vaernet operated on a further seven prisoners (Reinhold, Schmith, Henze, Köster, Ledetzky, Parth and Boeck) out of a group of ten. From three (Liesch, Kreutz and Voss) only urine was taken. The prisoners were photographed at the time of the operation and a month later to assess signs of appearing younger. Henze died from infectious bowel catarrh and severe emaciation on 21 December 1944.<sup>19</sup>

In one case, the Franciscan theologian Bernard Steinhoff (inmate no. 21686) claimed his erotic thoughts changed from young men to women. Even so, he was castrated.<sup>20</sup> A victim of glandular experiments described how his right side became lame, and no longer being able to work as a musician.<sup>21</sup> Vaernet's final report to Himmler on 10 February 1945 explained how his hormone research remained unfinished. He steadfastly continued his research, and went on taking out pharmaceutical patents.<sup>22</sup>

## Nerve gas

Hitler was frustrated by the slow progress of military and IG tests on a substance known as N-Stoff (code for Chlorine Trifluoride). Hitler hoped that N-Stoff could be Germany's wonder weapon, as a combined incendiary and poison gas. In May 1944 he hit on the scheme that V2 rockets could carry this deadly substance.<sup>23</sup> He ordered that the SS should take up experiments on this. Here again was the expectation that SS researchers should conduct human experiments in a concentration camp and achieve dramatic breakthroughs. While Karl Wolff claimed that Hitler approved of Rascher's aviation experiments, the N-Stoff experiments are the only experiments to have occurred as a direct result of Hitler's orders.

Grawitz assigned Ploetner and the SS pathologist Hans Sachs to undertake N-Stoff experiments at Sachsenhausen in the second half of 1944. An outpost of the KWI for Physical Chemistry was built by prisoners close to

Falkenhagen, a satellite camp of Sachsenhausen, with the aim of producing N-Stoff, but very little was produced. An initial experiment was made at Sachsenhausen on 25 September 1944. Grawitz then requested from Himmler five prisoners for further experiments to establish the effect of N-Stoff on the skin. Gebhardt, Nebe and Glücks gave their support. The matter was also discussed between Sievers and Poppendieck.<sup>24</sup>

Otto Bickenbach (a Nazi Party member from 1933 and SA officer) moved from Heidelberg to direct the polyclinic at Strasbourg. He developed protection against gas poisoning with a preparation called Utropine. Hirt had been experimenting at the camp of Natzweiler in Alsace since November 1942.<sup>25</sup> In 1943 Hirt informed Himmler about his researches, and he proposed extending them to humans. Along with Helmuth Ruehl, they began to experiment for the Ahnenerbe. Bickenbach carried out three series of phosgene experiments at Natzweiler.<sup>26</sup>

In April to May 1943 Bickenbach smeared a substance containing phosgene on the underarm of fifteen 'German prisoners'; three died. In June 1943 Bickenbach forced a reputed 90 to 150 prisoners to undergo inhalation experiments with phosgene.<sup>27</sup> Hirt and Bickenbach conducted a third series of experiments on an estimated forty victims.

Following fierce disagreement between the researchers, Hirt mobilized the Ahnenerbe against Bickenbach. But then Bickenbach transferred to Karl Brandt's gas warfare defence organization. On 1 March 1944 Hitler had placed chemical warfare under Brandt, as Generalkommissar for Gas Defence with a remit to cover research, civilian protection and field applications. Brandt was interested in the deployment of Tabun and Sarin.<sup>28</sup> Brandt restored Bickenbach's permit to research on phosgene gas in Natzweiler, and remained steadfast in his support of Bickenbach.<sup>29</sup> Richard Kuhn, a committed Nazi and the Director of the KWI for Medical Research, was researching the dangerous and highly toxic Soman. Kuhn approved Bickenbach's experiments on phosgene in Natzweiler.<sup>30</sup> Bickenbach continued research (he used cats) at Fort Fransecky, a Luftwaffe installation north of Strasbourg. He also conducted a self-experiment with Urotropin.<sup>31</sup>

## Jewish children

The eleven Jewish youths at Sachsenhausen children – an extraordinary phenomenon in the camp – received protection from the prisoners. Dohmen distanced himself, but a pretext used by Norwegian prisoners involved in camp administration to counter the killing order was that the children might still be needed.<sup>32</sup>

Heissmeyer redoubled his efforts in his TB experiments at Neuengamme. He required the assistance of two French prisoners, Gabriel Florence and René Quenouille, a radiologist arrested for assisting British parachutists.

Dr Quenouille secretly weakened the vaccine to protect the children. The vaccine experiments took place on 9 January, and again on 19 February 1945. On 3 March a Czech prisoner surgeon Bogumil Doclik was ordered to remove the children's adrenal glands. On 12 March 1945 the pathologist Hans Klein analysed the children's glands at his lab at the 'Pathological Institute' in Hohenlychen.<sup>33</sup>

On 20 April – Hitler's birthday, a day that saw SS guards drunk and celebrating – the Reich Security Office ordered the dismantling of the 'Heissmeyer department'. Allegedly, Pohl gave the fateful order to kill all prisoners involved with the experiment (he was concerned about BBC report on the Ravensbrück Rabbits), and Arnold Strippel ordered its execution. The presence of the Swedish Red Cross in the camp meant that the children were sent to a special exterior camp at the Bullenhusendamm School in Hamburg, established for Scandinavian prisoners. The SS doctor Alfred Trzebinski supervised the killing of the children by injections and hanging them on the night of 20 April. The SS guards then set about killing René Quenouille and Gabriel Florence, and two Dutch prisoners Dirk Deutekom and Anton Hoelzel.<sup>34</sup>

## The City of Mothers

Clauberg continued to seek support for his research institute. His City of Mothers scheme appealed to the wife of Gauleiter Fritz Bracht, who had earlier sought Clauberg's gynaecological help. In January 1944, Clauberg directly approached Bracht, Gauleiter of Upper Silesia. Bracht and his wife had taken an interest in Clauberg's research and consequently ordered that a clinic be provided close to Königshütte for this research.<sup>35</sup> The City of Mothers, or 'Geburtenstadt', was to be located at the spa town of Bad Königsdorff-Jastrzemb.

Clauberg had a competent and compliant surgeon in Dering, already released from Auschwitz on 25 January 1944 to work at Königshütte (Królewska Huta) and eventually for the new City. Clauberg was keen to develop a research centre in the 'City of Mothers'. Clauberg and Goebel stated, the aim in Auschwitz was to test a method for use in the City of Mothers. They intended to jointly patent a remedy for infertility, and worked together on detailed plans. Clauberg thought of feeding the infertile with vegetables locally grown on a soil manured with hormones. Goebel began to experiment with contrast preparations using sulphonamides such as Globucid and anaesthetics such as Anaesthesine and Novocain – accounting for varied reactions of the women.<sup>36</sup> This settlement was established not too far from Auschwitz by the National Socialist People's Welfare Agency (NSV) in the final gasps of the war, showing the tenacity of ideas of German pronatalism and German settlement expansion. Clauberg offered Goebel the position of chief pharmacist and director of the research laboratory.

The Bad Königsdorff (Jastrzębie Zdrój) installation opened on 28 October 1944. Clauberg transferred his lab and X-ray apparatus there, once Siemens had completed the installation work and cabling.<sup>37</sup> Clauberg and Goebel later alleged that they transferred their ‘patient material’ to this nascent City of Mothers.<sup>38</sup> The idea was a seamless continuity of the Auschwitz experiments. Rudolf Brandt suggested transferring 400 women from Block 10 to the nascent city. Clauberg hoped Himmler would be impressed by this scheme for 20,000 German mothers, but with the Reich crumbling, Himmler no longer had time for Clauberg’s reproductive schemes.<sup>39</sup>

On 30 December 1944, 273 women were still in Clauberg’s experimental block in Auschwitz.<sup>40</sup> Clauberg left Auschwitz only on 19 January 1945. He was devastated when his equipment ended up at Dachau in a chaotic state.<sup>41</sup> Goebel transferred some of the women to Ravensbrück. There, from late January 1945, Clauberg found further women to sterilize demonstrating how there was intensification of the experiments within an ever diminishing Reich.

## Ravensbrück sterilization

Despite the Soviet advance, Clauberg hoped that at Ravensbrück he could find refuge with his wife. Clauberg followed a request from Lolling and again applied inter-uterine injections in early January 1945 sterilizing an estimated 120 to 240 gypsy women, many from Hungary. The group were injected and X-rayed in two days. The effort might be seen as the test-run of the new mass sterilization method. Clauberg shows the relentless dedication to continuing experiments within a contracting German Reich.<sup>42</sup>

The Sinto, Anna W. was sterilized in Ravensbrück, aged sixteen. She was told that ‘it was an examination, but the pain afterwards, so I felt it. Several young girls 12 to 16 years.’ The Slovak Roma Maria S. explained: ‘And so all of us women went to the sick room and there the doctors looked us over. They burned something in our uterus. I suppose so we wouldn’t have children, or what, I don’t know. . . They burned something between our legs. This wire – or how should I explain it, something like an injection, and they heated it on a stove.’

Jewish women at Ravensbrück also underwent terrifying sterilizations: Helen Hoffmann, a Slovakian Jew, remembered, ‘It seemed like they were trying to turn over the womb so that Jewish women should not be able to have children. They used unusual instruments. The experiment was very painful. I was tied down. They used long instruments were made of iron.’

Elisabeth Barna, a seamstress from Budapest, writes how in December 1944 at Ravensbrück she was medically examined. Then from behind a

curtain a cold object was inserted, and she felt as if she was being injected. Then she was forced to endure a second injection.<sup>43</sup> The numbers sterilized at this late point in the camp's history go beyond what Clauberg could have achieved in a couple of days. Some experiences could well have been linked to experimental practices of the camp doctor and gynaecologist Percival Treite.

## Chemical defences

On 8 February 1945 the SS medical expert on race and heredity, Helmut Poppendieck reported to RuHSA about the chemist Ludwig Werner Haase's experiments on prisoners at Neuengamme. This was a series of survival experiments. Haase added mustard gas and nitrogen to water, and had prisoners drink this compound.<sup>44</sup>

Haase was departmental head at the Reich Institute for Water, Ground and Air Hygiene in Berlin, where he had devised a technique for water purification. One hundred and fifty prisoners were made to drink water contaminated with mustard gas between 3 and 15 December 1944. Haase's experiments were regarded as a success. Further experiments were undertaken with a stronger poison, ending on 8 February 1945. It is not known who the victims were, nor the effects of the experiments.<sup>45</sup>

Haase asked Himmler for permission for further research on eight prisoners who were condemned to death, indicating that some would certainly die. He wanted to determine the level of lethality for different poisons by comparing fatal doses and doses unlikely to be fatal: the actual threshold of lethality could then be determined as between these amounts. Himmler – at this late stage in the war on 17 February 1945 – refused permission. Although experiments continued at other camps, like those of Schilling at Dachau, Himmler began to dismantle the experimental programme. He required research records to be destroyed, and on occasions that research subjects be killed. The aim was to obliterate all trace of the experiments.<sup>46</sup>

There was frantic building of a new Central Institute for Cancer Research at the Reich University of Posen in 1944. Kurt Blome, a former SA activist turned research scientist, was encharged by Goering in late April 1943 to co-ordinate biological warfare research in the guise of cancer research. Blome also participated in Blitzableiter (literally lightning conductor), which was a programme for biological weapons research.<sup>47</sup>

Blome appointed the seasoned human experimenter on paratyphus, Karl-Josef Gross, to undertake experiments at Posen. Gross went from Mauthausen to Nesselstedt near Posen where his laboratory and testing facilities with seventy beds opened later in 1944; by late January 1945 the area was under siege.<sup>48</sup> Hermann Gildemeister supplied serum to Gross who, according to Soviet records, tested it on four Russians in



February 1945, causing two deaths.<sup>49</sup> The incentive for his late flurry of activity was that cancer research was a cover for germ warfare research. Equipment and specimen orders revealed a focus on plague and tularemia.<sup>50</sup>

When Alsace became a combat zone, Bickenbach and Richard Kuhn requested twelve beds at Bad Mergentheim, once the seat of the Teutonic Knights, as they were intent on further human experiments on phosgene amidst the crumbling Reich.<sup>51</sup>

## **Buchenwald hygiene**

The Hygiene Institute of the Waffen-SS expanded its preventive medical work from Buchenwald to the V1 and V2 rocket plant of Mittelbau-Dora. Here the sanitary conditions and death rate were appalling: Ding had to undertake routine screening for tuberculosis and the testing of East Europeans working underground for hook worm. At the same time the prisoner researchers had batches of fake vaccine sent to the SS in Berlin, and Dachau. The vaccine research continued, but conditions were worsening. On 28 May 1944, a typhus vaccine trial was carried out on Buchenwald prisoners.

Healthy prisoners were injected and severe reactions occurred. The Spanish prisoner Francois Salinas was subjected to injections in May 1944 at Buchenwald, then in June 1944 at Flossenbürg.<sup>52</sup> At Buchenwald from 23 to 28 May 1944 prisoners were injected in groups of five, eight injections a day over four days. Robert Santerre received injections in his skull and spine, in what he termed a 'mental illness experiment', in March/April 1945.

## **Forced labour**

Benzene injections killed fifty-one forced labourers at Hinterbrühl underground aircraft factory (near Vienna) on 31 March 1945, despite prisoner doctors and nurses refusing the order. Heinrich Gins, the head of the RKI smallpox department, was researching dental caries as a result of infectious pathogens with support from the DFG. He heard 'from an SS doctor' that experiments in concentration camps were possible, and in March and April 1945 researched in two camps by Mühldorf in Upper Bavaria: one under the Todt forced labour organization at Ecksberg; the other at the Mettenheim, an external camp of Dachau where Jewish prisoners were utilized for the experiments. Over 100 prisoners were experimented on (50 in each camp) with the new vaccine.<sup>53</sup>

At the obstetrics university clinic in Graz, Ehrhardt carried out twenty-two abortions and a further thirty-nine on forced labourers from January 1945 until the end of the war.<sup>54</sup> These instances confirm how the juggernaut of the Nazi medical research careered relentlessly onwards.



## Psychiatry

The malariologist Rose continued research right up to the American takeover at Pfafferoode. This pattern of relentless experimentation in clinical contexts was widespread. At the Spiegelgrund from January to late April 1945, forty-nine child inmates died. The forty-ninth was Rudolf Thaler on 15 April (there was a final death in June).<sup>55</sup>

In a summer 1944 meeting of thirty psychiatrists at Gugging in Lower Austria on euthanasia, Emil Gellny demonstrated a patient killing using his Elektroschockapparat 'Elkra II'. He continued killings at Gugging and Mauer-Oehling to April 1945, as he devised more efficient killing apparatus. Experiments thus continued as euthanasia went on, at Kaufbeuren until June 1945.

## Cover up

The ending of the war had the SS desperate to remove blood group tattoos, something that Mengele had always declined to have. Irene Zeigelstein underwent an experiment at Majdanek, when five prisoners with smooth skin underwent attempts to remove their tattooed camp numbers. A nurse explained that the SS wanted to hide identification as SS members.<sup>56</sup>

Even the corpses of the dead were meant to be destroyed. In October 1944 the anatomical assistants Bong and Meier at Strasbourg were ordered to destroy the skeleton collection. They began to extract gold teeth and the tattooed numbers. Hirt fled on 15 November with the destruction incomplete. One hundred and fifty bodies were found in the cellars. Sixty were Soviet prisoners transported from the camp of Mutzig.<sup>57</sup> Hirt eventually committed suicide in Schluchsee in the Black Forest on 2 June 1945.

On 12 March 1945 Himmler ordered the destruction of Schilling's notes, protocols and papers.<sup>58</sup> Undeterred by this severe blow, Schilling continued frenetically to research during April 1945 until after the liberation of Dachau. He issued a 'concluding report' on 5 April 1945, but in fact the experiments continued. Treatment of the infected had to remain, allowing the experimental organization to remain in place.<sup>59</sup> Alexander Taranez, a Russian, was experimented on a day after liberation of the camp, on 30 April 1945. At his trial Schilling offered to continue his experiments with volunteers 'for the benefit of science'.<sup>60</sup> Schilling's Luxembourgish prisoner assistant, Eugène Ost kept back record cards with details of infection, blood extraction, drugs used – and in some cases death for over 300 experimental subjects. In all, he could provide details of over a thousand experimental subjects.

At Auschwitz there was a massive incineration of documents. Prisoners buried the gypsy camp record books, so that they were later recovered.

Similarly the surgical record of the X-ray castrations was removed by a prisoner and then returned to the camp records after the war. Documentation on routine tests on gypsies and twins at the Hygiene Institute of the Waffen-SS at Raisko survived intact.

The Hygiene Institute of the Waffen-SS at Buchenwald had a series of 'secret diaries' destroyed by the SS at Ohrdruf on 28 March 1945. This covered case histories and temperature charts. After Mittelbau-Dora was heavily bombed on 2–3 April, then on 4 April the Buchenwald department was disbanded, Schuler (as its head had changed his name from Ding) joining an SS armed unit.<sup>61</sup>

In a heavily bombed and increasingly beleaguered Berlin, Verschuer first outhoused research records to Beetz (just beyond Sachsenhausen). Verschuer still wished to maintain the institute in Dahlem. By February 1945 it became clear that Berlin would fall, and Verschuer opted for evacuation, including materials that Mengele had supplied from Auschwitz. But Verschuer destroyed certain KWI for Anthropology records.<sup>62</sup> Nachtsheim stayed put, planning evacuation of his prized rabbit stocks to Switzerland. Lenz was depressed and moved to Westphalia.<sup>63</sup>

Heissmeyer buried a chest of experimental records at the Hohenlychen sanatorium. Amidst the concealment and destruction, prisoner assistants retained incriminating records. Kogon persuaded Ding to keep the Buchenwald diary with details of lethal experiments since 1942. Gerrit Hendrik Nales, a Dutch prisoner nurse at the Ahnenerbe block, kept records of the typhus vaccine experiments at Natzweiler.

Antithetical processes were at work: the SS tried to eradicate all traces of research, while researchers still clung to records as essential to maintain German science beyond any defeat. Himmler tried to purge an imperfect establishment – Rascher was shot by the SS on 26 April 1945, and his wife Nini at Ravensbrück a few days before liberation. Karl Brandt was condemned to death on 17/18 April 1945, and although released on 2 May, the episode brought home the twin failures of Hitler to restructure medicine, and of Himmler to exploit the war and Holocaust to Nazify medical knowledge on the basis of lethal experiments. While the continuity of combat and loyalty to the Führer was a remarkable feature of the last days of the Third Reich, scientists were once again out of step: they frenetically experimented to the end, out of conviction that here was an opportunity to obtain unique data on which to base their post-war careers.<sup>64</sup> Above all, they hoped that German science could be saved.



## CHAPTER SEVENTEEN

# The structure of coerced research

### Victim cohorts

Coerced experiments had a distinct dynamic as components of the machinery of racial policy, war and the Holocaust. Initially, Nazism gave an impetus to ambitious genetic and medical studies in genealogy. While serving the needs of racial evaluation of the population, there was the hope to explain genetic patterns of disease, notably in psychiatry as well as other major illnesses such as TB. By the time of the war there was a shift from genealogy to human experiments. The transition from animal to human experiments was marked by the mixed primate and human experiments of Schaltenbrand; later, the animal geneticist Nachtsheim used cardiazol to induce in rabbits a shaking palsy similar to hereditary epilepsy, but then switched to children from a psychiatric hospital.<sup>1</sup>

The SS programme of concentration camp experiments was a major outcome, but there were other components of the great crusade for experimental medicine, consuming human bodies. Only certain concentration camps became major centres of coerced research. Other camps were sites of opportunistic research on the initiative by one or other camp doctor. None of the SS 'Aktion Reinhardt' extermination camps was a site of experimentation. Auschwitz rapidly became a centre of large-scale experiments from late 1942, as doctors conducting selections realized that they could pick out research subjects of potential interest. Forced labour and POW camps, psychiatric clinics and prisons were sites of experiments.

The SS was internally divided with competing elements. Some experiments in concentration camps ran without Himmler's direct approval, as those of Mengele and Wirths in Auschwitz. Hitler only once intervened directly – to press for experiments on N-Stoff – at a time when the survival of the Reich looked increasingly uncertain. Hitler was aloof and disinterested in the

experiments: when Brack of his Chancellery ran experiments in Auschwitz on X-ray sterilization as well as T4 experiment centres, Hitler appeared detached. The implication was that Jews and psychiatric patients were better killed off, rather than scientifically or economically exploited. By way of contrast, Himmler along with leading SS doctors and racial researchers realized how experiments could augment SS power, while reconfiguring German medicine on the basis of racial values.

The overall number of victims can be reconstructed as a composite of identified individuals. Anonymized batches are added to these when the experiment is reliably documented in terms of a publication or report where the experimenter cites research subject numbers without further details. This amounts to an overall total of 15,744 victims.<sup>2</sup> This number is based primarily on individual, person related records, so constitutes a verifiable minimal number of victims of coerced experiments. The figures given above include persons deliberately killed for the research interest of their skeletons and skulls; and for the research value of their brains. Those anatomical victims who were killed for research (as by Kremer in Auschwitz), or who suffered some form of experimental intervention prior to execution are included.

A higher number results by taking the total of all persons who claimed to have been an experimental victim, amounting to 12,002 persons. That gives an overall number of victims as 27,748 persons. In many instances a narrative can be matched to a scientist's description: for example coincidental details can be linked, as when a scientist and a victim of Buchenwald typhoid experiments both mention the deliberately infected potato salad. But in numerous other cases corroborating documentation has not yet surfaced.

Jews amount to a possible 3,878 victims.<sup>3</sup> At first Jews were measured and racially studied out of a sense that here was a group destined for extinction. Then, figures like Kremer and Rascher would pick on a Jew when they wanted to dissect a dead specimen. Only with the establishing of Auschwitz did Jews become used for experiments in large numbers.

There are problematic locations in terms of whether experiments were conducted such as the camps on the territory of former Yugoslavia and Transnistria, and the camps of Bergen-Belsen, Stutthof, and Theresienstadt, and in special children's blood camps. Sometimes the person might have been the victim of mistreatment resulting in physical injury, but what happened to that person does not fulfil the criteria of an experiment. Or the victim appears an improbable research subject: claims to have been a non-Jewish victim of Clauberg at Auschwitz are discounted. Claims that the Germans drained children's blood on a large scale in Belarus, Latvia and the Ukraine have been made, but corroborating evidence on the German side is so far lacking.

This study focuses on experiments where victim experiences can be linked to documentation. Some types of medical interventions are problematic. Many camps have surgical records, as for Mauthausen, Dachau and Auschwitz, but apart from the Auschwitz castrations and forced abortions

at Graz, whether an experiment was intended remains unclear whether surgery is just being practised, or experimental.<sup>4</sup> Hermann Kiesewetter and Hermann Richter at Gusen carried out surgery on KZ Gusen inmates for no medical reason. To study the function of the human brain, Kiesewetter also carried out trepanations with KZ Gusen inmates. Sometimes this surgery concerned female reproductive organs. Clauberg's research at Block 10 was part of a far wider set of reproductive experiments, linked to university clinics for obstetrics and gynaecology. Countess Yvonne Komornicka, her alias was Capitaine Kléber in the resistance in the Vaucluse, denounced Treite's role in the 'Affaire des timbals', in late 1944 at Ravensbrück. Instead of an operation for a hernia, Treite removed her left-hand Bartholin's gland.<sup>5</sup> It is important to establish a verifiable number of victims on a person by person basis.

Some experiments and systematized research involved large numbers of victims. These collective groups are not included in the initial headcount of victims, but can be added. Grebe researched on 118 families where dwarfism occurred, reconstructing ancestries for 9,350 persons.<sup>6</sup> Ehrhardt documented 1,000 gypsies in East Prussia. By 1944 Ritter had researched 21,498 'clear cases' of gypsies. Kraut researched on 6,802 forced labourers. The SS Nutrition Inspector Schenck required that 10,000 concentration camps prisoners be fed a specially devised 'Mycel' sausage, made from cellulose and causing atrocious stomach pains. Greite researched 2,000 Jews at the Vienna Jewish Emigration Office. Two and a half thousand 'British' (in likelihood also Australian and New Zealand) prisoners of war were infected with hepatitis on Crete, and some hundreds of Greek civilians. These large batches amount to 50,150 persons.

Adding these batches of victims to the circa 27,748 possible victims of coerced research makes an overall total of 77,898 victims of coerced research. Hildebrandt has estimated 15,000 civilian and 15,000 military executions under the Nazi system of 'justice': she considers two thirds can be viewed as Nazi victims.<sup>7</sup> Adding this estimated figure of 20,000 would bring the total number of victims of Nazi medical research to around 98,000. This figure requires caution as composed of a much smaller core of verifiable individual victim histories. Moreover, what the experiment meant in terms of causing death, severe maiming or irreversible damage to reproductive organs, or a shorter period of pain and discomfort means that science involved carries a varying responsibility in terms of the Holocaust. But if forms of killing based on scientific research – such as injections, the selection of 'incurable' patients, preventive killing of populations suspected of harbouring typhus and other infections, and the racial categories used in the Holocaust – we find that science takes a role in the murder of millions. The experiments then can be seen in terms of sharpening the scientific edge of a lethal science. This would be a way of linking Mengele the researcher with his selecting for the gas chambers, or indeed rationalize Himmler's obsessive involvement in medical research. This means that around 100,000 mutilations and a lesser number

of deaths can be attributed to the system of German higher education and research, and medical provision. These heavy burdens were intimated by the Nuremberg prosecutors. Yet, major works and collections in Holocaust history either largely ignore, or marginalize the dynamics of scientized persecution.<sup>8</sup> German legislation makes it impossible to commemorate by name victims of medical experiments, just as victims of 'euthanasia' killings also cannot be commemorated by name on a par with Holocaust victims.

By taking either a long-term approach to institutions as the DFG and its precursor, or a comparative international approach, the specificities of experimental killing are lost. Japan was the one country that experimented with equivalent numbers of victims. There is no reliable estimate of the number of Japanese experimental victims, and how many were killed. Various authors speak of 3,000 deaths over ten years citing the Soviet prosecution records, or indeed of several thousands.<sup>9</sup> The Japanese might have been responsible for fewer victims overall, but had a higher percentage of fatalities.

The number of experiments by year shows a distinctive pattern with 1942 to 1945 as the years of greatest intensity in terms of both numbers of experiments and numbers of identifiable victims with 1944 as a highpoint. There were some series of experiments that were of long duration running on into 1945. Notable were those of Schilling for malaria in Dachau, and at the Spiegelgrund where killings continued until the Allied takeover. Clauberg on chemical sterilization, and Mengele's twin research ceased before they were scientifically concluded. As unfinished there were many survivors. When long-running series of experiments are taken into account, there was substantial activity on through the early months of 1945.

The gender proportion indicates that males were in the majority by 2:1. This is partly as a result of higher numbers of men in concentration camps, and partly in the researchers seeking equivalent bodies to those of German soldiers. Auschwitz experiments have a high number of females, because of the activities of Clauberg in Block 10.

Non-German nationals as from Alsace or South Tyrol were especially vulnerable. Polish priests were more vulnerable than German priests. Gypsies and Jews were preyed on by scientists especially from 1943, as Auschwitz made them available.

The age structure of victims corresponds to the population structure. A dip in numbers of those born between 1916 to 1918, and subsequently the peak in age for both males and females are explained by the starvation in the later years of the First World War. The age structure of victims corresponds to the general birth rate fluctuations.

Germans (and Austrians, taking the start of the year 1938 as the defining point) were experimented on in high numbers: many of these German victims were deemed to have some sort of defective characteristic – whether psychiatric, homosexual etc. Overall, a wide spectrum of nationalities fell victim: the largest group were Polish Jews and non-Jews (2,727 confirmed

victims); the second largest were Germans (2,253 victims). There were large groups of Soviet victims (1,022), Austrians (782) with the addition of ca. 440 stateless Jews who lived in Vienna, Hungarians (609), Yugoslavs (537) and Greeks (426). There were over 250 Czechoslovak, Dutch and French victims, and 156 stateless victims. Sixty-eight Romanians were deported to Auschwitz where Jews from the area ceded to Hungary in 1940. Smaller national groups are also of interest as the twenty Spanish civil war veterans experimented on in Mauthausen, and at least 13 British POWs in Sachsenhausen (to which an unknown number of British, and possibly Australian and New Zealand, hepatitis experimentally infected victims on Crete can be added). That Swiss, Swedish and Irish nationals were victims is also significant in terms of unconventional life histories of the victims. While it was claimed that Grawitz in 1943 apparently ordered that no French, Norwegian or Dutch prisoners be used, this does no accord to the actuality, even for non-Jews.<sup>10</sup> Those who were stateless, especially when Jews and gypsies, were especially vulnerable.

Sometimes the same person would be repeatedly used in an experiment – Rascher might place the same person in the pressure chamber or cold water tank three times; Clauberg would inject the same person up to seven times. Certain victims were utilized for multiple experiments: in Dachau some prisoners were used repeatedly for malaria, phlegmone, cold and low pressure experiments. Polish priests were liable to be so used: Father Leon Michałowski was used for malaria and hypothermia experiments, suffering heart pains, dizziness and disorientation from the cocktail of Atebrine, and quinine for the malaria experiments, and the freezing rendered him numb, with breathing difficulties and a sense that he was about to die.<sup>11</sup> The priest Jan Lipski was subjected to malaria and phlegmon experiments. Josef Laubinger underwent seawater drinking, malaria and cold experiments; Gerhard Schleimer at Buchenwald in May 1944 for typhus and then in October for gland transplants. Gerhard Adam and Wilhem Laubinger were used for typhus and phosgene experiments at Natzweiler. Subjection to multiple experiments occurred also in Block 10 in Auschwitz. Some of the Ravensbrück Rabbits underwent both leg wounding and transplantation experiments.

In determining how many of the experiments caused the victim's death, the following criteria have been used: experiments that had death as an intended outcome, experiments where the victim was so injured that they subsequently died, and experiments when the victims were killed so as to conceal what happened. Again, numbers need to be based on identified individuals. Thus of the seventy-four Polish Ravensbrück Rabbits, six died from injuries and six were deliberately killed.<sup>12</sup>

Overall, there were 4,364 deaths attributable to the coerced research, including 1,800 bodies used for research. The number who died because the experiment took the victims deliberately to the point of death amounted to 635 persons.



## Concentration camp locations

The numbers of experiments and victims by concentration camp varied enormously. Major camps that were locations of experiments were, notably (in order of confirmed victims) Auschwitz with 3,835 victims, Dachau with 2,411, Mauthausen with 2,243, Buchenwald 1,773, Sachsenhausen with 1,403, Ravensbrück with 796, Natzweiler-Struthof with 260, Neuengamme with 115, and Gusen with 60. Auschwitz (with Birkenau) came late on the scene in 1943, but had the highest number of victims. There the sub-camp of Monowitz as a mainly work camp had fewer experiments. (See Table 6.)

Importantly, the SS co-ordinated some sets of experiments as on TB, tetanus, and typhus in multiple camps. Prisoners were transported from Auschwitz over long distances for experiments as shown by the Strasbourg Jewish skeleton collection, Sachsenhausen hepatitis adolescents, and Bullenhusen child victims. Gypsy men were dispatched for experiments in the wake of the disbanding of the Auschwitz Gypsy Camp to Buchenwald and Natzweiler.

At Flossenbürg, Gross-Rosen and Majdanek, camp doctors experimented on their own initiative. Such 'wild' experimentation suggests that predatory camp doctors knew that they could indulge their scientific interests just as they could also practice surgery. That camp medical staff rotated from camp to camp, and between camps and scientific institutes makes a wider knowledge of the experiments likely. The involvement of numerous university academics in war work for the army, airforce and SS created a sense of urgency to resolve medical problems. Reports of experiments in concentration camps to military medical conferences alerted university academics to the availability of prisoners for research. Prisoners were dehumanized, and regarded as commodities that were expendable and exploitable.

Even more shadowy were medical abuses at Bergen-Belsen, Stutthof and Theresienstadt. Here there were no experiments – at least officially. Some survivors have claimed to have been experimented on at these locations, itemizing injections and painful eye examinations. There were a very few locations with special camps used for experiments (as for Polygal), but experiments often were located in special sealed off blocks within certain camps.

In terms of numbers Auschwitz can claim the highest number of victims between 1943 and 1944, followed by Dachau. By way of contrast, the extermination camps of the Aktion Reinhardt – Belzec, Sobibor and Treblinka undertook no experiments or research whatsoever. Other camps – notably Majdanek, Bergen-Belsen, Theresienstadt, Fürstenwalde, and Stutthof – were not officially locations for experiments. But some survivors claim that they were experimented on – raising problematic issues of the discrepancy between survivor memory and the official record. Issues are

how to define an experiment, differences between victim perception and the official record, and – as looks highly certain for Majdanek under Heinrich Rindfleisch – the possibility of ‘wild’ experiments etc.

Jews became the largest group experimented on, primarily as a result of large-scale experiments at Auschwitz. The arrival of large numbers of Jews allowed the doctors on the ramp to select out particular types – twins, persons with growth anomalies for Mengele; women who had given birth but before menopause for Clauberg; children who had no jaundice for Dohmen etc. Other doctors prowled Auschwitz and Birkenau as Schumann and Beger hunting for subjects for sterilization and skeletization. Surplus populations were prey for experimenters: this can be seen with a series of groups for whom the experiments were an alternative to forced labour: Polish priests collected in Dachau, or gypsy men sent from Auschwitz for experiments in Natzweiler and Dachau. Children could not readily be absorbed as labour: but they were increasingly used for experiments, not least as laboratory animals were in short supply.

The streams of arrivals in Auschwitz were so immense in terms of sheer numbers that statistically rare anomalies could be screened for. Not only was a camp like Auschwitz a collecting point for racial undesirables such as Jews, gypsies and Slavs, but it also offered unrivalled possibilities for genetic screening of large populations. This is what made Auschwitz so distinctive as the location of the highest victim experiment numbers, setting it apart from other camps. Mengele’s training in the study of genetic anomalies meant that he grasped how the genocidal procedures could be scientifically exploited. Auschwitz was unique in that this was the one camp where whole families entered: it meant that twins and others of genetic interest could be retained for study, or otherwise dispatched to other locations, or killed and their body parts retained. Clauberg similarly plucked mothers from their young families and retained the women for reproductive experiments and X-rays. In Schumann’s case, here was a camp where young male and some female Jews were retained for forced labour. These labour detachments offered him ideal experimental material.

The screening of ‘idiot’ children at the Heidelberg Psychiatric Clinic, and Mengele’s research meticulously studied each child physically and psychologically. The Heidelberg researcher, Deussen availed himself of contacts to the children’s parents. The living child once studied could be sent for killing so that the brain could be available for further research.

The idea was that the killing at Auschwitz would improve the health of the German race. The experiments were to yield knowledge on the causes of genetic anomalies as well as about reproductive health. The situation was the inverse of social medicine and a family-based approach to health.

The experimentation conducted primarily by the Germans was distinctive in its scale and callous disregard for life and health of the research subjects. Attempts to relativize the deadly research by comparisons to researches on the Allied side (for the Allies experimented on conscientious objectors who

had volunteered, or in the United States in penitentiaries) consistently show how more extreme and lethal the German researches were. The Soviet Gulag appears to have had a regulated system of experiments: these were responsibly supervised and were relatively safe.<sup>13</sup> Only the Japanese matched the Germans in human vivisection of an unparalleled viciousness. The Japanese similarly researched on persons deemed racially inferior. The Japanese organization was much more centralized than that of the Germans. While numbers of Japanese victims went into the thousands, estimates vary, and the precise number is not known; overall numbers appear lower, although there was a higher ratio of fatalities.

## Perpetrators

The West German Chamber of Physicians forced Mitscherlich to accept just 300 German doctors overall conducted medical atrocities (a category wider than experiments). For the experiments (leaving to one side routine sterilization and the euthanasia), the number of perpetrators amounts to at least 265. Only 18 were female. Most were German, male and physicians. Overall, there were at least 198 physicians (as anthropologists and biologists were also involved). Claus Schilling was the oldest, born in 1871, and the most youthful was born in 1923. The largest group were born between 1905 and 1915, amounting to 42 per cent. At least 161 were members of the Nazi Party, 58 of the SA, and 110 held SS membership. Academic distinction was also prominent with 79 of professorial rank.<sup>14</sup>

Their overwhelming sense of their German identity is confirmed by those on the margins of the Reich where racial identity was strongly felt, as Karl Brandt and Konrad Schaefer from Alsace; Entress was from Posen where he took Polish medical qualifications in 1938; Brachtel and Wagner were from the 'Sudetenland', and Alois Gaberle and Otto Adam were originally Czechoslovakians; Hirt and Rüdlin held both German and Swiss nationality; Capesius, Benno Orendi and Fritz Klein were German Romanians. Additionally, there were two Dutch involved in the Sachsenhausen TB research. The Ukrainian Waszelwitsch performed sex change/hormone experiments in Peciora, Transnistria. The Spanish national (Garcia Hazael Martin) and the Polish Ukrainian (Wladimir Pruc) were involved in the Graz group experimenting on fetuses. There was one German Belgian, Delmotte. There were thirty-eight Austrians, and most were 'illegal' Nazis before the Anschluss. Eckert was a German American. The Dane Vaernet was keen to test his new 'cure'. There were two Dutch perpetrators – the TB researchers Gualtherus and Herman Zahn; finally, the peripherally involved Belgian Delmotte, whose life ended in suicide.

Despite the rising entry of women into the medical profession and the sciences, and wartime shortages of personnel, there were decidedly fewer

women involved in coerced research, and only fifteen can be identified. Herta Oberheuser from Ravensbrück is the outstanding example. Karin Magnussen relentlessly pursued the Mechau family until she had their eyes. There were female psychiatrists such as Barbara Uiberrack as well as the paediatricians Marianne Türk and Margarethe Huebsch at the Spiegelgrund in Vienna, and at the KWI for Psychiatry Käthe Hell and Barbara Schmidt at the Prosektur at Eglfing-Haar. Female anthropologists included Eva Justin and Sophie Ehrhardt, who researched the gypsy children; Barbara Kahlich, Elfriede Fliethmann and Marianne Pevny researching the Tarnow ghetto. The psychiatric experiments involved nurses as assistants, and women had ancillary roles as lab assistants and secretaries. Women were not involved in military and airforce medical services and in research on weapons; nor did they have a role in the Waffen-SS. Women had less opportunity to conduct coerced research. Oberheuser and Magnussen were ideologically highly motivated by Nazi values, ambitious in terms of their careers, and deeply immersed in scientific issues. No ethical argument against experiments was ever made on the basis of inconsistency with any values associated with women such as care and compassion.

Female adult victims were never mixed with males; children were at times held in mixed groups. Apart from the Ravensbrück Rabbits' leg wounds, most experiments on women were associated with reproductive organs. Women did not appear on the shoe track or in the large and long-running malaria or typhus experiments. The proportion of female to male brains used is more equal.

Claus Schilling shows how concentration camp research needed neither membership of the NSDAP or SS; while scientific opportunism was a major motivation, Schilling retained an imperialist outlook. Bessau, who experimented on children in Berlin, was not an NSDAP member. Although Robert Ritter also took a leading role in researching gypsies as a preliminary for their imprisonment and being killed, he was not a Nazi Party member.

However, most involved in coerced research were Nazi Party members, amounting to 60 per cent, and 35 per cent were SS members. Some, like Blome, clung to their SA membership, insulating themselves from SS command hierarchies, as was the case also with Schumann and Beiglböck.

In terms of age and seniority the experiments represented a spectrum. Younger researchers were seeking a Habilitation and a university career – well exemplified by Mengele and Herrlinger, or career advancement as Kremer. This was also true for psychiatric researchers as Deussen. The former nurse Eva Justin used her researches on gypsies to acquire a doctorate and Habilitation, laying the basis for a university career.

German academia was involved at all levels. The prestigious Kaiser Wilhelm Institutes (KWIs) were markedly present – notably for brain research, psychiatry and anthropology. Other KWIs involved included those for leather research, or Richard Kuhn of KWI for physical chemistry on chemical warfare research.

This fragmented structure was driven by the convenience of the researchers. They wanted a local location. Victims were to be brought to them – with groups shipped from Auschwitz in the cases of Haagen, Heissmeyer and Dohmen.

The SS wanted to use the experiments to gain a hold over universities. In part it did this by recruiting and resourcing senior figures such as Hirt and Vonkennel. In part it supported alternative institutes such as that of Gebhardt at Hohenlychen. Clauberg similarly attempted to draw on SS resources while approaching the NSV welfare organization for his City of Mothers.

Himmler wanted Rascher to obtain a university position through producing research for a Habilitation. In February 1942 (just when the low pressure experiments began at Dachau) the idea was that Rascher should obtain a position at the German Research Institute for Psychiatry, which it was hoped could be brought under SS control.<sup>15</sup>

Himmler had demanded that Rascher be discharged from the Luftwaffe and transferred to the Waffen-SS.<sup>16</sup> This meant that the SS should take the prime role on survival research. Yet Rascher encountered severe internal criticism within the SS. On 17 May 1943 Rascher complained to Sievers as to how Gebhardt ordered him about when he visited Hohenlychen. Gebhardt said that he would throw out a second semester student with such results. Rascher tried to explain that his report was not rigorously scientific, but just indicative results for the Reichsführer SS. Gebhardt recommended that Rascher should leave Dachau as having no scientific direction there, and delayed Rascher's transfer to the Waffen-SS, considering him better placed within the academic system.

Mengele is a prime example of the scientifically active concentration camp doctors in seeking to obtain a Habilitation. Oberheuser also saw the experiments as a career opportunity, gaining transfer to Hohenlychen. Fischer later admitted to the court at Nuremberg that a Habilitation would have meant further experiments. Indeed, Stumpfegger achieved the Habilitation for the Berlin Medical Faculty in 1944 on the basis of transplant experiments.<sup>17</sup> The racially minded anatomist Herrlinger researched for his Habilitation on the basis of the 'fresh material' from executions that was the basis – albeit not without controversy – of his post-war career.<sup>18</sup> Hoven and Erich Wagner had their doctorates written by prisoners at Buchenwald, as did Delmotte in Auschwitz.<sup>19</sup> What is less clear is the extent that student dissertations often on drug tests routinely used unethically obtained materials, something that has been found at the University of Giessen.<sup>20</sup>

## Funding

The DFG, along with the Reich Research Council, was massively involved in funding coercive experimental research. Neither as an organization, nor

did its eminent advisers see any ethical problem. The surgeon Sauerbruch as the expert responsible for medical sciences approved most medical grants.

The DFG researcher files reveal much on its funding of human experiments. In the 1980s Müller-Hill achieved a breakthrough by demonstrating how Verschuer included funding for Mengele in his research grants. Subsequently, Ebbinghaus and Roth, and Klee have documented the substantial DFG funding for racial and coerced medical research. However, despite a major DFG funded project, there has not been full disclosure on the extent of unethical medical research, let alone any reconstruction in terms of sheer numbers and identities of the research subjects. The General Plan for the East is rightly recognized as academically devised genocide. But no evaluation of the medical research projects has appeared. As with the Kaiser Wilhelm Society, it is easier to acknowledge an extreme instance than the widespread permeation by Nazi values of mainstream research.

Early examples of coercive research can be seen with research on the Rhineland children selected for sterilization. The financing of Robert Ritter's gypsy researches was massive: Ritter established an expansive research department at the Reich Health Office for 'Racial Hygiene and Population Studies', and was massively funded by the DFG from 1936. At the end of 1943 he consumed 78 per cent of the available budget for 'asocial and criminal biological research'.<sup>21</sup> Further examples include: Rascher (albeit prior to research at Dachau), Schaltenbrand on multiple sclerosis; Nachtsheim and Verschuer with Mengele as his informal assistant; Clauberg's benefiting from Himmler having directed funding to him; and the researches of Beiglböck and the seawater drinking, Haagen, Rüdin and Schneider, Schilling, and Rose.<sup>22</sup>

Hallervorden and Spatz had 10,000 RM granted from 1940 for investigations in idiocy. Hugo Spatz applied in November 1940 to the neurologist and ministerial official, De Crinis who forwarded the application to the DFG. The funds supported the brain research 'on extensive materials' and a Prosektur in Brandenburg for Heinze.

The DFG readily contributed funds to forced experiments. As the war proceeded, the DFG cut funds for hereditary and racial research, so that by 1944 funding for this area had virtually ceased. By way of contrast, war-related medical research – and with this coercive experiments – received substantial funds.<sup>23</sup>

## Conducting research

No researcher was coerced in any way to undertake experiments. The opportunistic nature of the experiments bears this out. The researchers remained autonomous regarding whether experiments were carried out. Even in the case of Schumann's carrying out an assigned task of X-ray sterilization, he did this in ways calculated to win him favour with his superiors.

Coercion involved a variety of strategies concerning managing research subjects. Sometimes, the researchers exploited how the racially persecuted were contained against their will in life-threatening situations, as for the stateless Jews in the Prater stadium. Here the anthropologists were courteous in their requests. In the Tarnow ghetto it is possible that the anthropologists provided some small financial inducement. In Block 10 in Auschwitz, Clauberg did not speak or engage with his victims, although Goebel was more personable.<sup>24</sup> Mengele managed victims by being playful to secure compliance; on other occasions he was brutal, icily detached and manipulative. Rascher threatened research subjects with his pistol. Beiglböck similarly threatened a research subject already used for research at Buchenwald with a pistol.<sup>25</sup>

Karl Höllenreiner explained that at first that it was just a work detail or 'Arbeitskommando' was all he was told. Beiglböck then announced that they would be undergoing seawater drinking experiments. One of the assembled prisoners protested that having survived murderous cold water experiments he did not wish to undergo another set of similar experiments. Beiglböck then drew his pistol and threatened to shoot him, forcing him to participate. In fact, Rudolf Taubmann and Josef Laubinger were also victims of malaria and in Laubinger's case freezing experiments.<sup>26</sup> Father Marion Dobrowski protested to Schilling against the experiments, who insisted that as a prisoner he had no right to object. As a result of Schilling reporting him to the Camp Commandant, there were orders for additional experiments: he was subjected to three infections by mosquitoes and one by injection of infected blood. But Dabrowski considered his protests saved him and another priest from a further experimental injection.<sup>27</sup>

By way of contrast to the experiments at pistol point, the anthropologist Gabel declined a pistol in Auschwitz, and Dohmen laid his pistol aside in Sachsenhausen as a gesture indicating that he was not going to kill his victims. In both contexts, the situations were life-threatening for the research subjects.<sup>28</sup>

Sadism was not the primary motive. But sadistic impulses became evident in the stress of conducting experiments. Leo Alexander diagnosed 'primitive satisfactions obtained from the regression to infantile sadistic patterns', as a release of irrational subconscious impulses.<sup>29</sup> Yet the evidence suggests calculated rationales of exploitation, as researchers dehumanized their subjects, and regarded them in objective detached terms. There was an overwhelming sense of duty to carry out tasks, such as selections and experiments.<sup>30</sup> The psychology of Rascher showed an occasional loss of control under stress and consequent gratuitous cruelty, anger and viciously vindictive violence. He was overwhelmingly concerned to impress Himmler. Anger and frustration triggered episodes of sadistic and murderous cruelty. After two Russians who were held in the tank were bitter in their invective Rascher felt aggrieved, and burst into rage that his assistants gave the Russians choloform and evipan (as this spoiled Rascher's interest in how long a prisoner would be conscious). Rascher's heavy drinking led to a suicide attempt with



luminal tablets. The killing and autopsy shows calculated cruelty; whether this was to gratify a sadistic appetite is a possibility. Rascher notified the pathologist in advance in five cases that a research subject was to be killed in the pressure chamber. The Germans on their side made promises of care and release to secure compliance. Rascher certainly released a Russian to work in the camp kitchens, but no research subject was released from a camp.

Mengele occasionally showed outbursts of anger and horrific cruelty going beyond what was scientifically required. He did not beat or sexually abuse twins, but the survivors and witnesses like Nyiszli and Perl testify to his calculated viciousness. Certainly, scientific ambition, and dedication to Nazi racial aims were widely shared. Researchers used deception and coercion to obtain compliance. In Hoven's case he was bound up with selecting prisoners with tattoos for the delectation of Ilse Koch. But the scale of the experiments suggests a widespread mentality that was more calculated in exploiting opportunities for research.

The capacity to kill ultimately became self-killing – as with the leading medical figures of Conti, de Crinis, Grawitz and Lolling, the professors Eppinger, Hirt and Holzlöhner; Hirt's assistant Wimmer was among the subordinate researchers who killed themselves, as did the camp doctors Ding, Delmotte, Treite, Wirths and Eisele. For some it was fear of prosecution ending in a death sentence; for others – as the suicide note of Holzlöhner indicated in an identification of the self with the Nazi community – it was not being able to live under National Socialism. Erich Wagner committed suicide in 1959, and Beiglböck emulated his revered teacher Eppinger by committing suicide in 1963, as did Vonkennel in that year.

Alice Platen-Hallermund as a member of the German delegation at the Nuremberg Medical Case published in 1948 an insightful analysis of the medical mindset of the involved physicians. She detected a psychology of fear and hate, as well as the delusional incentive of purifying the *Volkskörper*.<sup>31</sup> The scientific intelligence officer and psychiatrist, Thompson diagnosed the racial killings as a form of self-hate.<sup>32</sup> The psychologist Lifton sees the cruelty and coercion involved in research and the imposition of what he calls 'medical killing' as a process of 'doubling' of two intact personalities. One was ruthless, and the other idealistic.<sup>33</sup> Lifton has a point as regards a duality of belief systems as there were two configurations – the Nazi racial ideology and that of the relentless pursuit of science. Combining these (in contrast to a double sort of Jekyll and Hyde persona) appears to have been enabling, to the point of undertaking maiming and murderous experiments. Wirths, the Auschwitz chief physician insisted on the otherness of the dehumanized victims. There was a high degree of autonomy and self-motivation in all cases, rather than just following 'orders'. Sadism appeared more in occasional outbursts of frustration rather than as routinized in the experiments. Yet, as Wildt has argued, such exterminatory research was not a matter of sober technicians but involved a conceptual commitment to eradicating the enemies of the racialized community.<sup>34</sup>



This analysis focuses on the opportunities to advance medical careers and scientific status, and these were varyingly combined with racial rationales. A concentration camp or a clinic offered a high level of control, both in scientific terms and in terms of ensuring compliant research subjects. Many experiments required sustained use of equipment such as X-ray machines, repeated procedures (as Clauberg), observation of clinical efficacy of medications, and pathological investigations. A camp block was a human laboratory where equipment and research subjects could be on site; while the proximity to a university centre meant utilization of further resources.

Researchers used inducements – Ritter would pay a mark for a blood test, and field researchers would go armed with tobacco and sweets.<sup>35</sup> The typhoid experiment survivor Henryk Mikołajczak described the conditions in the experimental Block 46 as a world apart with beds, sheets, improved food and even music. Experimental blocks had their windows blacked out, detaching research subjects from the outside camp. In Ravensbrück the lack of a secure block for the experiment victims created disorder in the camp, offering opportunities for wider solidarity and concealment. That the brutality of the camp staff led to several executions exacerbated the disorder.

The detention meant vulnerability to sexual abuse. Ding and Hoven at Buchenwald had a reputation as sexually exploitative of adolescents.<sup>36</sup> Mengele had the capacity to inflict suffering to outright murder; he was manipulative, and calculated in inflicting pain, and in killing for body parts; but there is no evidence that he was physically sexually abusive.

Women were first used for the wounding experiments at Ravensbrück from 1942, although for the wounding and surgical experiments, gender was incidental. But generally women were subjected to invasive experiments focused on reproduction. The outcome was often sterility and pain, and as for Schumann's female victims, death. If a woman had been previously pregnant, then the prisoner was of interest for Clauberg. If currently pregnant their lives were in danger. Thus one woman selected by Mengele concealed her pregnancy and was subjected to a Caesarean birth with all sorts of medical interventions. Victims of forced abortions were themselves frequently killed in Auschwitz.

Children were first experimented on in psychiatric hospitals, and then Sinti and Roma children were studied. The children used as research objects outside the psychiatric hospitals were Sinti and Roma, and Jewish. Mengele shows how by 1944 Auschwitz-Birkenau offered unrivalled opportunities for research on children of medical interest.

## **Selection of victims**

Victims were selected from among those who had arrived recently – as they were better nourished and healthier. This was important in Auschwitz-Birkenau, given the murderous conditions. Clauberg's Dutch, French and

Greek victims were selected on arrival. That way, they could be maintained in reasonable health for what were severe operations.

Arrivals in Auschwitz could not know whether it was better to be a 'Frau' rather than a 'Fräulein', or whether being a twin might be a passport to survival or death. Victims were generally taken by surprise – Schumann lured victims by feigned inducements such as a day without work. Leon Z commented on the painful memories of the fate of a cousin and a friend from their home town of Sierpc while at Auschwitz: 'They took them to the hospital. We did not know what for. Later on, by talking to them we found out what was going on . . . They castrated them. We tried to help them out with food. Through the windows we could see the sheets covered with blood.'

Sometimes the number was called. As a unique identifier prisoners could do nothing about this. This happened to victims after they were X-rayed by Schumann, when they were called once again – they did not know that they were to be castrated. Leon recollected: 'Around 1943 my cousin's and my friend's numbers were called. We knew how to manoeuvre . . . if they knew your number there was nothing you could do.'<sup>37</sup>

Selection procedures for research subjects were never standard. Sometimes the scientist selected directly, as was the case with Mengele on the Auschwitz ramp; sometimes Mengele was called by a colleague or guard to view a twin or dwarf; sometimes it was the Block Elder filling a quota; sometimes the SS required a special batch of prisoners. Hoven in Buchenwald manipulated the procedures siding with the politicals against the criminals. As Hoven showed, prisoner numbers could be switched. Rascher's assistant, Neff said that in Dachau camp authorities selected, but on occasions he substituted the prisoner to be used. In Ravensbrück the camp authorities selected, but then the suitability of the person was confirmed by researchers. Eugen Haagen rejected unfit specimens when they arrived at Natzweiler from Auschwitz.

The historian Volker Roelcke advances the view that the experiment was the logical step in the development from an animal model to routine clinical application in operative military surgery.<sup>38</sup> It is possible to view Rascher's deadly experiments on low pressure and freezing in somewhat similar terms, in that they were meant to render routine medical procedures more effective.

Scientifically, the experiments had a clear set of rationales. There is evidence for randomization with alternate distribution into groups. Majdanski referred to the drawing of lots.<sup>39</sup> Such procedures refute the notion of experiments as pseudo-science.

Volunteering for an experiment entailed an immense risk, because a camp was inherently coercive and destructive. Eva Mozes' mother asked whether it was good to be a twin.<sup>40</sup> In Auschwitz selection as a twin, or for sterilization research in Block 10, meant avoiding or postponing the gas chamber. Elsewhere, an experiment could mean relief from forced labour or additional rations. Rascher tended not to kill research subjects who had volunteered.

But on occasions the pressure or temperature gauges malfunctioned, and the volunteer lost his life. If the twins refused to co-operate they would be beaten or deprived of food.

The seawater drinking victims were offered the chance to volunteer for a 'good work detail'. The deception was that an experiment was not in itself equivalent to any labouring detail. The actual experience remained an issue of controversy – with Beiglböck defending his procedures as medically correct, and that he treated his research subjects decently.<sup>41</sup> Similarly problematic is the defensive argument that experiments saved lives in Auschwitz. For surviving twins and dwarves in Auschwitz, this was the case – albeit all were earmarked for death as were the gypsy women and children. Schumann reduced the life chances for the X-ray sterilization victims, who were already selected for labour detachments; the women were liable to death and indeed died from the invasive oophorectomies. Clauberg certainly received Greeks whose transports otherwise went directly to the gas chambers. But this was at the cost of their fertility, after their children were killed. If subsequently unsuitable, they had to take their chances in Birkenau where survival rates were poor. This was not any intended saving of lives but their exploitation, and survival was fortuitous.

At the Natzweiler phosgene experiments, the first group of fifteen soldiers were volunteers. But the tests were so severe that no further volunteers were forthcoming. This replicated the situation at other camps, as the freezing experiments – initially prisoners volunteered for some food, but the experience was horrendous: Fernand Labalue at Dachau dissuaded others from volunteering after his experience of the freezing tank, despite the lure of extra rations.<sup>42</sup> Schilling claimed that his research subjects had generous rations, as allocated to hard labourers.<sup>43</sup> Once prisoners realized that the inducements were slight in terms of the physical damage or death that could ensue, round-ups and coercion became the rule.

## Consent

Victims felt a sense of outrage that an experiment was an additional imposition to imprisonment. The Ravenbrück Rabbits articulated in their protest to the camp commandant that the disabling operations went beyond what the Germans could impose on a person imprisoned for resistance or as a hostage. Himmler often authorized experiments on prisoners condemned to death, but in fact this was stretched to include all prisoners. Indeed, researchers at times changed the intended group – as Dohmen selecting adolescents instead of the specified criminals. There was no legitimacy under German law for experimentation on condition of subsequent pardon.<sup>44</sup>

Clauberg in Auschwitz uniquely asked at least some prisoners for their consent. Renee Duering was asked to consent to 'certain physical examinations'. She remembered having to sign a consent form – this required

her to state her last address, and (ominously) whether she had gold teeth. She remembered that one prisoner, Gerda Müller did not sign, and consequently she was sent to Birkenau (although she did survive). The Dutch prisoner Hilda van West refused to let herself be injected by Clauberg, and she too was sent to Birkenau.<sup>45</sup> Trees Soetendorp, who was Dutch and arrived in Auschwitz on 23 September 1943 was similarly forced to 'volunteer' or be consigned to death in Birkenau. At least some of the Ravensbrück sterilization victims were forced nominally to consent. The threat of death undermined any notion of consent as freely given. Information as to what the experiment would involve and what substances were to be used was conspicuously lacking.

Maria Broel-Plater, one of the victims of the sulphonamide experiments at Ravensbrück, stated that she 'was not asked, and none of us knew why we were brought to the hospital'. Jadwiga Dzido explained she did not know what was going to happen to her and that no woman volunteered. Maria Kuśmierczuk stated that her name was called out, a policewoman came and took her, and she 'didn't tell [her] where [she] was going'.<sup>46</sup>

Schilling stated that only a small number of prisoners refused. He claimed that he explained what would happen to them as a result of deliberate infection, promising treatment and cure. He conceded that as prisoners there was no possibility of resisting. Victim accounts were vociferous concerning the coercion, suffering and lack of care.<sup>47</sup> The final act of deception was the faking of causes of death. For Schilling's victims, the cause was never a malaria infection or a toxic drug dose.<sup>48</sup>

There was no opposition to the experiments among German scientists. The brain pathologist Franz Büchner lectured on 'The Oath of Hippocrates. The Fundamental Laws of Medical Ethics' to Freiburg University medical students in 1941. He criticized 'the termination of so-called life not worth living', and the killing of psychiatric patients.<sup>49</sup> He did not focus on the experiments, and had the assignment of evaluating the brains of air force victims who died from oxygen deficiency. Similarly, at a meeting of the military doctors, Rose at a professional meeting criticized the serum experiments of Ding. Gebhardt privately criticized Rascher for scientific error rather than causing deaths. German scientists criticized Rascher for scientific weakness rather than for inhumane ethics. Rascher felt that the doctors Ruff and Wetz were against his experiments to the point of death. Indeed, Nini Rascher complained to Himmler's office that Wetz might cancel the experiments. The prisoner assistant Neff finally denounced Rascher to Himmler for his dishonesty. No criticism was made of coercion itself. The ethic of self-experiment was not necessarily an alternative to the coerced experiments. Rather, as Beiglböck and Bickenbach show, self-experiment was only a preliminary for more dangerous experiments.

In terms of scientific utility the results were meagre. Nazi Germany expelled hundreds of researchers in medicine and the life sciences. By 1945 ground-breaking research had been conducted by the Allies, as shown by the

refugee contribution to penicillin, and the treatment of spinal injuries. Most of the coerced experiments on the German side were scientifically derivative and unnecessary. They took place more to resolve difference among medical factions than as part of a coherent medical war effort. The deaths produced meagre results in terms of lasting scientific value. The phosgene experiments uniquely established a safety threshold.<sup>50</sup> The Allies researched the issue of rapid descent using volunteers and self-experiments without ethical transgressions. The freezing and rewarming experiments left a legacy in terms of rapid resuscitation procedures, and the design of flotation vests. But here too Strughold sagely pointed out the different salt content in various seas was not taken into account.<sup>51</sup> The longer-term scientific impact of Rascher's resuscitation research has been exaggerated in that citation counts cannot be replicated.<sup>52</sup> The scientific legacy of the experiments remains meagre.

## CHAPTER EIGHTEEN

# Resistance and sabotage

### **Evasion**

The experiments were a process that saw deception, coercion and corruption on the German side, and whatever opportunities there were for evasion and resistance on the part of the victims. The prisoner assistants disrupted as best they could. One must put aside the idea that here were perfect laboratory procedures, imposed with inexorable efficiency, that victims invariably complied, and that the results were punctiliously reported. Clauberg lied to Himmler, Rascher falsified results, Hoven was corrupt and manipulative capable of faking results, and so the chain of deceit continued. Prisoner assistants balanced the need to keep the confidence of their overseers with doing whatever they could to subvert procedures. Results were always questionable in that victims from the start were malnourished and traumatized, so problematic in their validity from a scientific point of view. Overall, the experiments generally did not operate smoothly.

Nor did victims readily comply. Although ordered to report to hospital, a priest might ignore the command and go to work as usual.<sup>1</sup> Block 10 saw much evasion and concealment. Prisoner assistants might dilute doses of drugs, as Kłodziński (his resistance reports were signed ‘Stakło’) in Auschwitz. The Polish socialist prisoner physician, Władysław Fejkiel advised that prisoners should spit drugs out. Similarly at Dachau, the prisoner nurse, Heinrich Stoehr, learned as much as he could about medical science to assist fellow prisoners, falsified medical reports to save prisoner lives, and sabotaged the administration of toxic pharmaceuticals. Working in camp infirmaries provided an opportunity to switch numbers, giving a prisoner due to be called for an experiment, a number of a deceased person. Henryk Demrych commented on the clandestine resistance when phlegmon was inoculated at Dachau, and how this greatly undermined the results.<sup>2</sup>

Zarfati Barouche’s left ovary was irradiated by Schumann, and then she worried that her right side would be sterilized: ‘I walked up . . ., hiding my

scar with my skirt. Luckily he did not notice, and once again I was saved from the experiments.<sup>23</sup>

Mengele had to manage his hundreds of twins. Vera K. recollected, 'I was not well behaved and not afraid of Mengele. I had OK relations with Mengele – symbiotic, he got information and I got food, symbiotic. . . I gave Mengele trouble any way I could.'<sup>24</sup> Similarly, the Austrian twin, Miriam Wachsmuth confronted Mengele. She recollected, 'I was frech [cheeky] with him – I said you want to kill me – he said no it is not like that – I said I want to be a nurse, and to study medicine myself. I want to study the chromosomes. I am not stupid.' Mengele tried to reassure her that she would be safe if she let him study her. But Mengele was a relentless killer: 'My sister was much much more frech with him – he injected her with air in vein. I was screaming, screaming.'<sup>25</sup> In the final analysis, Mengele obtained whatever results and specimens he wanted; but he was unable to complete whatever research was intended.

## Deception

Mengele occasionally mistook close resemblances for twins. This happened with Ephraim and his one year older brother Laszlo Reichenberg. Prisoner assistants conducted sabotage to deceive Rascher. They altered the adjustments on the rectal temperature thermocouples, so that he could not cool prisoners below the revivable limit.<sup>6</sup> Rascher proudly claimed that he could revive prisoners from a lower temperature than was actually the case. The water temperature in the freezing experiments was manipulated. Even collaborators despised Rascher for his braggard boasting – Holzlöhner and Finke spoke contemptuously of a 'Rascher curve' when the human cooling data was distorted, as was also the rapid descent data.<sup>7</sup>

The attenuation of vaccines was carried out to make their effects less severe. The French prisoner nurses (who were also to be killed at the Bullenhuser Damm) tampered with the cultures that were injected into the twenty children. Prior to the seawater drinking experiment there was a riot, when one male nurse was badly beaten up by the research subjects.<sup>8</sup> In Auschwitz the prisoner doctor Bruno Fischer gave reduced doses of mescaline that were harmless.<sup>9</sup>

During the seawater drinking experiment, drinking water was smuggled in. When the Swiss pacifist Wolfgang Furrer was experimented on at Dachau as one of Claus Schilling's malaria Versuchskaninchen, the prisoner assistants told him, that 'we prisoners would do the utmost to see no one had to die'.<sup>10</sup>

Research procedures more generally could be sabotaged. The French biologist Claudette Bloch disrupted research at Raisko on developing a plant for producing rubber by deliberately mixing up seeds. Other Raisko medical research was also subverted. The vaccine research at Buchenwald involving a group of prisoners which included Ludwik Fleck delivered fake

vaccine to the Germans. The routines of experiment could be used subversively. Prisoner doctors protected the women in Block 10 by means of the Spuckkommando ('spitting kommando'). This consisted of a group of inmates who had to spit every morning into test tubes. The aim was to find a method to determine blood groups using saliva. The idea for the sputum collection derived from Jacques Lewin, a prisoner doctor from France, who worked in the laboratory in Block 10.<sup>11</sup> Kleinova and the prisoner scientist Lewin testified that as many prisoners as possible from Block 10 were recruited for this to spare them the sterilization experiments.<sup>12</sup> Raisko itself could provide a fortunate prisoner with a protective niche. A Jewish man from Cracow described how:

It happened that they put me in a laboratory in Raisko . . . They put me in a section where they were making experiments on people to find medicine to cure diseases. They had a Jewish doctor, his name was Meisel, and they brought me to him. I became the guinea pig. They tried the injection on me. My luck was good next day his assistant got sick. So he met me, talked to me, got fond of me, and he said that he would like to have me for an assistant. They tried it on another person and it killed him. Is that heroism or luck?<sup>13</sup>

The Polish Jewish prisoner doctor Alina Brewda exercised a protective role in Block 10. The conscientious French prisoner doctor, Adelaïde Hautval objected to Dr Wirths that she would not participate in his experiments. She objected to subjecting prisoners to such coercion. She was repulsed by the surgical sterilization of a young Greek woman. Wirths insisted that Jews were fundamentally different.

There were three prisoner-researcher initiatives on the murderous nature of Nazi nutrition: in the Warsaw Ghetto, in the Transnistrian camp of Vapniarka against the use of poisoned peas, and by the French prisoner doctors Georges Wellers and Robert Waitz in Auschwitz-Monowitz where the IG Farben Buna synthetic rubber factory was sited, on prolonged camp starvation diets.

Research could also be conducted as a form of prisoner resistance. From mid-February until mid-July 1942 a well-organized group of incarcerated doctors made a study of starvation and associated diseases in the Warsaw ghetto. This represented the inverse of German experiments to accelerate the processes of destruction as showing the impact on the bodies of the incarcerated of the increasingly acute deprivation. The findings were eventually smuggled out of the ghetto, before its destruction in 1943.<sup>14</sup>

A similar case of prisoner research occurred at Vapniarka, a camp in Transnistria under Romanian administration, where Jews who were communists were deported from Romania. Inappropriate feeding with poisoned peas (*Lathyrus sativus*) took place. Here the prisoner doctor Arthur Kessler scientifically analysed the appalling diet of toxic fodder peas



being given, to show that it was poisonous, and to convince the authorities to ameliorate conditions.<sup>15</sup>

From October 1944 Wellers and Waitz conducted a haematological study of the blood of twenty-six prisoners to show the physiological effects of the starvation diet of under 1,000 calories. The data was carried by them in two copies on the death march to Buchenwald: one copy survived for post-war publication.<sup>16</sup>

## Pain

Victims felt dehumanized and expendable: Elizabeth Lefkowitz reflected, ‘we were not human beings anymore’.<sup>17</sup> Eva Mozes felt twins were ‘to be used as experimental objects and then killed’.<sup>18</sup> Certain examinations were painful, such as the turning of their eyes. Experiences of pain varied. While some of Clauberg’s inter-uterine injection victims referred to the pain as a burning sensation with a feeling as if the entire lower body was pressed together, others felt the pain as similar to birthing contractions.

Betty Cohen described how:

They put us on the table . . . then the one calls ‘come and look’ ‘ein grosses Log’ very humiliating. They gave me the Spritzers. . . It was an injection into the vagina. I have children thank god, but most of friends do not. A type of sterilization. One of my friends was terribly burnt. We could stay in the bed and rest for a couple of days . . . a terrible burning sensation, I got three or four (injections).<sup>19</sup>

Goebel tested various solutions, so others did not experience the pain as severe at all.

Trees Soetendorp recollected: ‘After “Spritzen” (injections), we had terrible abdominal pains. It felt as if we were on fire. We got a high fever and we vomited. I underwent three of those “Spritzen” . . . besides being “spritzed” we were also, at regular intervals, called on to donate blood.’<sup>20</sup>

A Jewish woman from Salonika, aged about twenty-five, remembered how: ‘I was taken to the examination room for experiments six times. I was called in every month or every two weeks. The injections hurt very much and for a long time – about a week. The needles were very large and the injection was internal in the uterus. The pain was extreme.’<sup>21</sup> Clauberg injected painful liquid into Gustl Nathan’s uterus, and then observed the results by X-raying. The procedure was accompanied by bleeding and inflammation. Her one thought was surviving this incredible pain.<sup>22</sup>

Elsewhere, the experience of pain was severe. Alex Frohlinger remembered how, ‘Dr Klein says to close my eyes, as he will do some cutting.’ He was then tied down:

I saw the blood spritzing, coming out out – under my nose and on my face . . . Grinding my teeth and I tried to hold on. I was ready for anything to happen . . . Blood was coming down my neck and I was feeling weaker and weaker . . . I was tied down, I just tried to hold on ready for anything . . . Then bandaged when came to myself. So weak I could hardly move. A couple of Haeftlinge [there]. No anaesthesia – I saw everything . . . I was afraid to scream, ground my teeth – I was a very strong boy, I was about 19 years or 20. I just was praying – came to me a word from Hebrew School the Hebrew Hazack – word meaning strength and courage, I kept praying to myself hoping everything would be alright.<sup>23</sup>

Julius Oesterreicher, a young Hungarian Jew, experienced an experiment on twenty-one Jews at Auschwitz in 1944. It seemed to him that the experiment was on pain thresholds, but was more likely to have been Kaschub's on skin wounds. During the experiment, he was tied down on his stomach with straps. He was given no explanation, just asked to respond to a couple of questions. His legs were bandaged, and wounded. A couple of days later the bandage was removed. His skin became thick and rainbow-coloured. His scar was an inch deep, and the doctor took off skin from the left foot. No anaesthesia was used, but 'my luck that he cut it out' unlike others in the experiment who died.<sup>24</sup>

In carrying out the castrations the concern was to minimize resistance, so an anaesthetic was used. Jack Listopad recollected: 'We were taken to the hospital . . . We were given a spinal. One by one taken to the table. They took out one testicle. I had to lay in that room 8/9 days . . . Second one sometimes taken out too.' He experienced immense pain from infection after the removal of his testicle, cold and hunger after the operation, then angina, and throughout the threat of being transported to the gas chamber.<sup>25</sup>

## Solidarity

Different groups found solace and support in solidarity. Groups coalesced of Polish women in Ravensbrück, priests in Dachau, and Jewish twins in Auschwitz.

The Rabbits in Ravensbrück have become a celebrated group for courage, and defiance, and sustaining group as well as camp solidarity. It has wrongly been alleged that the Germans gave them that name to express a derogatory view. In fact the name was given by prisoners (possibly the activist French group of Tillion) to show solidarity and increasingly defiance. Once they realized that they were victims of experiments, they became a focus of outrage. Five women died from operations, and the Germans executed six, prompting resistance and subterfuge.

Victims also used the name 'Rabbits' in Block 10 as well as 'Die Perforierten'<sup>26</sup>; those going to experiments on the 'slaughter slab' in the

'torture chamber' were called 'Paranymphs'. Clauberg's victims were held for long periods in Block 10, punctuated by the summons of the women for immensely painful inter-uterine injections. The women knew they were better off in their isolation, but also vulnerable to the vagaries of any impending selection or being sent to labour to death in Birkenau. There was some light sewing, and at times herb collection, but otherwise they were protected from forced labour.

Block elders on occasions intervened, as Magda Blau, rescuing two girls destined for the skeleton collection. The Block elder saved the younger twins.<sup>27</sup> The Blockaelteste subverted that Mengele wanted to kill anyone who could not jump to 1.8 metres. Twins looked after their fellow twin; otherwise the children were more atomized.

Inevitably one's number would be called for the incessant operations for purposes that were never explained. Aliza Barouche knew that she would be harmed: 'My number was called for the operation. I did not answer when they called my number... people thought I was hysterical.'<sup>28</sup>

In Block 10 a group of about eighteen French prisoners (bound by political radicalism and east European roots) tried to promote greater solidarity, and optimism, among themselves and within the block.<sup>29</sup> The prisoner lab researcher, Slavka Kleinova, a veteran of the international brigades, supported this group. She ran the small lab in the Block, in association with the Rasiko research station. The changed atmosphere of the Block was of general benefit, Keizer founded a bridge club and discussion circles for politics and literature.<sup>30</sup>

Gustl Nathan, originally from Düsseldorf, ironically referred to the 'experimental club', with its daily routine of experiments and forced labour. She attempted to create a spirit of solidarity, in an attempt to overcome how the national groups remained separate in a conflict and anxiety riven atmosphere.<sup>31</sup> Block 10 had about 800 occupants. Clauberg sent them to Birkenau if he deemed them unsuitable but otherwise held onto his group; Schumann in contrast returned victims to the main camp. On 13 June 1944, the whole establishment moved to Block 1.

The 'eleven', as the Sachsenhausen Jewish boys became known, were a close-knit group, sharing to survive. Fellow prisoners were supportive. The boys maintained their identity as Jews and their own self-worth. In the end, Dohmen appeared not to care whether the boys lived or died. As so often among the coerced experiments, the victims were a disposable commodity. This was amidst a situation when the Nazis were killing the sick and weak. In February 1945 the boys' names were on a list to be killed. But just as they were leaving for their imminent end, the order was countermanded. Norwegian prisoners managed to intervene to protect them. But their papers were ordered to be burnt.<sup>32</sup>

The experimenters were generally disinterested once the human guinea pigs had served their function. Hoellenreiner commented how Beiglböck

never had contact after the experiment; Schumann did not provide any form of aftercare as wounds festered and oozed pus.<sup>33</sup>

## Publicizing the experiments

German academics came to learn of the experiments through contacts, networks and conferences during the war. Hans Dirl, the Director of the Clinical-Chemical laboratory at the University of Munich, explained that in mid-1942 the rumour spread about experiments at the camp in Dachau, but it was not clear exactly on what. Dirl stated how many experiments were carried out as on terminal cancer patients who would die in four to five weeks.<sup>34</sup> Dirl refused to be taken by Rascher to Dachau. Rascher continued to come to Dirl every few weeks until the end of 1943 or early 1944. The chemist Rudolf Punzengruber brought blood samples from prisoners for analysis and Dirl carried out analyses for the Dachau camp hospital. Weltz presented X-ray pictures at the Munich Medical Faculty of internal organs taken at high pressure.<sup>35</sup>

Eugen Gildemeister, RKI President, typified how a senior medical researcher was keen on research executed in concentration camps. Later efforts were made to disconnect and deny. Rudolf Gönner, when sent from the Behring Institute Lemberg met the SS bacteriologist Erwin Ding at least four times. He claimed that when he delivered packages of lice to Buchenwald, he did not know that it was a concentration camp.<sup>36</sup>

During the war, news of murderous experiments in concentration camps reached the Allies. In December 1943 the medical periodical *The Lancet* deduced that the coincidental deaths of prisoners indicated by Ding's publication in the *Zeitschrift für Hygiene* on vaccine experiments meant that prisoners were being murdered on a large scale.<sup>37</sup> News of sulphonamide experiments on Polish women reached the Polish government in exile in London during 1944, prompting an international outcry.<sup>38</sup> Allied and Soviet military units found further evidence of medical research atrocities in locations such as Auschwitz and at the anatomy institute, Strasbourg. Allied revelations on the experiments were taken up in shocked press reports. It meant that by 1945 the Germans were experimenting in the full knowledge that they could be subject to criminal prosecutions.

The Ravensbrück Rabbits made clandestine photographs on 1 October 1944. They can be compared to the gas chamber photos smuggled to London by the Polish resistance in September 1944.<sup>39</sup> The five photos of leg wounds of identifiable victims were taken by Joanna Szydłowska, and the French prisoner Germaine Tillion took the still undeveloped spool of film out of the camp in April 1945.<sup>40</sup>

The Rabbits alerted the wider world by writing in urine as an invisible ink, and by passing information to Polish forced labourers. The



**FIGURE 18.1** *Clandestine photograph of a mutilated leg of the Polish political prisoner Bogumila Babinska-Dobrowska at Ravensbrück concentration camp.*

United States Holocaust Memorial Museum, courtesy of Anna Hassa Jarosky and Peter Hassa W/S #69340

American Polish prisoner Aka Kołodziejczyk, released in 1942, had a list of Rabbits, which she passed to the Polish government in exile.<sup>41</sup>

In early March 1943, over sixty crippled victims of medical experiments, many on crutches or being carried by fellow prisoners, protested to the camp commandant against the operations. They denied that they had consented in any way. The aim was to alert prisoners that the Rabbits did not agree to experimental operations regardless of what the SS claimed.<sup>42</sup> The next day, the Rabbits sent a letter to the camp commandant, asking if the experimental operations were part of their death sentences. In September 1943, ten were ordered to go to the hospital. The Rabbits, supported by other women in their block, refused to go to the infirmary. The ten women escaped by hiding among other prisoners. They were captured, and forcibly operated on. Helena Piasecka testified after the war during the Ravensbrück Trial in Hamburg that resistance earned her more brutal treatment. The 500 women who participated in hiding the Rabbits were locked in Block 24 for three days with little food and water as a punishment.<sup>43</sup>

Puzyna transcribed documents on the experiments and these were smuggled out of Auschwitz by a labourer, Franciszek Zaguba. These were of anthropometric measurements of 295 Jewish women, and on 117 twins.<sup>44</sup>

Slavka Kleinova provided a detailed description of Block 10, which was smuggled out of Auschwitz by Tadeusz Holuj and Stanisław Kłodziński. The complete summary was forwarded to the Polish government in exile in London. It was the basis for public protests, and was kept at Polish documentation centre.<sup>45</sup> The prisoner doctor and socialist, Kłodziński wrote two reports for the Polish underground on the activities in Block 10 in Auschwitz. One report was published in London.<sup>46</sup> The BBC broadcast shook Gebhardt, convincing him that he would be placed on trial, and Pohl was anxious to cover up evidence of experiments.<sup>47</sup>

The Soviet Extraordinary Commission denounced Clauberg in autumn 1944 on Radio Moscow. This was part of Soviet monitoring and propaganda against the experiments at Auschwitz by the Extraordinary Commission during the war.<sup>48</sup> The Soviet Scientists Antifascist Committee via their Secretary Pilipchuk sent a telegram to the Royal Society of Tropical Medicine and Hygiene in London on 12 May 1944.<sup>49</sup> The counterpart was the shocked Allied reports at finding bodies in the cellars of the Strasbourg anatomical institute. The British-produced *Basic Handbook* issued in April 1945 referred to the 'Use of Prisoners for Scientific Experiments':

This has taken various forms. Thus, at Mauthausen, certain prisoners were compelled in 1942 to undergo tests in connection with new war gases, their effects, and the efficacy against them of existing protective devices. . . . It has been reported, also, from a number of camps, that their medical officials have used prisoners as 'guinea-pigs' in the course of researches, including vivisection, experimental injuries, inoculations, and so on.

Liberated prisoners at Auschwitz, Buchenwald and Dachau set about documenting the medical experiments before hostilities ceased.

## Irresolution

The imposing of a system of murderous and maiming brutalization of prisoners was profoundly destructive for German medicine. The experiments were widely known and condoned by many significant figures in the medical establishment. Some killing simply continued after military capitulation – as at the psychiatric hospital of Kaufbeuren, until Allied troops arrived. There were suicides and a massive Allied endeavour to interrogate and evaluate. Certain researchers managed to provide the Allies with 'intelligence', as did the astute Ploetner.

The aftermath of surviving an experiment meant a new chapter in the lives of victims. Just like a tattoo with a camp number, the experience of subjection to an experiment marked an indelible episode of injury, pain and terror. Many had to live with consequences, as sterility due to the loss of

both testicles or sealing of their wombs, or leg wounds that irrevocably destroyed muscle and nerves. Testimonies encountered denial and evasion on the part of the Federal German authorities.

A small group of Allied war crimes and scientific intelligence officers did seek to reconstruct the entirety of the experiments, realizing that the totality of the experiments should be reconstructed.<sup>50</sup> By the 1970s Robert Lifton shifted the inquiry away from murderous experiments to a wider problem of medical killing.<sup>51</sup> Any focus to identify distinctive elements of the motives for undertaking coercive research was thereby lost.

Overall, the scale of the experiments was greater, the contexts wider, and the injuries were worse than often assumed. Despite the diversity of circumstance, background and age, there were some recurrent features among the myriad narratives of the experiment as experienced. There was an overwhelming sense that the dehumanization of the camp was being taken one terrifying step further. While being made to feel a negation of self-worth as an animal or object, there was terror. Even if cool about volunteering, what was underwent was far worse than they expected, and imagined. Eight prisoners drank cognac with added mescaline.

The Belgian prisoner nurse recollected:

I felt like my head would explode. They asked me if I would accept any accusation, and I would, but I wouldn't just say the truth. It was the most acute suffering that I went through at the camp. I felt as if my head was completely full. When they asked me a question, it hurt to find space to internalise the question, my head was full of visions caused by the medicine.<sup>52</sup>

The physical damage and injury were often long lasting with wounded bodies, and enfeebled hearts. But as exceptional and outside the routine, the experiments have had a lack of recognition and due understanding that continues until today. On the German side is a wholesale disinterest in victims of research among historians, and a consistent and protracted failure among responsible agencies to compensate adequately, and – with rare exceptions (notably Tübingen in the late 1980s) – to deal with the legacy of stockpiled body parts.<sup>53</sup> This in turn has impeded the historical effort to reconstruct the identities of victims. Most disturbing today is the denial of identity to victims who perished, due to data protection and procedural restrictions.

Apart from the Schumann's X-ray sterilization experiments and Hitler's delusional thrust to have N-Stoff researched, medical researchers or industrial interests generally initiated the experiment. Rascher proposed the cold experiments in a letter to Himmler of 15 May 1941.<sup>54</sup> Himmler interfered with proposals, authorized and had a facilitating role, but the primary agency lay with the scientists. Scientists stood outside camp hierarchies. Himmler told the Dachau commandant 'Dr Rascher is subject

to me only'.<sup>55</sup> Each set of experiments had a highly idiosyncratic set of arrangements.

Victims were left with injuries requiring costly treatment, in some cases they were profoundly demoralized, in others defiant and outraged at the coerced experiments, and many experienced pain, whether constant or sporadic. While some recovered to an extent, often lives could never be normal. There was for some enduring sterility, others were physically incapacitated, felt severe weakness from weak hearts, and there could be enduring psychological trauma. This account is an incomplete history, in that the full extent of the appalling research atrocities are still coming to light, and the post-war response of professional denial and the struggle for compensation and recognition provides a sequel. But the empirical evidence and analysis of victim cohorts show that the extent of the experiments was greater than the record hitherto allows. Individual experiences provide a window on the wounds and suffering inflicted.

Reconstructing the narratives of the experiments as experienced at the time necessarily re-opens wounds and how gratuitously inflicted suffering was deemed a priority for the Reich, its racial health and research. In not only identifying the dead but also the invasive procedures experienced by survivors brings injuries and pain to the scrutiny of the present. German government and academic institutions and the generality of German historians have still not taken on board the full significance of experiments in terms of what these reveal about power structures, the mentality of perpetrators, the nature and quality of medical science under National Socialism, and the life histories of victims who deserve greater recognition than being regarded as an amorphous and anonymized mass. Post-1945 professional standards and qualifications were severely compromised. The medical, scientific and technologically minded elites who formed a crucial component of Europe's strongest economy were rarely able to confront the devastation that their science had wreaked. The lack of closure on the Nazi experiments and their victims means that we inhabit a world in which research ethics and practices remain contested and controversial. The tragedy of the Nazi experiments indicates the wider importance of shedding light on this dark episode in the annals of medical science. For as the hugely empathic and perceptive scientific intelligence officer, John Thompson, who first set out to document all coerced experiments presciently stated in November 1945, that by failing to investigate the full extent of the experiments, unethical practices would continue to spread internationally in medicine, thereby undermining relations of reciprocity and trust.<sup>56</sup>





# APPENDIX

**Table 1** Victims: Gender

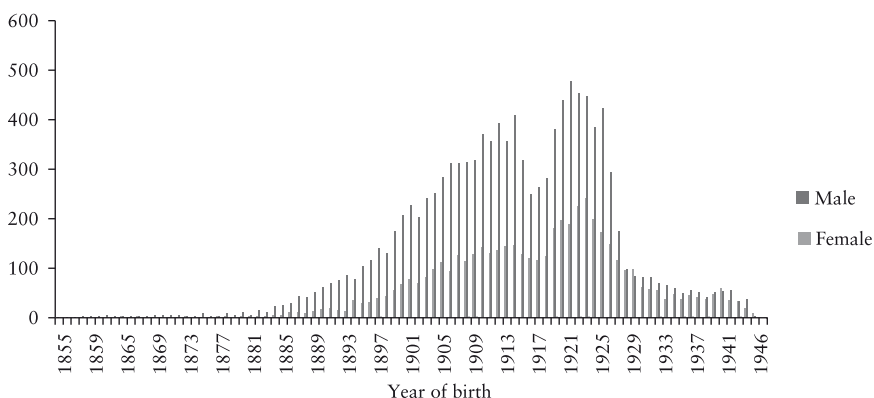
Gender	Confirmed Victims	Pending	Total
Female	3,959	4,381	8,343
Male	9,690	7,185	16,875
Unknown	2,095	436	2,531
Total	15,744	12,002	27,746

Note: ‘confirmed victim’ means that a claim can be linked to other sources on the conduct of the experiments, deportations, and from the ITS; ‘pending’ means that the claim has yet to be linked to documentation on the experiments.

The statistics are based on multiple sources relating to post-war trials and compensation files. See: Paul Weindling, Anna von Villiez, Aleksandra Loewenau and Nichola Hunt, ‘The Victims of Unethical Human Experiments and Coerced Research under National Socialism’, paper under review. The statistics represent a snapshot of data as on 7 July 2014.

The anonymized tables are based on systematic analysis of ITS records consulted at USHMM, compensation files and other records, as on brain sections. Key files are UNA SOA 417/3/01; and the Federal German Ministry of Finance files on compensation for victims of human experiments held at the Bundesarchiv Koblenz under B 126. I am further grateful to the archives of the Kaserne Dossin, and the Auschwitz, Buchenwald, Dachau, Mauthausen, Neuengamme and Sachsenhausen memorial museums.

**Table 2** Victims: Age



**Table 3** Victims: Nationality

Nationality	Confirmed Victims	Pending	Total
Austrian*	782	17	799
Belgian	16	32	48
British	16	2	18
Czechoslovakian	263	1,019**	1,282
Danish	2	1	3
Dutch	265	26	291
French	156	57	213
German	2,253	123	2,376
Greek	426	17	443
Hungarian	609	1,393	2,002
Irish (Republic)	1	–	1
Italian	71	6	77
Latvian	1	1	2
Lithuanian	4	2	6
Luxembourgian	1	–	1
Norwegian	11	1	12
Polish	2,727	4,167**	6,894
Romanian	51	39	90
Soviet	1,022	24	1,046
Spanish	22	4	26
Stateless*	449	4	453
Swedish	1	–	1
Swiss	3	–	3
Yugoslav	537	3,421**	3,958
Unknown	6,055	1,646	7,701
Grand Total	15,744	12,002	27,749

\* 'Stateless' includes 440 stateless residents of Vienna in addition, subjected to anthropological investigation.

\*\* These numbers relate to persons compensated but for whom no reliable data has been created to date.

**Table 4** Ethnicity

Ethnicity	Confirmed Victims (15,751 persons)
Jewish	20% (3,151 persons)
Roma and Sinti*	2.5% (393 identified persons)

\* In addition are Roma and Sinti victims of large scale anthropological investigations of Ritter, Justin and Ehrhardt amounting to at least 21,498 persons.

**Table 5** Religion

Religion	Confirmed Victims	Pending	Total
Jewish	3,091	787	3,878
Other or unknown*	12,653	11,215	23,868
Grand total	15,744	12,002	27,749

\* This category includes Christians (Catholics, Protestants and Orthodox), Muslims, Jehovah's Witnesses, Seven-day Adventists and atheists.

**Table 6** Numbers of fatal experiments

Circumstances of Death	Confirmed Victims	Pending	Total
Killed for research	2,956	50	3,006
Died or killed after the experiment	862	22	884
Died from experimental procedures	383	171	554
Grand Total	4,201	243	4,444

**Table 7** Victims by concentration camp, 1939–45

Camp	Confirmed Victims	Pending
KZ Auschwitz-Birkenau	3,835	4,238
KZ Dachau	2,411	1,109
KZ Mauthausen	2,243	793
KZ Buchenwald	1,773	805
KZ Sachsenhausen	1,403	330
KZ Ravensbrück	796	809
KZ Natzweiler-Struthof	260	20
KZ Neuengamme	115	30
KZ Gusen	60	223
KZ Flossenbürg	11	32
KZ Gross Rosen	4	50
KZ Majdanek	3	30
KZ Bergen-Belsen	2	9
KZ Oranienburg	2	1
KZ Stutthof	1	35
KZ Plaszow	–	3
Grand total	12,919	8,517

**Table 8** Estimates of perpetrators and victims, 1942–99

Person	Date	Document	Numbers of Perpetrators	Numbers of Victims of Human Experiments
Lolling <sup>57</sup>	Autumn 1942	Pohl affidavit 26 March 1947		30 to 40 series of experiments
	Nov/Dec 1944	Basic Handbook (UK)		Thousands as part of genetic/racial killings
	May 1945	Denazification of the Health Services and Medical Profession of Germany (US)	24,000	
Thompson	30 Nov 1945		90% of leading clinicians and scientists 'at the highest level' = 'several hundred' TNA FO 1031/74	
Thompson	25 January 1946	Mellanby note TNA FD 1/5826	300 scientists	
Rapp <sup>58</sup>	Sept 1946	Pokorny interrogation Sept. 1946	Thousands	400,000–500,000
Ivy	Sept 1946	'Nazi War Crimes of a Medical Nature'	70 physicians/scientists	

(continued)

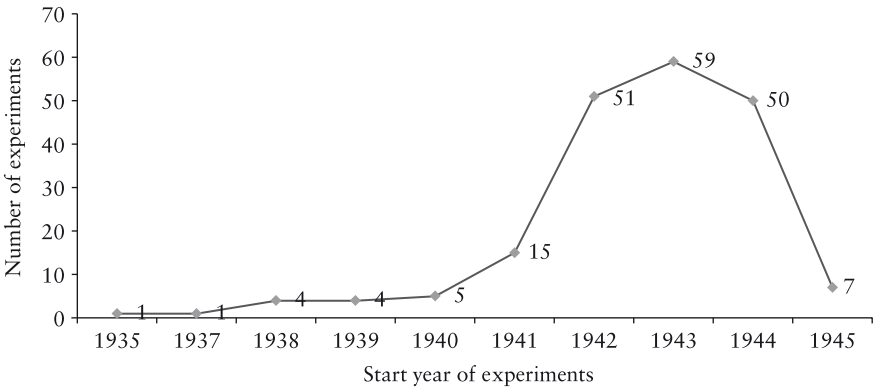
Table 8 (Continued)

Person	Date	Document	Numbers of Perpetrators	Numbers of Victims of Human Experiments
Taylor	9 Dec 1946	Opening Speech		Hundreds of thousands of victims of 'atrocities committed in the name of medical science'
Servatius [defence lawyer for Karl Brandt]		NMT 4/2204		2000
Pohl <sup>[59]</sup>	26 March 1947	Pohl affidavit 26 March 1947		350–400 in eight experiments
Prosecution Pohl	April 1947			'thousands of inmates with a wanton disregard for human life'
Judgement NMT	August 1947			2,000
Rein	August 1947		'dass die in Nuremberg einen verschwindend kleinen Teil der deutschen Ärzteschaft darstellen.'	
Arbeitsgemeinschaft der Westdeutschen Ärztekammern	March 1949		350	

Ivy, Andrew (consultant to the Tribunal)	28 Nov 1947	'Some Ethical Implications of Science'	70	
Mielke on behalf of German medical commission	18 Dec 1947	Letter	How many doctors as perpetrators? [open question]	
Ivy	18 Aug 1949	'The Meaning of Medical Ethics Learned & Emphasized at The Nurnberg Trials'	100	
Nissen, Rudolf	1953 in Deutschen Rundschau		Small number of Nazi doctors with 100s of supporters	
Justice Sebring	1950s/60s	Law Lectures	200 [All atrocities]	
William L. Shirer	1960	Rise and Fall of the Third Reich, 1164	Less than 200 but known to 1000s of doctors	
Mitscherlich	1960	Medizin ohne Menschlichkeit, 13	350 [All atrocities]	
Proctor, Robert	1999	Nazi War on Cancer, 344n.4	Roughly 1,000 deaths	
Weindling, Villiez, Loewenau, Farron	2014	Database on victims of coerced experiments	265 [for coerced experiments/ research]	15,744 [minimum number] 4,201 killed



**Table 9** Number of experiments



Note: Long-running experiments are only given in the year they commenced. In 1945 the shoe track experiments (began in 1940) and the malaria experiments (began 1942) still ran.

# NOTES

## Preface

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## Chapter 1 Exploring experiments

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- 3 UNOG SOA 417/3/01 Iwan Ageew file, statement relating to compensation request of 1951, see letter from Ageew to Egon Schwelb 15 October 1951.
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- 10 My thanks to Volker Roelcke for a listing of dissertations from the University of Giessen.
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## Chapter 3 On the slippery slope: From eugenics to experiments

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## Chapter 8 Experiments and extermination

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