



Not a Slippery Slope or Sudden Subversion: German Medicine and National Socialism in 1933

Hartmut M. Hanauske-Abel, MD

The history of medicine this century is darkened by the downfall of the German medical profession, exposed during the doctors' trial at Nuremberg in 1946. Relying largely on documents published during 1933 in German medical journals, this paper examines two widely accepted notions of those events, metaphorically termed "slippery slope" and "sudden subversion." The first connotes a gradual slide over infinitesimal steps until, suddenly, all footing is lost; the second conveys forced take over of the profession's leadership and values. Both concepts imply that the medical profession itself became the victim of circumstances. The slippery slope concept is a prominent figure of argument in the current debate on bioethics. The evidence presented here, however, strongly suggests that the German medical community set its own course in 1933. In some respects this course even out paced the new government, which had to rein in the profession's eager pursuit of enforced eugenic sterilizations. In 1933 the convergence of political, scientific, and economic forces dramatically changed the relationship between the medical community and the government. That same convergence is occurring again and must be approached with great caution if medicine is to remain focused on the preservation of physical and medical integrity. M&GS 1996;3:A5

Die apokalyptische Ansicht der Welt ist eigentlich die, daß sich die Dinge nicht wiederholen [1]. -- Ludwig Wittgenstein

The apocalyptic view of the world quintessentially is one in which events do not reoccur." The notion that something will not happen again prepares the

ground for cataclysmic re-enactments. In 1946, the year Wittgenstein scrawled this idea into his notebook, leading civilian and military representatives of German medicine were indicted at Nuremberg for crimes against humanity. Among them were assistant and tenured professors; clinic directors and the personal physician of the chancellor; the head of the German Red Cross; the highest ranking physician of the army and of the air force; and biomedical researchers employed by the pharmaceutical industry, the military, and universities. Some of Germany's top physicians killed themselves before interrogation or indictment. Among them was the highest representative of

At the time of publication HMH-A was assistant professor of pediatrics and head of the Matrix Biology Laboratory, Department of Pediatrics, Cornell University Medical College-The New York Hospital.

© Copyright 1996 Medicine & Global Survival

Germany's medical profession, Dr. L. Conti; the rector of the Christian Albrecht University of Kiel, Professor E. Holzlohner; and the director of the I Medical Clinic of the University of Vienna, Professor H. Eppinger, still renowned and honored as one of the pioneers of hepatology.

To this very day the dimensions and implications of the doctors' trial are hard to grasp, particularly for the German medical community. Even at the international level the prevalent concepts on "Nazi medicine" and "Nazi experiments" have as their essence "daß sich die Dinge nicht wiederholen," that such events will not happen again. The use of the very term "Nazi" implies historical uniqueness, designates a chapter closed and finalized, and intimates that those involved had been "Nazis," who, disguised as doctors, gained control and then executed their ideology. "It is difficult to believe that such . . . killing . . . could occur again" [2].

Slippery Slope Concept

Outside Germany the prevalent concept on Nazi medicine is often expressly summed up by the slippery slope concept [3], first formulated by Professor L. Alexander, a consultant to the United States chief counsel for war crimes during the doctors' trial. "Whatever proportions these crimes finally assumed, it became evident to all who investigated them that they had started from small beginnings. The beginnings at first were merely a subtle shift in emphasis in the basic attitude of physicians. It started with the acceptance of the attitude . . . that there is such a thing as life not worthy to be lived. . . . Gradually the sphere of those to be included in this category was enlarged to encompass the socially unproductive, the ideologically unwanted, the racially unwanted and finally all non-Germans. . . . It is, therefore, this subtle shift in emphasis of the physicians' attitude that one must thoroughly investigate" [4]. This slippery slope argument, often with explicit reference to "Nazi medicine," has evolved into a prominent element of the current debate on bioethics [5,6]. According to this concept the events that led to the Nuremberg trial began like a slide on an incline, one event leading to another until eventually things got out of hand, balance was lost, an accident occurred, and people were hurt. The concept of "snowballing involvement" [7] loaded with the seductively a historic imagery of automatism and avalanche, dilutes accountability. After all, sooner or later slides happen on slippery slopes and then progress with inherent relentlessness, ever more accelerating, and hardly checked by individual movements or voluntary decisions.

Sudden Subversion Concept

German medicine was "raped" The slippery slope argument dovetails with the "sudden subversion" concept, prevalent inside Germany and for decades aggressively promoted as the official view by the Chamber of Physicians. This powerful monopoly organization requires membership of every medical doctor and exercises immense regulatory and oversight functions. According to the sudden subversion concept "the new masters materialized overnight" [8] and then, in an act of rape, subjugated German medicine, which thus became Hitler's first and most immediate victim. To quote the current president of the chamber, Dr. K. Vilmar: "When the physicians were able to see clearly... it was too late to do anything" [9].

This concept of sudden subversion, or rape, was first promulgated by both consultants to the United States chief counsel for war crimes during the doctors' trial, Professor Alexander and Professor A C Ivy. "Nazi propaganda was highly effective in perverting public opinion and public conscience in a remarkably short time. In the medical profession this expressed itself in a rapid decline in standards of professional ethics" [4]. "The world now knows that the Nazis during the recent war used human beings without their consent as experimental subjects," wrote Professor Ivy, and he pinpointed as those responsible Chancellor Hitler and his Minister for Popular Enlightenment Dr. J. Goebbels, "the man whose false propaganda and racial views resulted in the most wanton torture and destruction of human beings in the history of the human race" [10]. These pronouncements by two expert witnesses at the Nuremberg trial are so severely flawed by lack of actual evidence that they have not been repeated by German advocates of the sudden subversion concept. Instead, they increase the number of those involved in the assault from just two individuals to, in the words of Dr. Vilmar, "at the very best 400" [9] without, however, specifying any criterion for arriving at this number or presenting a list of names for verification.

The Spirit of Enlightened Amnesia

The slippery slope and sudden subversion concepts have had a notable effect on the formation of national and international consciousness. Over the years it became an integral part of public discourse and even an accepted academic exercise to invoke "lessons learnt" [11] or "Nazi experiments, which were non-therapeutic" [2] without referencing even a single historical document, to psychologize and parade perpetrators without precisely naming them [12] -- indeed, to define them as the actual victims and out-

right reinvent the past [9]. In this investigation these two influential concepts are contrasted with excerpts of articles published primarily during 1933, covering the period just before and after the inauguration of the new administration. This material, though restricted to a brief period, contains factual evidence that the concepts of a slippery slope and sudden subversion are not adequate to describe recorded events correctly. In that case consideration of a novel concept may be in order.

Present Study: Compilation of Documents

From original publications in German and English, which until now have received little or no attention by scholars or the public, three sets of documents were compiled. The three sets covered events in politics, science, and economics, terms applied here according to their broad contemporary use, which often entails overlap. Each document set is centered on 1933, structured chronologically, and extensively referenced in an effort to provide practical verification and inspire future research. Texts quoted in each document set were chosen for their representativeness, the quoted excerpts functioning as a concise synopsis. Personal bias is apt to affect the quality of such a document selection, and so is translation, which itself implies interest and thus partiality. In this study a dedicated effort was made to address both sources of bias.

Most of the referenced publications are from the leading German medical journals, which were read by the vast majority of the nation's then 52,518 physicians [26] and often printed in prominent layout. More than half of the documents quoted were chosen from *Deutsches Ärzteblatt*, today still the most respected and widely read platform for continuous medical education and professional politics in Germany. By contrast, only one citation is from the still prestigious *Munchener Medizinische Wochenschrift*. In the early 1930s that journal aggressively promoted nationalistic, anti-Semitic, and eugenic ideas in central Europe's medical communities to such a degree that in 1935 Czechoslovakia categorized it as a fascist magazine and banned its distribution [27]. All material from National Socialist medical journals was excluded to avoid distorting the selection, though these journals were well received in the profession and printed in large numbers (for example, during 1934 *Ziel und Weg* had a weekly circulation of 16,000) [28,29].

In 1986 the German Chamber of Physicians and its various branches acknowledged that they had "unfortunately"

destroyed potentially embarrassing documents relating to their collusion with the Hitler administration [13]. Thus one of the few remaining ways to reconstruct the deliberations and actions of the representatives of the German medical profession during the spring and summer of 1933 is by hand searching the German medical journals of that year. Having been collected in libraries throughout Germany and the world, they are today the possession and inheritance of all physicians. Through close reading of these journals it was possible to identify pivotal passages in all three categories of interest, and for the first time these passages are printed in English. Their translation was by the distinguished British biophysicist and translator Professor J. W. Boag [30,31]. Only occasionally did the author need to correct a translation in the interest of precision. Even with the most sensible effort, however, the language of Winston Churchill remains too innocent to convey the penumbra and pandemonium of the German originals. innocent to convey the penumbra and pandemonium of the German originals. innocent to convey the penumbra and pandemonium of the German originals.

Document Set 1: The Political Arena

On 30 January 1933 the National Socialist Adolf Hitler is appointed chancellor by Reich President Paul von Hindenburg [32,33].

On 5 March elections for the new parliament are held in an atmosphere of intimidation, the National Socialists using every means at their disposal to cripple the electioneering of other parties and silence opposition voices. Despite these efforts they receive only 43.9% of the popular vote and declare the result a grand victory [32,33].

On 12 March Dr. K. Haedenkamp writes:

"The time for a calm and continuous development has come at last. The overthrow of party politics has opened the way for genuine statesmanship. The opposition has no possibility of overturning the plans of the Reich government. The parliamentary methods of the period following the first world war have suffered a decisive defeat, the horse trading of the political parties is at an end" [34].

Dr. Haedenkamp is executive director of the Hartmannbund, one of the two largest German medical associations.

On 21 March the chancellor and the

Reich president open the session of the new parliament in the Garrison Church at Potsdam [32,33]. Dr. A. Stauder, the democratically elected president of the Hartmannbund and the Deutscher Ärztevereinsbund, the two largest German medical associations, meets "in intimate talks" on account of "the political revolution" with National Socialist colleagues in Munich [35,36]. He then telegraphs Hitler that

"the principal professional organizations in Germany gladly welcome the firm determination of the Government of National Renewal to build a true community of all ranks, professions, and classes, and they gladly place themselves at the service of this great patriotic task" [37].

On 24 March in Berlin, parliament -- surrounded by SA and SS troops and with 17% of its delegates under arrest or in hiding -- passes the Enabling Act promoted by the National Socialist fraction. The act grants dictatorial powers to the new administration. A quarter of the 94 Social Democrats who dare to vote against the act will be assassinated later [32,33,38]. In Nuremberg Dr. Stauder meets with National Socialist colleagues in an atmosphere of cordial understanding, and one of them, Dr. G. Wagner, is named "commissioner" of the Hartmannbund and the Deutscher Ärztevereinsbund [35,36].

On 30 March Dr. Stauder announces that "by voluntary agreement" [39] he will resign his position in favor of his National Socialist colleague Dr. Wagner. His proposal meets with "unanimous approval" [36]. Dr. Haedenkamp comments:

"Stauder gave an emphatic reminder of the hard labor which had to be performed in the past under a political system that was ruinous to us all. The meeting unanimously approved the actions that had been taken, and responded with lively enthusiasm to the plans promulgated by the chairman of the medical associations" [35].

On 5 April the chancellor receives Dr. Stauder and sets out his aims [40]. A week later Deutsches Ärzteblatt announces on its title page Hitler's

"intentions for cleansing of the nation and particularly the intellectual elite from foreign influence and contamination by alien races. He emphasized Jewish intellectuals must soon be eliminated from the cultural and spiri-

tual life of Germany so that the nation's natural aspiration towards genuinely Germanic authority could be satisfied. . . . Even the United States was not at all willing to open now the doors for any Jews purportedly 'fleeing' from Germany" [39].

Hitler states:

"The measures for racial hygiene that are now being implemented may show their full effect only after centuries. What we have to do today is build a firm foundation for the genetic development of the nation. German physicians are called upon to participate in this work through their scientific research, through their far-reaching education of the population, and through their practical assistance" [39].

Dr. Stauder assures the chancellor a few days later by telegram of "refreshed determination to collaborate in the assigned field of national health" [41].

On 8 April in a unanimous declaration

"the Prussian Chamber of Physicians at its first meeting after the national revolution gladly declares its readiness to place all its energies and experience at the service of the Government of National Resurrection, which it salutes with joy and gratitude. . . . As we think back over the past 15 years [of the Weimar Republic] we recognize that none of us is likely to shed a single tear for the democratic government that now has passed into history. Like the great majority of German physicians, we all rejected, as much as this was possible with the means at our disposal, the basic principles of that government, and we opposed its policy concerning the health service" [42].

On 18 April, to celebrate the forthcoming birthday of the newly inaugurated chancellor, the German Society for Internal Medicine, holding its 45th congress in Wiesbaden,

"sends to the Führer of the New Germany their most sincere congratulations and their genuine admiration. As German physicians we see that our principal task is to work for the health of the nation with all our strength through research and scientific developments. As Germans we place our-

selves gladly in the service of all the endeavors directed towards the national and moral advancement of our people" [43].

On 19 April the German Society for Surgery also telegraphs a homage to Chancellor Hitler, and at its 57th meeting in Berlin meets under the "Symbol of the New Germany" [43] -- the swastika of the National Socialists.

On 24 June Dr. Haedenkamp summarizes:

"A new era, new tasks and new goals are replacing those of yesterday. Whatever is worthy of preservation shall be preserved, whatever is obsolete shall be cast aside. In the future we shall be guided by the strong will of authoritarian leadership, which has received its supremacy from the new State. To serve this State must be the sole objective of the medical profession. We are aware of the duties that we have to fulfil on its behalf. Insofar as we carry them out, we shall earn the right to have our work respected, and in this State occupy the position that we must claim so as to fulfil our tasks" [44].

By July 26,700 people are in "protective custody" [38]. By the end of 1933 several dozen concentration camps are operating as legal institutions, among them Dachau and Sachsenhausen [32,45], and lucrative positions for doctors in these institutions are advertised in medical journals. Physicians certify on government forms that tortured prisoners are in excellent health, that emaciated inmates could work if discharged, that natural causes led to death in detention [46-48]. Within short order physicians falsify the medical records of victims and suppress physical findings of torture [49]. records of victims and suppress physical findings of torture [49]. records of victims and suppress physical findings of torture [49].

Document Set 2: The Scientific Arena

In August 1932 the third international eugenics congress meets in New York and elects as its president Professor Ernst Rudin [50], director of the Kaiser-Wilhelm Institute of Psychiatry in Munich, Germany's most renowned institution researching the genetics of mental and central nervous system diseases. This honor is symbolic for the worldwide impeccable academic reputation and scientific excellence of German medicine. Eugenics is conceived as a biological meta-

science of man, combining distinctly different disciplines like population statistics, genetics, anthropology, psychometric analysis, even history and religion into a form of preventive medicine that endeavors to define and eradicate inherited illnesses. The social impact of genetic information is the focus of eugenics, also termed "Rassen hygiene" -- "racial hygiene" [51].

In November 1932 the Hartmannbund and the Deutscher Ärztevereinsbund, send a petition to the ministry of the interior of the Weimar Republic:

"with the request that it should draw up as soon as possible a national law which would permit and regulate sterilization on eugenic grounds. Reduced reproduction of persons carrying mental or physical handicaps of genetic origin must be achieved in order to guarantee the integrity of the population's gene pool" [52].

In January 1933 Deutsches Ärzteblatt declares that with the venue for the next national meeting still undecided one "main theme" would be "eugenic questions." Its title page announces a nationwide competition for the best research paper on this subject: "In what ways can general practitioners take part in genetic and eugenic investigations or in the acquisition of human specimens" [53]?

In March the Deutscher Ärztevereinsbund announces that it will finance "a central promotional effort of the German medical profession" and to that end establishes an "Education Office for Population Politics and Racial Improvement" [54].

In June Deutsches Ärzteblatt on its title page explains that the central promotional organization of physicians and its "Education Office"

"have the purpose of enhancing the idea of racial improvement among physicians and within the population. In doing so the medical profession has unselfishly devoted its services and resources to the goal of protecting the German nation from biogenetic degeneration. Beginning with general hygiene and the fight against infectious diseases, the development of public health leads from social medicine to racial hygiene. One recognizes a development which in logical manner proceeds from affecting the population through just external means to caring for its internal core and very substance, its genetic composition. The medical profession has a special responsibility to work within the

framework of the state on the tasks posed by population politics and racial improvement" [55].

The ministry of the interior establishes an advisory panel of experts to assist in the conception and rapid formulation of eugenic legislation and names Professor Rudin as panel chairman [50]. names Professor Rudin as panel chairman [50]. names Professor Rudin as panel chairman [50].

Guardian of Genetic Integrity

On 1 July Dr. Haedenkamp, as editor of the *Deutsches Ärzteblatt*, has the journal restart its issue numbers and advance its volume numbers to set it apart from the past and mark the new beginning. He proclaims:

"All that is German and genuine, all that embodies German style and German nature, all that is of German blood and German descent, all this alone can be the bearer of the German future. Our characteristic features have in the past been overlaid or mixed with alien features, often indeed overgrown and suffocated by them. Self renewal is possible only if the worth of one's own genetic composition is recognized. . . . Without a profoundly alarming awareness of the vulnerability and impending degeneration of our genetic composition no national recovery can be imagined. The physician has a duty to extend this knowledge and to deepen this awareness. Never before was the medical profession so intimately linked with the wisdom and the aims of the State as today. All the more joyfully must the profession welcome this extension of its duties and the challenge to fulfill its true vocation" [56].

On 14 July the new administration proclaims the Sterilization Act, entitled "Law for the Prevention of Genetically Diseased Descendants." Paragraph 12 instructs that the mutilating operation "must be performed even against the will of the person to be sterilized. The attending surgeon must request any necessary assistance from the police authority. If other measures are insufficient it is permissible to use direct force." Insurance companies and "the one who has been steril-

ized" are to be billed for the operation. The law establishes genetic health and appellate genetic health courts, which are attached to civil courts and presided over by a lawyer and two doctors, one of whom is an expert in medical genetics. The law specifies a catalogue of "genetic illnesses" and lists psychiatric indications and alcoholism, among others. Physicians, registering every case of "genetic illness" among their patients, just like they register births, deaths, or venereal diseases, cannot withhold any information and must comply with all procedural requests. They identify patients to the genetic health courts for adjudicating the sterilization act and are not bound to disclose the submitted information to these patients. Genetic health courts have subpoena power; their proceedings are secret-to preserve patient confidentiality and privacy.

Also on 14 July the president of the Kaiser-Wilhelm Society, Professor Max Planck, sends a memorandum to the minister of the interior, which includes the passage: "Herr Reichsminister, I am honored to most humbly inform you that the Kaiser-Wilhelm Society for the Advancement of Sciences is willing to systematically serve the Reich in all aspects pertinent to the research on racial hygiene" [50]. To that end Professor Planck has appointed a special commission, which includes Professor Rudin.

On 29 July *Deutsches Ärzteblatt* reprints the entire Sterilization Act and comments:

"Since sterilization is the only safe method to prevent the inheritance of mental diseases and serious genetic disorders, the law must be looked upon as an expression of loving care for the coming generations, and as an act of altruism. The elimination of defective genes is not of itself sufficient to keep our nation healthy and energetic, for this purging of the common gene pool must be complemented by positive population measures" [57].

Professor Rudin coauthors the medical segment of an interpretative commentary, which all physicians are required to purchase at a special low price of 3 Reichsmarks and which contains a detailed addendum on surgical procedures for sterilizing males and females written by the nation's leading authorities in reproductive medicine [29].

On 19 August *Deutsches Ärzteblatt*, asserting that "every doctor must be a genetic doctor," publishes the first article on this topic, entitled "The physician and genetic improvement" by Professor F. Pommel. Key phrases are "extermination of life not worth living," "legally enforced sterilizations," "creation of a new, biologically based nobility," and "the goal of breeding in the interest of the race" [58]. As part of eugenic considerations "extermination of life not worth living" is thus introduced as a legitimate part of continuing medical education and becomes a standard technical term.

On 16 September the *Journal of the American Medical Association* reports that Professor Rudin's institute "received a bequest of \$1,000,000 . . . as a culmination of many previous gifts" [59].

Engineers of Genetic Improvement

On 21 December a report on the front page of the *New York Times* estimates "400,000 Germans to be sterilized" [60]. The article states that the program could incur expenditure of 14 million Reichsmarks but would save the national economy the enormous costs of providing futile care for hereditary diseases, liberating up to 1 billion Reichsmarks annually. "In no country of the world is eugenics more active as an applied science than in Germany. . . . Germany is the first of the great nations to make direct practical use of eugenics" [61].

By 1937 the consequences of the medical community's zealous activities alarm Dr. Wagner. He notices in the population "an often almost psychotic fear to get under the wheels of this law." He addresses a memorandum to Chancellor Hitler in which he protests "the sterilization of entire families whom providence did not give the chance to receive the degree of formal schooling that is required to pass the intelligence tests. . . . Science has to remain the servant of our political principles and intentions." Within a year the "Nazis" have reined in the activities of the medical community [29,50].

Expurgators of Genetic Ballast

In 1939 eugenic sterilizations of patients come to a halt. The T4 euthanasia program is instituted, a nationwide, centralized, and peer reviewed program to murder adult and paediatric patients clinically classified as futile or terminal cases [62]. The program is geared towards economic performance in the health-care market, improvement of institutional and national revenues, and cost efficient utilization of limited resources. In addition, the T4 organization, like any other

health care provider, bills for the medical and health care related services it renders to covered persons. The fee and reimbursement structure implemented by H-J. Becker, its senior fiscal administrator, annually generates a net operative surplus in the range of millions of Reichsmarks [65]. The practical experience obtained in the killing hospitals of T4 provides the core for the annihilation technology of the death camps, often implemented by the same technical and medical personnel [62,64,66].

On a large scale now the medical community continues its efforts to "take part in the acquisition of human specimens" [53] from the plethora of "material" produced by the killing hospitals, death camps, and executions to serve teaching and research [62]. From 1933 to 1945 the Eberhard Karl University in Tübingen alone receives 1,077 corpses from executions [67,68]. In the words of Professor J. Hallervorden, the eminent neuropathologist:

"I heard that they were going to do that and so I went up to 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.' I gave them fixatives, jars, and boxes, and instructions for removing and fixing the brains, and they came bringing them like the delivery van from the furniture company. . . . There was wonderful material among these brains, beautiful mental detectives. . . . I accepted these brains of course. Where they came from and how they came to me was really none of my business" [69,70].

Between 1940 and 1944 Professor Hallervorden obtains at least 697 brains from one killing hospital [71].

During the war physicians publish the results of such research [16], hardly concealing the facts and often including "terminal experiments" such as the lethal cold immersion experiments conducted at Dachau, editorialized by Germany's leading surgeon, Professor E. Gohrband [72]. After the war physicians previously involved in "the acquisition of human specimens" and now living in either German state continue to publish numerous papers utilizing these specimens [15,69,73]. As late as 1985 research originating in Germany is contaminated by the use of these specimens [74,75]. In 1989 such specimens are buried by some reputed German

universities and national research institutes [71,76-78]. research institutes [71,76-78]. research institutes [71,76-78].

Document Set 3: The Economic Arena

From 1928 to 1932 Germany's gross national product decreases by at least 25% as a result of the great depression, a decline further aggravated by payment of substantial reparations under the Versailles Treaty. Unemployment rises from 0.75 million in mid-1928 to over 6 million in early 1932. The per capita tax payment declines by 41% and the average annual taxable income of physicians by 34% [32,50].

In 1933 about 17% of all physicians in Germany are classified as "Jewish"; there is a similar proportion among physicians in private practice certified to treat insured patients [26]. Larger cities have higher proportions of Jewish physicians (for example, 40-50% of all physicians in Berlin were Jews) [26,79]. To be Jewish the *Deutsches Ärzteblatt* stipulates that "it suffices if one parent or one grandparent is non-Aryan" [80]. In early March 1933, within weeks of the inauguration of the new, openly anti-Semitic administration, Jewish physicians in hospitals in Berlin and Brausla (now Wroclaw) and Jewish school doctors in Bavaria are summarily dismissed. In the Baden region Jewish doctors are no longer allowed to treat insured patients, though still eligible to do so by law [26]. On 23 March the Hartmannbund and the *Deutscher Ärztevereinsbund* decide to take steps against their Jewish members—steps effective throughout the nation and publicly announced in *Deutsches Ärzteblatt* [36]. Dr. A. Stauder, the highest and democratically elected representative of all physicians, advises insurance companies "as soon as possible to replace Jewish doctors enrolled in their programs" [81]. He urges his Jewish colleagues within the professional organizations to resign immediately from any office they may hold by election or appointment.

On 5 April the chancellor receives Dr. Stauder. A week later, in its title page coverage of the event, *Deutsches Ärzteblatt* explains:

"The Chancellor recognized the economic distress and hardship often existing in the medical community and especially among its young doctors. By energetic actions to remove racially alien elements, employment opportunities and a space to exist must be generated for these young Germans" [39].

Either a Jew or a Colleague

On 6 April *Deutsches Ärzteblatt* reports that in an act of self purification the removal of Jewish colleagues from councils and committees of the professional organizations had been achieved without difficulty and was in general completed. Notice is given for the first time that "Germans are to be treated by Germans only" [36]. On 8 April Dr. Haedenkamp publishes a detailed list of the measures directed against Jewish colleagues, which "have been implemented in the meantime." He remarks that "just for the time being, we are still bound by the existing law" [35]. Accordingly, "care must be taken" not only in excluding Jewish physicians from the professional organizations but in "eliminating" them from any and all professional functions in society. He states: "In many parts of the country large numbers of Jewish doctors have been preliminarily excluded from treating insured patients" [35]. And: "The new regulations about the eligibility to practice in private praxis and to treat insured patients primarily derive from the intention to implement an employment enhancing strategy within the medical profession itself" [82]. Also at that time the German Society for Internal Medicine denies one of its most renowned officers, Professor Leopold Lichtwitz, the chair of its 45th congress in Wiesbaden on account of his being "non-Aryan"; just one year earlier the society had elected him as congress chairman [83].

Only on 22 April, four weeks after the unilateral action of the medical associations, does the newly inaugurated minister of labor issue the first state decree directed against non-Aryan doctors. They can no longer participate in the treatment of insured patients and would not receive new licenses. The text of the decree, formulated with considerable help from Dr. Haedenkamp, administratively assigned to the ministry [40,43], is announced in several medical journals [84,85]. Dr. Haedenkamp's public commentary is: "The legally binding licensing regulations now are precisely formulated with the intention to eliminate non-Aryan physicians" [86]. Organizational oversight for the implementation of the "Entjudung" is assigned to the Hartmannbund -- executive director Dr. Haedenkamp.

On 20 May the Journal of the American Medical Association prints translations of the decrees to decertify and delicense non-Aryan physicians [87]. Also in May Lord Rutherford, Lord Rayleigh, Sir William Bragg, Professor J. S. Haldane, and other eminent British scientists sign an appeal publicly protesting that German universities are compelling scholars and teachers to relinquish

their posts and "on the grounds of religion, political opinion or race are unable to carry on their work in their own country." That protest, supported by the Royal Society, specifies the names of 164 scholars, mostly distinguished professors, who were expelled between 4 April and 15 May [88]. By October the list includes more than 1,000 names, and Lord Rutherford presides over a protest meeting at London's Albert Hall, which raises \$500,000 to support the expelled scholars. Professor Albert Einstein,

"who spoke in English, expressed his deep sense of gratitude. . . . A historian delivering judgment at some future period, when Europe was politically and economically united, would be able to say that . . . the liberty and honor of this continent were saved by its Western nations" [89].

On 23 June the German minister of labor issues a decree that severely limits the professional activity of any non-Aryan physician in the health care system even if an extraordinary license had been granted [90]. As a result of this set of decrees the proportion of Jewish doctors certified to treat insured patients drops by 31% (from 5,308 to 3,641) in just one year [26,79]. The positions vacated in the medical system were filled preferentially by young doctors loyal to the party [26,28].

On 15 July the first full article directed exclusively against "The Jewry" appears in *Deutsches Ärzteblatt* and asks: "What measures are best suited to prevent its further encroachment, or to reclaim the positions it has usurped" [91]?

On 21 July an agreement between the key medical association and the insurance industry is announced "that in the future, only Aryan physicians will be employed, and that non-Aryan physicians will be reimbursed only for treating non-Aryan patients" [92].

Permanent Impact

On 29 July *Deutsches Ärzteblatt* publishes on its title page the following decree:

"It is forbidden: (1) that doctors of German origin arrange coverage with doctors of an alien race; (2) that doctors of German origin refer patients to, or accept care for patients of, doctors of an alien race; (3) that doctors of German origin consult for, or invite consults from, doctors of an alien race. Objections are excluded" [93].

A surging wave of suicides among des-

perate Jewish doctors claims some of Germany's leading physician-scientists, among them Professor Leo Langstein, "one of the leaders in modern pediatrics," whose "sudden death" is deplored by the *Journal of the American Medical Association* [94].

In the summer of 1933 Jewish physicians are ostracized by their colleagues, isolated from their patients, and legally excluded from society. This expulsion, designed as "an employment enhancing strategy within the medical profession itself," coincides with an 11.3% increase in the income of physicians within the next 12 months. By 1935 doctors' average taxable income has increased by 25%. By the end of 1933,

"at the beginning of the winter semester, a notice was posted at the University of Berlin concerning the admission of non-Aryans, which was to the effect that all those who have not been excluded will find in their record book a special entry concerning their admission to further study. The non-Aryan physicians receive a yellow identification card, and the Aryans a gray one. . . . Non-Aryan medical students cannot count on receiving a license to practice medicine" [95].

In 1933 an estimated 9000 doctors in Germany are thought to be categorized as non-Aryan [26,28]. By 1938 only some 285 of these "mosaic sick treaters," as they will then officially be termed, will remain, relegated to treating only Jews. It has been estimated [78] that of all non-Aryan German colleagues practicing in January 1933, at least 5% will perish of suicide, at least 25% will be murdered, and those remaining will survive only by taking refuge on virtually every continent on earth.

In the summer of 1996 fewer than two of every 1,000 German doctors are Jewish. "As far as the medical profession [is] concerned, Nazi policy had been effective; Germany [is] practically judenrein" [78].

Discussion

These three document sets, relying on leading German medical journals from late 1932 to late 1933, were compiled to indicate conceptions and intentions within the medical community and to hint at ensuing events. From the findings a strong argument can be made that the medical crimes against humanity presented at the doctors' trial in 1946 were the result of changes in German medicine that did not evolve gradually over several years but happened largely within a distinctly brief period during early to mid-

1933. Changes which today are interpreted as causing the downfall of the German medical community were at that time warmly welcomed by the widest segments of that highly educated biomedical and scientific elite. They derived from the active and deliberate contributions of its nationally and internationally renowned representatives, exemplified by Dr. Haedenkamp's "To serve this State must be the sole objective of the medical profession" and Professor Planck's "The Kaiser-Wilhelm Society for the Advancement of Sciences is willing to systematically serve the Reich." The changes further resulted in immediate economic benefits for physicians, rises in incomes significantly exceeding those of both the legal profession and the general population.

The documentation presented here suggests that this transformation of German medicine cannot adequately be described by the metaphor of slippery slope or sudden subversion. The evidence for a "snowballing involvement" [7] of physicians in 1933 "that .. had started from small beginnings" [4] is scant at best. All the community's voluntary decisions, as documented here, were intended to accelerate events to the points of willing self submission under the National Socialists, outperforming even their eugenic intentions, and out pacing even Hitler's anti-Semitic designs.

Considered individually or in combination, the document sets do not support the notion that German medicine was dishonored in just the first act of rape by "at the very best 400" Nazis [9]. Nor do they support the concept of a sudden subversion followed later by countless other atrocities. All the luminaries of the profession, its associations, and the biomedical community at large were able to act rationally right from the start, and all appeared thrilled not to have it any other way. The statements, programs, and actions displayed in these documents do not tell the story of physicians dragged against their wishes into acts they did not like, or of physicians taking steps along a path on which they did not wish to tread. Hinting at underlying currents, this essay can only state the facts. It is for historians to analyze how deep and distant were their roots.

The annals of the downfall of German medicine are replete with the names of internationally renowned scientists like Professors Planck, Rudin, and Hallervorden [96,97] and clinicians like Harvard-trained Professor G. Schaltenbrand [98], who conducted neuroimmunological experiments on uninformed subjects -- not at a concentration camp but at the Julius Maximilian University of Wurzburg [98]. The image of Nazi hacks

and SS quacks engaged in lethal experiments in the seclusion of death camps is widely held to epitomize the type of doctor on trial in Nuremberg. But it is a false image--a stereotype constructed from incomplete data. The direct involvement of people representing the highest professional standards, the international connections, and the financial support that German medicine and science had acquired at that time make the rapidity and extent of the transformation in the summer of 1933 all the more remarkable.

The Lesson of Convergence

The new administration took immediate legislative actions affecting the entire biomedical community. For example, it ceased to enforce the extraordinarily advanced legislation of the Weimar Republic on human experimentation [99,100] while at the same time implementing a most stringent and research restricting law on animal protection [101,102]. More consequential than those measures, however, was the convergence of otherwise separate forces preexistent in German society and its medical community. Document set 1 evidences the merger of professional politics with the interest of government. Document set 2 shows that medicine and science formed a unity with state proclaimed goals, becoming their applied format, even their executioners. Document set 3 illustrates the coalition forged between the professions' economic desires and a prevalent doctrine -- anti-Semitism.

In this interpretation the activities of individuals like Stauder, Rudin, Planck, and Haedenkamp reflect aspects of the convergence of previously separate political, scientific, and economic forces into one impulse that dramatically changes the relationship between the biomedical community and the government. With the formation of this convergence driven impulse a transition occurs, so immediate and profound that it requires one to break loose from the idea of continuous development. There is an abrupt shift from one state to another. Instead of steady change there is a suddenly altered condition; instead of a series of intermittent states there is leapfrog transition. These observations are all qualitative descriptors for a quantum jump. A similar pattern -- the convergence of otherwise separate political, scientific, and economic forces into one impulse that dramatically changes the relation between physicians and government -- is also discernible in two large scale studies classified as unethical and conducted under very different circumstances -- namely, the Tuskegee syphilis study [107] and the human radiation experiments [108]. Though both were spon-

sored by the United States government, there is general consensus that the United States government subsequently pursued comprehensive and honest investigations in either case. The "subtle shift in emphasis of the physicians' attitude that one must thoroughly investigate" [4] in these cases, as in the German one, delineates an approach that tends to exclude the societal context in which medicine happens.

From 1932 to 1972 the state run Tuskegee study followed up 399 uninformed black men in Macon County, Alabama [107], diligently recording the spontaneous evolution of intentionally untreated syphilis and its lethal consequences. The state run nuclear experimentation on uninformed men and women, at times pregnant, were conducted at institutions throughout the United States [109,110,111]; included among other things the injection and ingestion of radioisotopes; and were classified in an internal memorandum as having "a little of the Buchenwald touch" [112]. "The Nazi experiments had practically no effect on them because American officials tended to dismiss the German studies as isolated acts of deranged scientists-sheer madness that would never again be repeated" [107]. The notion "daß sich die Dinge nicht wiederholen" prepares the ground for cataclysmic re-enactments.

Contextual analysis of events during the summer of 1933 in Germany may not just improve an understanding of the past but may also help to assess the present and near future. Developments within medicine and society during the past decade, particularly in North America and Europe, may found another convergence of previously separate political, scientific, and economic forces. Biomedical progress, fiscal constraints, legal decisions, and government regulations are all closing in on the practice and teaching of medicine. These forces may not be as demonic as those in Germany in the summer of 1933, but only by approaching their next apparent alignment with great caution can we avert a conflagration.

Acknowledgments

This paper was written in honor of Dr. John Duncan Dawson (1946-1990). I am indebted to the following people, whose support and encouragement made the project possible: Professor J.W. Boag (Edinburgh, United Kingdom); and Dr. B.M. Cracchiolo (New Haven, Connecticut). Critical documents were generously provided by Dr. E.C. Wolff (Bethesda, Maryland); M. Roelen (Berlin); and Dr. S. Kolb (Nuremberg). Discussions with Professor M.H. Kater (Toronto) and the late Professor G. Mann

(Mainz) had a formative influence on the design and execution of the study.

References

1. Wittgenstein L. *Vermischte Bemerkungen*. Frankfurt: Suhrkamp. 1977:107.
2. Angell M. Editorial responsibility: protecting human rights by restricting publication of unethical research. In: Annas GJ, Grodin M A, eds. *The Nazi doctors and the Nuremberg code. Human rights inhuman experimentation*. New York: Oxford University Press. 1992:276-85.
3. Derr PG. Hadamar, Hippocrates, and the future of medicine: reflections on euthanasia and the history of German medicine. *Issues Law Med* 1989;4:487-95.
4. Alexander L. Medical science under dictatorship. *N Engl J Med* 1949;241:39-47.
5. Burgess JA. The great slippery-slope argument. *J Med Ethics* 1993;19:169-74.
6. Macklin R. Which way down the slippery slope? Nazi killing and euthanasia today. In: Caplan AL, ed. *When medicine went mad: bioethics and the holocaust*. Toronto: Humana Press. 1992:173-200.
7. Reichel W, Dyck AJ. Euthanasia: a contemporary moral quandary. *Lancet* 1989;ii :1321-3.
8. Jachertz N. Die neuen Herren kamen über Nacht. *Dtsch Ärztebl* 1983;80:23-6.
9. Vilmar K. Die "Vergangenheitsbewältigung" darf nichtkollektiv die Ärzte diffamieren. *Dtsch Ärztebl* 1987;84:C767-79.
10. Ivy AC. The history and ethics of the use of human subjects in medical experiments. *Science* 1948;108:1-5.
11. Angell M. Euthanasia. *N Engl J Med* 1988;319:1348-50.
12. Lifton RJ. *The Nazi doctors: medicalized killing and the psychology of genocide*. New York: Basic Books. 1986.
13. Kater MH. The burden of the past: problems of a modern historiography of physicians and medicine in Nazi Germany. *Ger Stud Rev* 1987;10:31-56.
14. Wuttke-Groneberg W (ed). *Medizin im Nationalsozialismus. Ein Arbeitsbuch*. Tübingen: Schwäbische Verlagsanstalt. 1980:380-4.
15. Hanauske-Abel HM. Die Unfähigkeit zu trauern: Erziehungszielfür junge deutsche Ärzte? *Rundbrief-Ärzte warnen vor dem Atomkrieg* 1987 Nov:25-44. Reprinted in: *Berliner Ärzte-Mitteilungsblatt der Kammer* 1988 Mar 3:136-62.
16. Hanauske-Abel HM. From Nazi holocaust to nuclear holocaust: a lesson to learn? *Lancet* 1986;ii:271-3.
17. Bleker J, Schmiedebach HP, Baader G, Hubenstorf M, Winau R, Sander S, et al. *Die Zeit* 1987 Nov 6:47.
18. Stock U. Zu diesem Text. *Die Zeit* 1987 Nov 6:46.

19. Medizin im "Dritten Reich." Cologne: Deutscher Ärzte-Verlag. 1993:1-244.
20. Ärzte unter Hitler: "Mission verraten." Der Spiegel 1988 Jan 18:76-80.
21. Halter H. "Die Mörder sind noch unter uns." Der Spiegel 1988 June 20:112-22.
22. Deutsche Ärzte protestieren. Die Zeit 1993 Jan 22:22.
23. Höchste Ethik. Der Spiegel 1993 Jan 25:195-6.
24. Leaning J. German doctors and their secrets. New York Times 1993 Feb 6:21.
25. "First, do no harm." The Washington Post 1993 Jan 23:A18.
26. Kummel WF. Die Ausschaltung rassistisch und politisch mißliebiger Ärzte. In: Kudlien F, ed. Ärzte im Nationalsozialismus Cologne: Kiepenheuer & Witsch. 1985:56-81.
27. Der Fall Gach und die deutsche Ärzteschaft. Int Arztl Bull 1935;2:94-6.
28. Kater MH. Doctors under Hitler. Chapel Hill: University of North Carolina Press. 1989.
29. Proctor RN. Racial hygiene. Medicine under the Nazis Cambridge: Harvard University Press. 1988:95-117.
30. Boag JW. The recombination correction for an ionisation chamber exposed to pulsed radiation in a "swept beam" technique. I. Theory. Phys Med Biol 1982;27:201-11.
31. Boag JW. Kapitza in Cambridge and Moscow. New York: Elsevier. 1990.
32. Holborn H. A history of modern Germany . Princeton: Princeton University Press. 1982.
33. Craig GA. Germany 1866-1945 . New York: Oxford University Press. 1980:534-637.
34. Haedenkamp K. Reform der Krankenversicherung? Arztl Mitt 1933;34:223-5.
35. Haedenkamp K. Die Gesamtvorstände zur Lage. Arztl Mitt 1933;34:309-12.
36. Bericht über die Sitzung des Geschäftsausschusses des Deutschen Ärztevereinsbundes am 2 April 1933 in Leipzig. Dtsch Ärztebl 1933;62:141-3.
37. Stauder A. An den Herrn Reichskanzler Adolf Hitler. Dtsch Ärztebl 1933;62:132.
38. Childs D. Germany since 1918. New York: Harper & Row. 1970:52-76.
39. Die Vertreter der Ärzteschaft beim Reichskanzler. Dtsch Ärztebl 1933;62:153-4.
40. Foreign Letters. The reorganization of the medical profession. JAMA 1933;100:1706.
41. Stauder A. Mitteilungen der Geschäftsstelle. Dtsch Ärztebl 1933;62:183.
42. Mitteilungen aus dem Arbeitsbereich der deutschen Ärztekammern. Dtsch Ärztebl 1933;62:225.
43. Tagesgeschichtliche Notizen/Kongress-und Vereins-Berichte. Med Klin 1933;29:594,628,691.
44. Haedenkamp K. Abschied von den "Ärztlichen Mitteilungen." Arztl Mitt 1933;34:512.
45. Gilbert M. The holocaust. A history of the Jews of Europe during the second world war . New York: H Holt and Co. 1985.
46. Hanauke-Abel H M. Osthofen: the terrain of denial. PSRQ 1991;1:127-37.
47. Valentin E. Die Krankenversorgung im Konzentrationslager. Int Arztl Bull 1936;3:57-9.
48. Krankenversorgung im Konzentrationslager. Int Arztl Bull 1937;4:82-3.
49. Die Zustände an der Deutschen Universität in Prag. Int Arztl Bull 1935;2:47.
50. Weingart P, Kroll J, Bayertz K. Rasse, Blut und Gene. Geschichte der Eugenik und Rassenhygiene in Deutschland. Frankfurt: Suhrkamp. 1988:188-561.
51. Weingart P. German eugenics between science and politics. Osiris 1989;5:260-82.
52. Ärztliche Rechtsfragen. Med Klin 1933;29:175.
53. Schneider H. Preisausschreiben des Deutschen Ärztevereinsbundes. Dtsch Ärztebl 1933;62:13.
54. Walder K. Aus der Sitzung des Vorstandes des Deutschen Ärztevereinsbundes. Dtsch Ärztebl 1933;62:217-8.
55. Walder K. Aufklärungsamt für Bevölkerungspolitik und Rassenpflege. Dtsch Ärztebl 1933;62:255-7.
56. Haedenkamp K. Das neue Deutsche Ärzteblatt. Dtsch Ärztebl 1933;63:6-8.
57. Das Gesetz zur Verhütung erbkranken Nachwuchses. Dtsch Ärztebl 1933;63:133-4.
58. Lommel F. Völkische Aufartung und Arzt. Dtsch Ärztebl 1933;63:221-4.
59. The German Eugenic Society. JAMA 1933;101:943.
60. Tolischus OD. 400,000 Germans to be sterilized. New York Times 1933 Dec 21:1.
61. German eugenics, 1934. Eugen News 1934;19:140-2.
62. Aktion T4. 1939-1940. Die "Euthanasie"-Zentrale in der Tiergartenstrabe 4 . Berlin: Edition Hentrich. 1987.
63. Medizin im Nationalsozialismus. Ein Arbeitsbuch. Tübingen: Schwabische Verlagsgesellschaft. 1980:25.
64. Klee E. "Euthanasie" im NS-Staat . Frankfurt: Fischer. 1983.
65. Klee E. Was sie taten-was sie wurden. Ärzte, Juristen und andere Beteiligte am Kranken-und Judenmord . Frankfurt: Fischer. 1986:78-80.
66. Von der Heilkunde zur Massentötung. Medizin im Nationalsozialismus. Heidelberg: Wunderhorn. 1990.
67. Seidelman WE. In memoriam: medicine's confrontation with evil. Hastings Cent Rep 1989;19:5-6.
68. Dickman S. Scandal over Nazi victims' corpses rocks universities. Nature 1989;337:195.
69. Muller-Hill B. Tödliche Wissenschaft. Die Aussonderung von Juden, Zigeunern, und Geisteskranken 1933-1945. Reinbek: Rowohlt. 1984.
70. Proctor RN. Nazi health and social policy.

- Simon Wiesenthal Cent Ann 1990;7:145-67.
71. Dickman S. Brain sections to be buried? Nature 1989;339:498.
 72. Gohrband E. Auskühlung. Zentralbl Chir 1943;70:1553-7.
 73. Aly G. Das Posener Tagebuch des Anatomen Hermann Voss. Beiträge zur Nationalsozialistischen Gesundheits-und Sozialpolitik 1987;4:14-66.
 74. Bogerts B. The brains of the Vogt collection. Arch Gen Psychiatry 1988;45:774.
 75. Gershon ES, Hoehe MR. Comment: on the deaths of Ernst and Klaus H. Arch Gen Psychiatry 1988;45:774-6.
 76. Dickman S. Laid to rest. Nature 1989;340:175.
 77. Peiffer J. Neuropathology in the Third Reich: memorial to those victims of National Socialist atrocities in Germany who were used by medical science. Brain Pathol 1991;1:125-31.
 78. Kater MH. Unresolved questions of German medicine and medical history in the past and present. Centr Eur History 1993;25:407-23.
 79. Hadrich J. Die nichtarischen Ärzte in Deutschland. Dtsch Ärztebl 1934;64:1245.
 80. Wagner G. Anordnungen des Kommissars. Dtsch Ärztebl 1933;63:218.
 81. Tagesgeschichtliche Notizen. Munch Med Wochenschr 1933;80:517.
 82. Haedenkamp K. Zulassung der Kriegsteilnehmer und der "Altapprobierten." Arztl Mitt 1933;34:417-8.
 83. Foreign Letters. The congress of internal medicine. JAMA 1933;100:1877-8.
 84. Neue Reichsgesetze. Dtsch Ärztebl 1933;62:195.
 85. Verordnung über die Zulassung von Ärzten zur Tätigkeit beider Krankenkassen. Arztl Mitt 1933;34:374-5.
 86. Haedenkamp K. Arztl Mitt 1933;34:375-7.
 87. Foreign Letters. Jewish physicians in Germany. JAMA 1933;100:1616.
 88. Foreign Letters. Assistance for professors displaced in Germany. JAMA 1933;100:2029-30.
 89. Foreign Letters. Aid for refugee scientists. JAMA 1933;101:1402.
 90. Eckel P. Standespolitische Neuerungen innerhalb der deutschen Ärzteschaft. Med Klin 1933;29:1228-9.
 91. Das Judentum in Deutschland. Dtsch Ärztebl 1933;63:75-6.
 92. Tagesgeschichtliche Notizen. Med Klin 1933;29:1032.
 93. Wagner G. Anordnungen des Kommissars. Dtsch Ärztebl 1933;63:131.
 94. Foreign Letters. Professor Langstein's death. JAMA 1933;101:295.
 95. Foreign Letters. Restrictions on the number of university students. JAMA 1933;102:710.
 96. Shevell MI. Racial hygiene, active euthanasia, and Julius Hallervorden. Neurology 1992;42:2214-9.
 97. Julius Hallervorden. Neurology 1993;43:1452-3.
 98. Shevell M I, Evans B K. The "Schaltenbrand experiment," Würzburg, 1940: scientific, historical, and ethical perspectives. Neurology 1994;44:350-6.
 99. Sass H-M. Reichsrundschreiben 1931: pre-Nuremberg German regulations concerning new therapy and human experimentation. J Med Philos 1983;8:99-111.
 100. Grodin MA. Historical origins of the Nuremberg code. In: Annas G J, Grodin MA, eds. The Nazi doctors and the Nuremberg code. Human rights and human experimentation. New York: Oxford University Press. 1992:121-44.
 101. Foreign Letters. New regulations concerning vivisection. JAMA 1933;101:1087.
 102. Foreign Letters. The law pertaining to the protection of animals. JAMA 1934;102:551-2.
 103. Medizin im Nationalsozialismus. Ein Arbeitsbuch Tübingen: Schwäbische Verlagsanstalt. 1980:347.
 104. Kater MH. The Nazi party. A social profile of members and leaders, 1919-1945. Cambridge: Harvard University Press. 1983:77.
 105. Monk R. Ludwig Wittgenstein. The duty of genius. New York: Penguin. 1990:394-433.
 106. Wittgenstein L. Cambridge letters. Oxford: Blackwell. 1995:293.
 107. Jones J H. Bad blood. The scandalous story of the Tuskegee experiment-when government scientists played God and science went mad. New York: Free Press-Collier Macmillan. 1981.
 108. The human radiation experiments. New York: Oxford University Press. 1996:1-656.
 109. McCally M, Cassel C, Kimball DG. US Government-sponsored radiation research on humans 1945-1975. Med Global Surv 1994;1:4-17.
 110. Faden R. The advisory committee on human radiation experiments. Reflections on a presidential commission. Hastings Cent Rep 1996;16:5-10.
 111. Buchanan A. Judging the past. The case of the human radiation experiments. Hastings Cent Rep 1996;26:25-30.
 112. Schneider K. 1950 Note warns about radiation test. New York Times 1993 Dec 28:1/A8.