**Appendix 4. The Hypoxia-experiments on Children at AMRI- Berlin.**

In 1993, Koch reported that six children aged 11-13 from the psychiatry clinic in Brandenburg-Goerden were tested in an altitude chamber using oxygen-reduced gas mixtures (mild hypoxia). We can assume that there was no informed consent. These tests were carried out at the Strughold directed Aeromedical Research Institute (AMRI) in Berlin on September 17, 1943 (A: 123).  The altitude was up to 6,000 m. The trial managers were in the chamber with the youths and they could add oxygen if required at any time. Seizures were not observed (B).

The biologist, Dr. Hans Nachtsheim, performed research during the war on epilepsy in cooperation with Dr. Ruhenstroth-Bauer from the KWI (Kaiser Wilhelm Institute) for Biochemistry. The director of this institute was Dr. Adolf Butenand, a Nobel Prize winner from 1939. About 150 experiments were performed on rabbits beginning in the spring of 1943 (B: 300). This research was sponsored by the “Reichsforschungsrat” (German Reich Research Council) and prioritized with the third highest urgency level. (D: 429). Use of the AMRI altitude chamber inducing epileptic seizures in animals (rabbits) had started in June 1943. Ruhenstroth-Bauer liaised with Wuhlgarten, who suggested to use children for the hypoxia experiments from the Goerden psychiatric clinic with its so-called “Forschungs- und Beobachtungsstation” (research and observation ward), connected close to Nazi´s euthanasia-program (C:247). OMR (Obermedizinalrat) Dr. Karl Brockhausen made 6 epileptic children available for the experiments at an altitude chamber of the AMRI on September 17, 1943 (A: 124, D: 432-3). The children were 11 to 13 years old and were exposed to an altitude up to 4,000 to 6,000 m. The experiments “failed”, as no seizure occurred (B:309; Letter of Nachtsheim, A: 125): Therefore, the researchers expressed a desire to use younger children (5-6 years old), an age not presently “available” in Goerden. There is no evidence that other human experiments were ever carried out.

The introduction of the 1944 article of Ruhenstroth-Bauer and Nachtsheim on animal experiments stated (E: 18): "For the experimentally working clinicians treating patients the methodological possibilities are always limited, as they should take the patients well-being into consideration. Only in exceptional cases, a researcher could dare in one patient a trial in the interests of future patients, whereof he cannot predict anything certain.”

Dr. Gerhard Ruhenstroth-Bauer stated in 2000 (G): “*Together with Professor Hans Nachtsheim, I carried out experiments with epileptic adolescents. I would like to stress that in every case Dr. Nachtsheim, a Luftwaffe doctor, and I went up into the vacuum chamber with the children. For each participant with nausea, immediately a supply of oxygen could be applied or the exam could be canceled. This did not occur in any case: on the contrary, the children talked almost cheerfully among themselves and also with Dr. Nachtsheim. Since no seizure occurred, we finished these experiments and had the impression that the problem concerning "oxygen deficiency in epileptic adolescents" was finished. Now, after more than 60 years, this assumption turned out to be wrong. In my correspondence with Mr. Klee I was made aware of the fact that the institution in Goerden represented an “euthanasia” institution. Understandably, this revelation shook me hard.”* However, the psychiatric wards were quite well known as questionable treating facilities. Though it is mentioned that no test subject was hurt, Beddies reports that in one test subject a facial cyanosis of the mucous membranes is mentioned as well as a mild dizziness (F: 240).

The medical historian, Von Schwerin, concludes: The experiments with the children from Goerden are not comparable with those of criminal medical experiments that are known mainly from the concentration camps where the death of the subjects participated was anticipated. These experimemts are rather an example of biomedical experimental practice on a daily basis. But the limits of this practice were being exceeded in National Socialism and the boundries stretched(B). Weindling named them “fremdnuetzige Forschung an nicht einwilligungsfaehigen Patienten” (research for the benefit of others on patients, who could not give an informed consent) (C: 251).

Dr. Strughold was the head of the institute providing the infrastructure (the AMRI altitude chamber) on September 17, 1943. He was not part of the experiments and did not use its results to our knowledge. The children were not harmed or seriously endangered according to the literature. However, these kinds of experiments were against the medical ethical understanding in Germany as published in 1931. There is no evidence that Strughold knew of, approved of or allowed the children experiments to take place at the AMRI, but it has been assumed. For this reason the termination of the scientific prize of the German Society for Aviation and Space Medicine (DGLRM) was a decision made in Germany in 2004.

Dr. Werner Noell wrote about the special physiology of the brain during anoxia in “German Aviation Medicine in World War II”, that was prepared under the auspices of the Surgeon General, U.S. Air Force in 1950. Based upon animal experiments, the state of recognition of anoxia physiology was written in the first article (H). His second article dealt with the human EEG during anoxia (I). Gremmler’s experiments on epileptic patients were also mentioned (Gremmler J. (1942), Nervenarzt, XV, 467). They “showed that their altitude tolerance did not differ markedly from that of normal people.” (I: 302). Kornmueller, Palme and Strughold had already performed investigations of anoxia at altitudes up to 7.500 m and published their results in 1941 (J). Notes on problematic human experiments on adults or children are not found in any of these sources.

A - Koch G. Human Genetics in my Time (Humangenetik und Neuro-Psychiatrie in meiner Zeit (1932-1978). Jahre der Entscheidung). Verlag Palm & Enke, Erlangen und Jena 1993.

B- Schwerin von A. Experimentalization of Humans (Experimentalisierung des Menschen. Der Genetiker Hans Nachtsheim und die vergleichende Erbpathologie 1920-1945). Wallstein Verlag, Goettingen2004.

C - Weindling P. Genetics and Human Experimentation in Germany, 1940-1950 (Genetik und Menschenversuche in Deutschland, 1940-1950). In: Schmuhl H.W. (Ed.). Rassenforschung am Kaiser-Wilhelm-Instituten vor und nach 1933. Wallstein, Goettingen 2003: 245-74.

D – Schmuhl H.-W. Crossing Borders. The KWI Institute for Anthropology, Human Heredity and Eugenics (Grenzüberschreitungen. Das Kaiser-Wilhelm-Institut für Anthropologie, menschliche Erblehre und Eugenik 1927-1945). Wallstein, Goettingen 2005.

E - Ruhenstroth-Bauer G and Nachtsheim H. Die Bedeutung des Sauerstoffmangels für die Auslösung des epileptischen Anfalls (The significance of oxagen deficiency as trigger for an seizure). Klin Wschr 23 (1944) 18-20

F - Beddies T. Kinder-“Euthansie” in Berlin-Brandenburg (Children-Euthanasia in Berlin-Brandenburg), in: Beddies T. and Huebner K. (Ed.). Documents regarding Psychiatrie in Nazi Germany (Dokumente zur Psychiastrie im Nationalsozialismus). Berlin 2003: 219-48.

G - Ruhenstroth-Bauer. Reader Letter „Experiments with Children“. Weekly newspaper Die Zeit 2000 No. 8. From www.zeit.de: 2000 No. 8.

H- Noell W. Special physiology of the brain during Anoxia. In : German Aviation Medicine Worls War II. Prepared under the auspices of the Surgeon General, U.S. Air Force. U.S. Government Printing Office, Washington D.C. 1950: 286-300.

I- Noell W. The human EEG during anoxia. In : German Aviation Medicine World War II. Prepared under the auspices of the Surgeon General, U.S. Air Force. U.S. Government Printing Office, Washington D.C. 1950: 301-3.

J - Kornmueller A. E., Palme F., Strughold H.: Ueber Veraenderungen der Gehirnaktionsstroeme im akuten Sauerstoffmangel (EEG-changes due to acute lack of oxygen). Luftfahrtmed 1941, 5: 161-83.