

Heinz von Diringshofen: Aeromedical Pioneer

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Heinz von Diringshofen (1900–1967) was a pioneer in aerospace medicine. His in-flight research on the effects of weightlessness and multiple g-loads was pathbreaking. However, there is recent evidence that he was involved in unethical experiments during World War II.

Heinz von Diringshofen was born in Magdeburg, Germany, on January 22, 1900. He served in the German army (Reichwehr) during World War I as a lieutenant. He then studied engineering at the Berlin Technical University in 1919, but discontinued his engineering studies to attend medical school in Berlin and Munich. In 1926 he served as a ship doctor on ocean cruises with Hapag Lloyd to South America and South-East Asia. In 1927, von Diringshofen rejoined the Reichwehr and was placed in military flight training. In 1930, von Diringshofen became a Captain and was deployed to the Flight Test Center in Lipetsk, USSR.

He performed his first aeromedical tests in 1931 at the Schleissheim airfield close to Munich. These involved the acceleration effects of spins and resulted in the documentation of nystagmus with a camera. A military command to the Physiological Institute of the University of Wuerzburg followed this (the Director was Max von Frey). Hubertus Strughold was present at this institute at the time and had been lecturing in Aviation Medicine since 1928 and performing aeromedical flight tests on the sensory organs.¹ Heinz von Diringshofen intensified these experiments by studying the effects of acceleration on blood circulation, blood pressure, pulse, breathing rate, and neurosensory organs. These in-flight tests were performed in an Albatros L 78 biplane (Fig. 1). The medical instruments used were modified for in-flight use by his brother and engineer Bernd von Diringshofen.

In 1932 he was assigned to a military position at Ludolph Brauer's medical clinic in Hamburg-Eppendorf. Brauer was head of the first German Institute for Aviation Medicine and Climate



Fig. 1. Heinz von Diringshofen in his Albatros (private archives of Heinz von Diringshofen family).

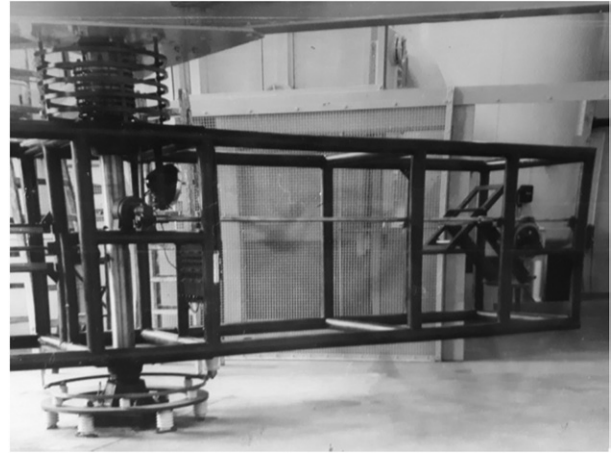


Fig. 2. The Air Ministry in Berlin centrifuge. This was the first centrifuge in Germany and operated from 1935–1945 (private archives of Heinz von Diringshofen family).

Research. Von Diringshofen presented lectures in aviation medicine at the University and AME training supplemented by physiological training in the large pressure chambers.⁴

His 1933 habilitation thesis to become a university professor investigated the effects of straight accelerations and centrifugal forces on humans and was based on the Wuerzburg in-flight experiments. Abstracts were published twice in the *Journal of Aviation Medicine*.⁷ While working in Hamburg, Heinz von Diringshofen was also a part of the organization of Airmen Examination Centers at medical clinics of universities. When the arming of the German Armed Forces was intensified (the Reichwehr became the Wehrmacht in 1935 with the Luftwaffe as a self-sufficient branch), von Diringshofen was transferred to the Air Ministry in Berlin in 1934 to establish an Aeromedical Laboratory. The installation and testing of a 6-m diameter centrifuge (17 G;² Fig. 2) together with his brother and engineer Bernd (Fig. 3) highlighted this short Berlin-based period.² Von Diringshofen gave lectures in aviation medicine at the university and developed a 5-yr plan for aeromedical research. In the winter of 1934–1935 his commitment was abruptly and harshly interrupted due to a personality conflict with a superior. He was succeeded by Hubertus Strughold, who later became a Project Paperclip specialist

From Neubrandenburg, Germany.

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Fig. 3. Bernd and Heinz von Diringshofen in 1946 (private archives of Heinz von Diringshofen family).

based on the Berlin research which had been initiated by von Diringshofen.

Heinz von Diringshofen was deployed in 1935 to Jueterbog Air Field south of Berlin. Here, in 1936 he established the Luftwaffe's Aeromedical Test Division (Sanitaetsversuchsgruppe-abteilung).² Before World War II he performed hundreds of aeromedical in-flight tests on the effects of acceleration up to 7.5 G_z and performed the first 0-g tests in steep dives up to 8 s using volunteer pilots and medical doctors.

In 1939 von Diringshofen became a full Professor at the Berlin University. His Aeromedical Guide for Aircrew (Luftfahrtmedizinische Leitfaden für fliegende Besatzungen) was translated into English in Canada in 1940 (**Fig. 4**) and published for the RAF. A French translation was published in 1943 in Algiers.⁶

Following the Battle of Britain, Heinz von Diringshofen implemented physiological training for all aircrew and medical officers beginning in 1940. He became a Colonel in the Luftwaffe in early 1942 and served in several theaters and was finally involved in aeromedical evacuation with Junkers Ju 52 at the Eastern front.

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Hitler's Air Doctor Teaching Health to British Fliers

Young Canadian and American pilots, in training for Great Britain's Royal Air Force in Canada, now are getting some last-minute coaching from the chief physician to Herr Hitler's air force, it was learned here today.

The embryo R. A. F. fliers are being supplied with translated copies of Medical Guide for Flying Personnel by Heinz von Diringshofen, Oberstabsarzt der Luftwaffe, which lays down the German aviation law on subjects ranging from how to handle your liquor to the proper sitting posture while dive-bombing.

Pilots of dive bombers should crouch forward, since in that position they can withstand, the author says, a centrifugal force of 5.5-8 times gravity, and in recovering from a vertical power dive the force "seldom exceeds 8g and then only for 1-2 seconds."

Should Drink Tea.

Fliers, he says, should drink tea and eat unsweetened chocolate on

has at least six-eight hours of restful sleep in between," he remarks soberly.

"But an evening with alcohol which lasts into the morning hours is not compatible with doing full duty on the next (same) day. The preaching of complete abstinence is to be avoided, as it leads to hypocrisy and a feeling of restraint. On the other hand, care should be taken that any flier who does not wish to take alcohol should not have pressure brought on him to take it."

Calls for Tact.

Having thus neatly straddled the fence between the W. C. T. U. and the Bartenders' Union, Herr von Diringshofen concluded that

Fig. 4. A newspaper clipping showing that Diringshofen's "Aeromedical Guide for Aircrew" had been translated into English and was being used by the Canadian Air Force in 1940 (U.S. National Library of Medicine. Heinz von Diringshofen Papers. MS C 535.)

He requested to be transferred to the Luftwaffe's Aeromedical Examination Center (Hauptfliegeruntersuchungsstelle) in Frankfurt in the summer of 1942. He began to be focused more on research activities and was sponsored by the Luftwaffe and the National Research Council (InSan/RFR) to develop research in the field of the therapeutic use of acceleration. He also established a civilian sponsored aeromedical research facility for mechanical effects in Frankfurt (Forschungsstaette fuer mechanische Einfluesse; destroyed by an air raid in 1943). There he was also active as a lecturer in Aviation Medicine at Frankfurt University.

Heinz von Diringshofen participated at the infamous Nuremberg Winter Conference in October 1942, where the results of the Luftwaffe sponsored hypothermia experiments at Dachau's concentration camp were presented by Prof. Holzloehner, who had collaborated with SS doctor Rascher, resulting in many fatalities of the medical research subjects. To our knowledge, von Diringshofen was not involved in any unethical medical experiments in WW II or before. However, after a lecture on aviation medicine in the winter term of 1942/1943 at Marburg University, he was asked by the gynecologist Prof. Bach (an SS doctor) if he could scientifically review a hypothermia paper edited by Rascher. Dr. von Diringshofen admitted that he had agreed to review it, but never heard about it again.³ However, recent evidence shows that Diringshofen likely had visited Rascher at the Dachau concentration camp to discuss hypothermia research topics.⁵

In 1946, von Diringshofen was found not to be eligible to continue work as a university professor by the U.S. military government. In 1947, this restriction was terminated by the liaison and security office of the Stadtkreis Frankfurt am Main, U.S. Army, as no criminal activities could be presented.

He did not become a Project Paperclip specialist (these selected scientists were vetted by the U.S. Army and transferred for work in the United States), but contributed as a consultant to the Aeromedical Institute of the Argentinean Air Force from 1951 to 1956. When he returned to Germany, he introduced the term "human

performance engineering" (Anthropotechnik) while working for several German aerospace companies. He continued lecturing in Aerospace Medicine at the Munich University. Although he was a consultant for the German Armed Forces during the 1950s, he was not accepted for active duty by the military (the Bundeswehr).

In 1962, Heinz von Diringshofen became the first President of the German Society of Aviation and Space Medicine (DGLRM). At the second Scientific Meeting on 8th/9th October 1963 in Munich, leading aeromedical specialists from the United States attended the meeting, including H. v. Beckh, J. P. Stapp, and H. Strughold. Heinz von Diringshofen died in Frankfurt, Germany, in May 1967.

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