History of Rocketry and Astronautics

Proceedings of the Fifty-First History Symposium of the International Academy of Astronautics

Adelaide, South Australia, 2017

Michael L. Ciancone, Volume Editor

Kerrie Dougherty, Part III Editor

Rick W. Sturdevant, Series Editor

AAS History Series, Volume 50

A Supplement to Advances in the Astronautical Sciences

IAA History Symposia, Volume 37

AAS Publications Office
P.O. Box 28130
San Diego, California 92198

Affiliated with the American Association for the Advancement of Science
Member of the International Astronautical Federation

First Printing 2020

ISSN 0730-3564

ISBN 978-0-87703-667-8 (Hard Cover Plus CD ROM)
ISBN 978-0-87703-668-5 (Digital Version)

Published for the American Astronautical Society
by Univelt, Incorporated, P.O. Box 28130, San Diego, California 92198
Web Site: http://www.univelt.com

Printed and Bound in the U.S.A.

Chapter 1

Karl Cerny: An Unknown Austrian Rocket Pioneer—1931–1934*

Karlheinz Rohrwild†

Abstract

Karl Cerny, an Austrian car mechanic, started building a series of liquid propelled rocket engines in 1931, which he tested on an old Bugatti chassis. In 1933 his liquid propelled rocket car was successfully tested and reached a speed of 70 km/h. He failed to get the necessary funding to transfer his rocket engine into a sailplane as the next step to high speed airplane transportation.

I. Introduction

Anyone interested in literature on early rocket history will find photos of rocket cars built by Fritz von Opel, Paul Heylandt, Max Valier and a certain Karl "Cermy" in the May 1941 edition of *Astronautics*, the journal of the American Rocket Society [1]. The article says about him: a Viennese inventor, in rocket-motored car of which details are lacking. This phrase aptly describes Karl Cerny's life story and his contribution to rocket technology.

* Presented at the Fifty-First History Symposium of the International Academy of Astronautics, 25–29 September 2017, Adelaide, South Australia. Paper IAC-17-E4.1.2.

† Hermann-Oberth-Raumfahrt-Museum, Pfinzingstrasse 12-14, D-90537 Feucht, Germany.

The facts available about the life and achievements of Karl Cerny (May 7, 1908, Vienna—March 2, 1967, St. Pölten) are rather scarce. The evidence available consists of a small personal estate in the form of a few photographs, a curriculum vitae, two letters from Wernher von Braun, a few additional photos of his rocket car and some newspaper articles. For this chapter, the information was completed with the data from the population registers in the various places he stayed and therefore his life and his achievements can be traced quite satisfactorily, despite the scarcity of sources.

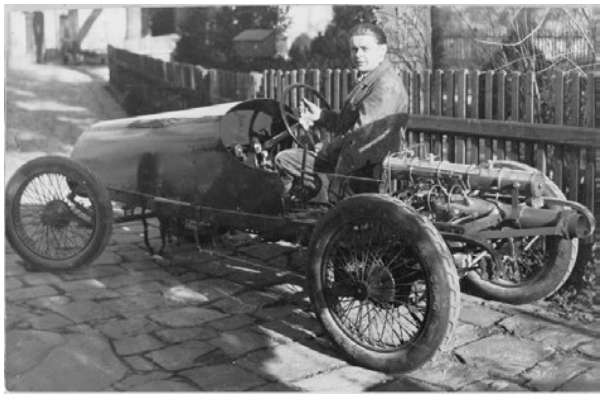


Figure 1–1: Karl Cerny in his liquid-fueled rocket car in St. Pölten in 1934.

II. Contribution to Rocket Engineering

II.1. Press Coverage

As stated in the introduction, there are a few press articles that complement each other in addition to the personal papers left by Cerny. The articles are chronologically presented below. The first mention of Karl Cerny in the context of rocket engineering is in *Neues Wiener Tagblatt* of February 3, 1933, issue 34, p. 7.

An Austrian Rocket Aircraft

Rocket Engine for Road Vehicles, Aircraft, and Ships

> For the last three years a humble worker, the head mechanic and chauffeur of St. Pölten Hammerbrotwerke has been working on a sensational invention in the quiet provincial town of St. Pölten.
>
> Karl Cerny—as this 25-year-old is named of whom we might be hearing a lot quite soon—was inspired by the repeated trials of famous designers and sportsmen and dedicated all of his free time to building a rocket drive. He

now hopes that in two weeks time he will be able to transfer his model from the cramped little room it was built in to the outdoors and to present his impressive invention to the public. For the time being Karl Cerny mounted his rocket engine onto the chassis of a normal motor racing car and will use this for the first test drives. Anyone who had an advance glimpse of the model car had to become convinced that this intelligent brainchild of the Austrian worker is a major issue.

In recent years many very famous people have made tests with rocket cars and rocket aircraft hoping to extent the speed of modern vehicles of transport, that is sufficiently fast as it is, to the extreme. Each of them had their special purpose for doing so. Some saw it as a matter of sportsmanship, others pursued it as a science, yet others intended to create a novel, terrible weapon for warfare. All of them failed. All previous trials by people like Valier, Opel, Goddard, Oberth were made using powder.

Karl Cerny learnt from the failures of his precursors. He received precise reports about the rocket test drives, intently studied books, magazines and the articles published and then adjusted the construction of his model car to these findings. On his trips abroad, he went to Italy and France, he learnt a lot and thus gathered enough experience to become a technical expert. Certainly his feeling for technology—he has not had any special technical training-, his intelligence and finally the support he received from his financial sponsor and manager, the St. Pölten merchant Mr Fritz Bondy, as well as from the director of Hammerbrotwerke, Franz Gessl, helped him greatly.

Karl Cerny also made another invention in addition to the peculiar vehicle design. He came up with a fuel mixture, which is, of course, confidential, that shall ensure the engine's maximum performance. This fuel is highly explosive, during normal operation 3.8 kilograms are consumed per minute and due to its enormous expansion force it can only be used in custom-built engines. This liquid fuel—thus no powder is used as in previous trials—provides the engine with an enormous thrust and a capacity for acceleration that will permit aircraft to fly at a speed of 800 to 1200 kilometers per hour, the inventor thinks.

This rocket drive by Cerny is mainly meant for aircraft, of course. In reality there is no road on which a rocket powered vehicle could drive; nevertheless the first demonstration will involve a road vehicle on a racing track, as a first test with an aircraft does not seem opportune. A rocket aircraft is the only conceivable vehicle for flight into the stratosphere. Regular airplanes are unfit, because the aerodynamic drag in a vacuum would be insufficient for their propellers to work. Furthermore a rocket drive is to achieve fifteen times the performance of a regular aircraft engine. A successful test of the rocket drive would also be significant for navigation. A vessel's turbine has to work extremely hard to displace the water and this would not be required for a rocket "engine."

In two weeks time Cerny himself will sit in the driver's seat of the modern streamlined model car to venture its first demonstration on a race track,

probably the trotting course in Krieau. Hitherto all tests have been limited to the operating capacity of the fuel and the engine. It sounds like the thunder and lightning of a cannon in the war. Fire is spit from the rear torpedo tube, the rocket car's characteristic. Certainly all of this can only impress a layman. An expert technician will only be convinced of the vehicle's actual usability once Cerny has achieved his goal of driving one hundred kilometers on the race track. The simple, personable inventor with whom we had the opportunity to speak and who explained his model to us to the extent possible, because many things still are his secret, however, is convinced that he will succeed and some experts share his view.

The inventor can look back on three years of hard work. He will be done in a few days and then Austria might have the first rocket car. One can only hope that the decent St. Pölten worker will be lucky with his trials. Austria will be proud, if one of its simple citizens completes such an impressive feat successfully [2].

Alexander Meisel

As Alexander Meisel's article says, the 25-year-old head mechanic and chauffeur of St. Pölten Hammerbrotwerke had been working on a rocket car with liquid fuel drive for three years and intended to present it to the public, probably at the trotting course in Krieau two weeks later. The intended speed is cited as 100 km/h and the fuel consumption as 3.8 kg per minute. Meisel describes Cerny as a self-educated person without special training, but gifted with a special technological instinct and intelligence who had the support of his financial sponsor and manager, the St. Pölten merchant Fritz Bondy as well as the director of Hammerbrotwerke, Franz Gessl. Cerny's goal was an aircraft to reach the stratosphere flying at 800 to 1200 kilometers per hour.

On February 26, 1933, the following photo (Figure 1–2) was published on page 5, bottom left, of the magazine *Wiener Bilder* (Year 38, no. 9) with the caption:

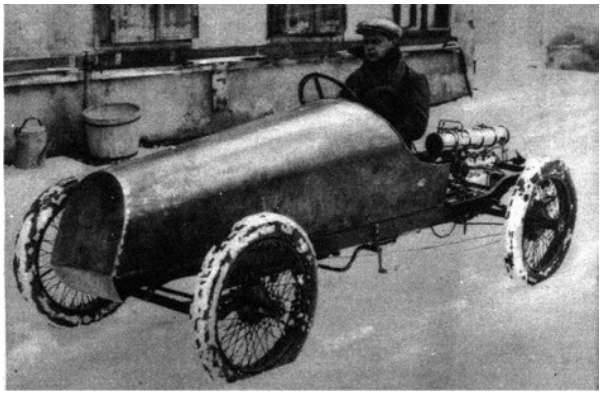


Figure 1–2: An Austrian rocket car: "St. Pölten head mechanic Karl Cerny built a rocket-motored car operated with a proprietary mix of liquid fuel. Our photo shows the inventor in his car. He thinks that aircraft can achieve a speed of 1200 kilometers per hour with his rocket." [3].

The rocket-motored car was pictured yet again (Figure 1–3) on March 9, 1933, on page 7 in no. 10 of the magazine *Das interessante Blatt* (Vienna) with the following caption:

Figure 1–3: An Austrian rocket car: "Mechanic Karl Cerny from St. Pölten built a car that is provided with liquid fuel and performed well during the first test drives. Photo: Schleich." [4].

A few days later *Neue Freie Presse* in Vienna carried the following story in its March 12, 1933, edition on page 14:

Successful Launch of a Rocket-Motored Car

> The rocket car designed by the inventor Mr Bondy in St. Pölten had its first start yesterday (note: Saturday, March 11, 1933) which was a complete success. He achieved a speed of 70 kilometers per hour.
>
> The car has a dedicated exhaust pipe, the liquid explosive mixture is supplied via a control valve. The speed is controlled by means of the supply volume of the fuel mix [5].

This article talks about a man named Bondy as the inventor of a liquid fuel rocket car in St. Pölten, who reached a maximum speed of 70 kilometers per hour during a test drive.

This discrepancy is explained once one consults the original text of the photo in Figure 1–4 written by the press photographer Karl Schleich:

Figure 1–4: Photo back side.

It states that the "inventor Bondy" had been Cerny's manager. This coincides with the statement in Alexander Meisel's article in *Neues Wiener Tagblatt* of February 3, 1933, which says: "the support from his financial sponsor and

manager, the St. Pölten merchant Mr Fritz Bondy as well as the director of Hammerbrotwerke, Franz Gessl, helped him greatly."

The trained car mechanic Karl Cerny had joined the garage and driving school of Franz Bondy (Figure 1–5) on June 10, 1926, as a mechanic and was promoted to shop foreman one year later.

Figure 1–5: Driving school Franz Bondy—St. Pölten.

He quit this employment on November 15, 1929, and started in the position of head mechanic at Hammerbrotwerke (bread factory) on November 18. He was responsible for the machine and motor pool and the improvement of the machinery. He terminated this employment on October 18, 1938.

Again, some days later, *Das kleine Volksblatt* in Vienna (Figure 1–6) published the following story in its issue of Saturday, March 18, 1933, on page 5:

In 20 Minutes from Berlin to America?

The future belongs to the rocket engine—A roaring machine
the entire town will hear—Sensational invention of a young Austrian.

The 25-year-old head mechanic Karl Cerny of St. Pölten has quietly designed a peculiar engine that may revolutionize the entire transport system, in particular aviation, as even some leading experts attest. Mr Karl Cerny provided the "Kleine Volksblatt" with the following interesting information about his invention:

I have been working on the calculation and design of a source of energy based on the principle of jet propulsion (rocket engine) for more than three years. The motor I invented shall provide existing aircraft with an enormous speed and project them into altitudes not yet reached. It is a fact that the aircraft equipped with the known internal combustion engines have already reached their limits in terms of speed and altitude. (The highest speed was achieved by an Italian water aircraft at 720 km per hour and the current altitude record is for 13,000 meters reached by an Englishman. Obviously this type of performance is limited to special aircraft and their useful lives and reach are very limited.) At any rate, the future belongs to the rocket engine. Only recently a calculation found that a rocket airplane will need 20 minutes to cover the distance between Berlin and America and must reach a

minimum altitude of 40,000 meters. Despite this enormous altitude it should be possible to land again 45 minutes later.

My engine can be installed into any regular aircraft without major problems, but it must have a special cabin. According to my calculations an altitude of 16,000 meters can be reached after only a few minutes and the aircraft will be going at a speed of 1000 to 1200 kilometers per hour.

All previous tests with rocket drives were fitted with so-called powder rockets. However, this type of drive has no perspective, because it cannot be controlled. But the engine I designed uses a mix of different highly explosive and liquid fuels which is only known to me. To achieve and determine the acceleration power I installed my engine on the chassis of a small Bugatti car which I will test drive for the first time after the snow has melted. The preliminary tests I have done so far (stationary and tensile tests) produced very positive results. Upon igniting the motor there is a fast sequence of intense blasts which already after a few seconds transition into an uniform roar which will be heard throughout town [6].

This article again stresses the actual purpose of Cerny's work: fast transcontinental air travel at an altitude of 16,000 meters and a speed of 1000 to 1200 kilometers per hour.

We also learn about his next plans, to do the first test drives "after the snow has melted. The preliminary tests I have done so far (stationary and tensile tests) had very positive results. Upon igniting the motor there is a fast sequence of intense blasts which already after a few seconds transition into an uniform roar."

On p. 31 of the French Magazine *Castrol* of April 1933 the following photo (Figure 1–7) is published [7]:


7 Groschen

Das Kleine Volksblatt

Zusammenstöße in Kapfenberg.

Oberstabsmeister Karl Cerny

Seitenansicht des Raketo

Figure 1–6: *Das kleine Volksblatt,* March 18, 1933.

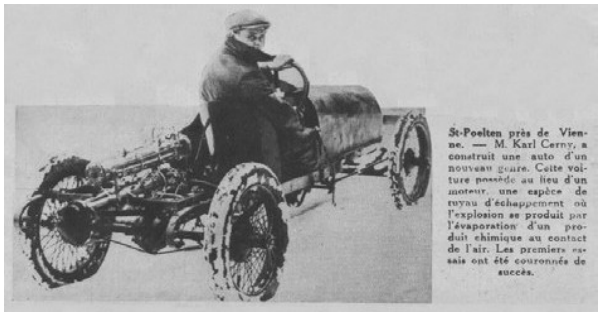

St-Poelten près de Vienne. — M. Karl Cerny, a construit une auto d'un nouveau genre. Cette voiture possède au lieu d'un moteur, une espèce de tuyau d'échappement où l'explosion se produit par l'évaporation d'un produit chimique au contact de l'air. Les premiers essais ont été couronnés de succès.

Figure 1–7

EXPLODING LIQUIDS DRIVE ROCKET CAR

AUSTRIA now has a new type of the rocket automobile, built by Karl Cermy, Viennese mechanic. A mixture of combustible liquids and gases is fed into a wide cylindrical tube at the rear of the car, where it ignites with a continuous blast sufficiently powerful to drive the vehicle forward at remarkable speed. First trials are reported to have met with success. Aside from the unusual power plant, the controls are standard.

Combustible liquids, fed into the cylinder seen at rear of this new rocket car, ignite with a blast that propels the car forward. Built in Vienna, it is shown ready for trial run

JUNE, 1933

The US magazine *Popular Science* publishes another photo (Figure 1–8) on page 29 in the June 1933 issue. Basically it is the same one as in *Magazine Castrol*, but here the vehicle has been cut out completely and the tires have been retouched. Unfortunately, Cerny became "Cermy."

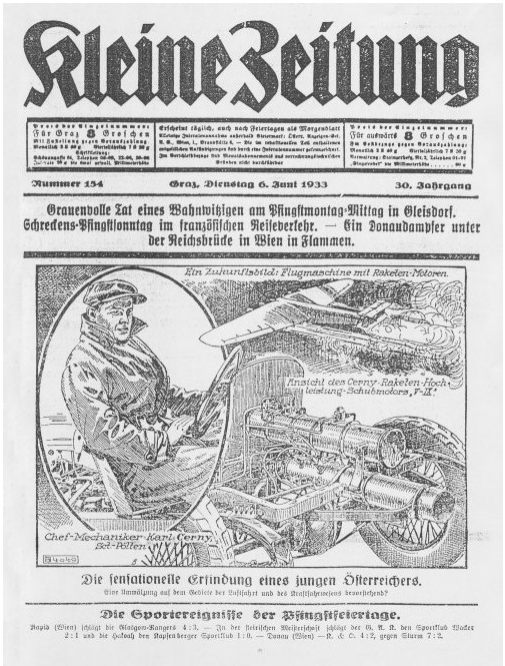
Figure 1–8: *Popular Science,* June 1933, page 29.

As a consequence of this publication the news item was carried by many US dailies and made its rounds through the media in North America for quite a while.

After July 11, 1933, the dailies reported based on the story in *Popular Science* without any bold headlines and photos.

The last report about Cerny's rocket car appeared on March 22, 1934, in *The Amarillo Globe Times*.

On Tuesday, June 6, 1933, the Graz paper *Kleine Zeitung* reported on p. 11 (Figure 1–9) as follows:



Kleine Zeitung

Nummer 154 — Graz, Dienstag 6. Juni 1933 — 30. Jahrgang

Grauenvolle Tat eines Wahnwitzigen am Pfingstmontag-Mittag in Gleisdorf.
Schreckens-Pfingstsonntag im französischen Reiseverkehr. — Ein Donaudampfer unter der Reichsbrücke in Wien in Flammen.

Ein Zukunftsbild: Flugmaschine mit Raketen-Motoren.

Ansicht des Cerny-Raketen-Hochleistungs-Schubmotors, P.-K.

Chef-Mechaniker Karl Cerny bei Proben

Die sensationelle Erfindung eines jungen Österreichers.

Die Sportereignisse der Pfingstfeiertage.

Figure 1–9: *Kleine Zeitung (Graz)*, June 6, 1933, front page.

Sensational Invention of a Young Austrian

Is a revolution in aviation and motor transport imminent?
(Regarding our cover.)

Without making much fuss about his many years of work and its success, a young Austrian in a mechanical workshop in St. Pölten achieved something that might very well trigger a revolution in aviation and motor transport soon.

25-year-old head mechanic Karl Cerny of St. Pölten designed a peculiar motor of the jet propulsion engine category, operating like a rocket and designated as a "rocket propulsion engine" by Cerny himself. The machine's operating principle is the recoil effect or reaction produced when an explosive gas or liquid mixture blasts in a space sealed on one side which leaves the gas only one specified direction to escape with great force. To utilize the pressure exerted on the opposite wall of the vessel is the key issue that all inventors of rocket engines are grappling with.

Already in fall and winter of 1931 the German engineer Valier test drove a rocket car in Berlin, he used compressed oxygen as fuel for propulsion.

The enormous and uncontrolled impact force led to a sad end of these trials. Valier became the victim of the explosion of his rocket car. Cerny of St. Pölten succeeded in harnessing and controlling the forces developing in his rocket engine's combustion chamber, thus turning the engine into a source of power fit for practical applications.

The young Austrian inventor uses a mixture of combustible liquids that is magneto-electrically ignited by two spark plugs arranged on the side of the explosion chamber. Karl Cerny paid utmost attention to avoid any disastrous incidents as far as possible. Therefore, when the engine is started an initial stage of the blast pressure will be activated first, the full force of the blast follows after it reached a certain expansion. The machine is equipped with a cooling mechanism for the internal motor block to prevent overheating and the detachment of the welding seams of the nozzles and valves by the extraordinary heat that is produced. Due to the peculiar design of the engine's combustion box and the position of the main expansion nozzle the combustion gases exit at a speed of 7000 to 8000 meters per second.

Therefore the reaction or recoil is correspondingly powerful. The fuel flows from the specially built high pressure vessels through a tubing system to the mixing chamber integrated in the motor block, where it is gasified. From the mixing chamber it is blown into the explosion chamber in compressed form.

Cerny's design plans have been completed down to the very last detail, the test engine is assembled and has been installed onto a Bugatti chassis. The trials that Cerny made showed that his rocket engine is working smoothly. However, the rocket propulsion engine causes an infernal noise when in operation.

> It starts with intermittent thundering which after a few seconds turns into a roaring that carries for kilometers. The inventor's calculation tables reveal a lot of interesting detail. With his invention Cerny is mainly aiming at applications in aviation. According to the calculations resulting from the practical tests with the engine which have been verified by experts, the rocket engine may accelerate a normal aircraft fitted with a special cabin to 1000 to 1200 kilometers per hour and raise it to a cruising altitude of 16,000 meters within a matter of minutes. However, Cerny also envisages combining his invention with propulsion engines that are currently state of the art in aerospace engineering. He plans to fit a sports aircraft which a third party provided, with two propulsion engines in addition to the regular aircraft engine. These propulsion engines shall be used during take-off and provide the aircraft within the first few seconds with a take-off speed of several hundred km/h, thereafter the propeller will take over from propulsion to pull the aircraft ahead. For this combination, Cerny has worked out all the details, the climax is an automatic switch-over from push to pull. However, the young inventor is planning to use not only the acceleration force of his propulsion engine. The rocket engine shall also be used to provide a braking effect by counter pressure at the time of landing very heavy, load carrying aircraft which always pose a major challenge for the pilots as their landing speed is between 100 and 140 kilometers per hour. This would reduce the landing speed very quickly, resulting in a soft touch-down and short running of the aircraft to permit heavy aircraft to land in confined locations.
>
> Karl Cerny has completed his motor car for the test drive in front of representatives of the technical field and the press, currently he is working on the installation of his propulsion engines in the aircraft. He is also waiting for the completion of several transactions which should provide him with the capital required for further testing and work, because, just as most inventors, Cerny is not wealthy and thus is not in the position to present his invention to the public on a large scale by his own means [8].

The article mentions Cerny's intention to develop a rocket engine that can be controlled and steered. Some details of the design, its functioning and the fuel flow are hinted at. Again, the actual purpose of the stratosphere aircraft is described, this time with some more details. Furthermore, it reveals the next plans of fitting a sports aircraft with two propulsion engines.

II.2. Estate

Regarding Karl Cerny's work in the field of rocket engineering his estate merely contains an undated curriculum vitae covering his life until 1954, two letters from Wernher von Braun to Cerny, and a six-page folder (Figures 1–10 to 1–14) consisting of four pages with photos and a few handwritten comments on his rocket tests.

The folder is titled: “Reaction engine—Rocket car—Long-distance projectile—1931—1935.”

Figures 1–10 to 1–14.

According to the handwritten note next to the first photo it shows a reaction engine with automatic jet—built 1931. The next photo depicts a reaction engine for 150 kg thrust—ninth test model—built 1932 to 1934. The last image on this photo page shows the first rocket car built in Austria—1934. The next page, the front side of a sheet that was inserted later, shows the driver’s seat on top and on the bottom a partial view of the engine. In between are two drafts for a jet racing car dated 1957. The back of this added sheet has a photo of the car in the yard of Bondy’s driving school, a sectional drawing and an external view of the draft for a long-distance projectile. The last page contains two sectional drawings for the reaction engines developed by Karl Cerny. The back of the sheet is empty.

There are four more photos of the rocket car (Figures 1–15 to 1–18) of February 1933, taken by the Viennese press photographer Karl Schleich (see Figure 1–4).

Figure 1–15 (left): Karl Cerny, Fritz Bondy, and Franz Bondy.
Figure 1–16 (right): Fritz Bondy, Franz Bondy, and Karl Cerny.

Figure 1–17

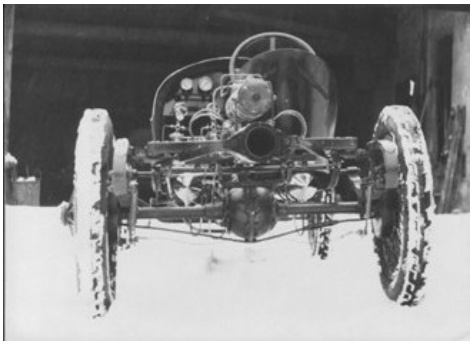


Figure 1–18

The next step would be to interpret the photographs and check whether they coincide with the statements in the newspaper articles. The texts include the following specific data on the rocket car's operating principle [with author's highlights]:

***Neues Wiener Tagblatt* of February 3, 1933:**

> He came up with a fuel mix, which is, of course, confidential, that shall ensure the engine's maximum performance. This fuel is highly explosive, during normal operation **3.8 kilograms are consumed per minute** and due to its enormous expansion force it can only be used in custom-built engines. The **liquid fuel** …

Das kleine Volksblatt in Vienna, no. 77, Saturday, March 18, 1933

The preliminary tests (**stationary** and tensile **tests**) had very positive results.

Kleine Zeitung, Graz, June 6, 1933

The young Austrian inventor uses a **mixture of combustible liquids** that is **magneto-electrically ignited by two spark plugs arranged on the side of the explosion chamber**. Karl Cerny paid utmost attention to avoid any disastrous incidents as far as possible. Therefore, when the engine is started an **initial stage** of the blast pressure will be activated first, the **full force** of the blast follows after it reached a certain expansion. The machine is equipped with a **cooling mechanism for the internal motor block** to prevent overheating and the detachment of the welding seams of the nozzles and valves by the extraordinary heat that is produced. Due to the peculiar design of the engine's **combustion box** and the position of the **main expansion nozzle** the combustion gases exit at a speed of 7000 to 8000 meters per second.

Therefore the reaction or recoil is correspondingly powerful. The **fuel** flows from the specially built **high pressure vessels** through a **tubing system** to the **mixing chamber integrated in the motor block**, where it is **gasified**. From the mixing chamber it is **blown into the explosion chamber in compressed form**.

II.3. Cerny's Rocket Engine

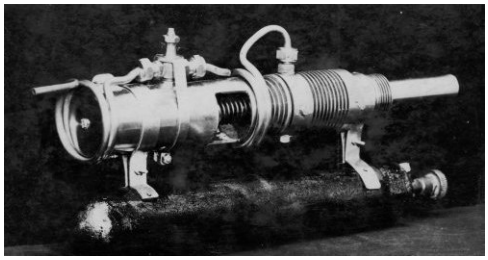


Figure 1–19: First reaction engine including an automatic nozzle—built 1931.

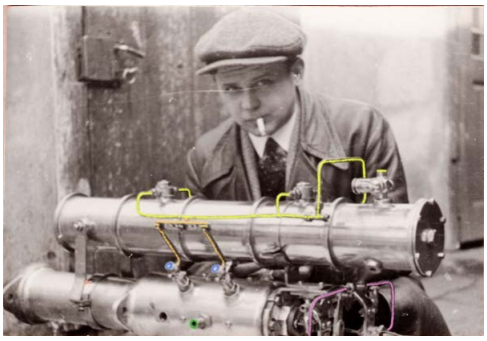


Figure 1–20: Ninth test version 1934 (view of Cerny's high performance propulsion engine V–IX).

Cerny's propulsion engine consists of two modules. The lower part with the outlet nozzle clearly is the rocket engine proper and the purpose of the cylindrical element above it is unknown.

The feed is via the nozzle located near Cerny's right shoulder. At the bottom in the image's center the feed pipes for the jacket cooling can be seen. Above these are two injection tubes that are valve-controlled.

Cerny's comment "high performance propulsion engine V–IX" suggests that this is the fifth rocket engine that was built which evolved through four previous iterations. The photo shows its latest version, the ninth one of 1934.

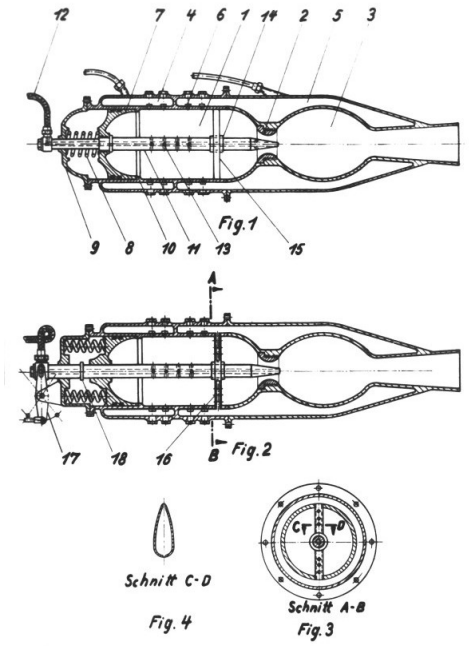


Figure 1–21

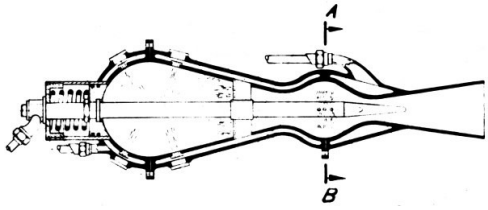


Figure 1–22

The estate includes the following sectional drawing (Figures 1–21 and 1–22) of a reaction engine with constant thrust generated by automatic pressure balancing in the mixing chamber which is effected by expansion of the combustion chamber, a jet control pin (Fig. 1) and a version with adjustable thrust (Fig. 2). What is shown corresponds to the description of *Kleine Zeitung* from Graz.

Description Fig. 1

1. Mixing chamber
2. Nozzle throat (heat resistant)
3. Combustion chamber
4. Jacket cooling for mixing chamber
5. Jacket cooling for combustion chamber
6. Spray nozzles
7. Pressure balancing pistons
8. Spring
9. Top housing cover
10. Bottom stop of pressure piston
11. Coupled control pin
12. Control pin for fuel feed
13. Inlet boreholes

14. Bearing of control pin
15. Bracket for control pin

Description Fig. 2
16. Bracket with inlet boreholes
17. Adjustment rocker for control pin
18. Control pin carrier

Description Fig. 3
Cross section A-B

Description Fig. 4
Cross section C-D

II.4. The Fuel Supply

This is described as a system of tubes feeding the fuel from specially built high pressure vessels to the mixing chamber integrated in the motor block where it is then gasified. Although the pictures shown below (Figures 1–23 to 1–28) describe many details of the fuel supply system, they are insufficient to allow the full reconstruction of this system.

Figure 1–23: Two gauges can be seen behind the top left quarter of the steering wheel whose purpose is unknown. Behind the steering wheel's bottom left quarter there are two pressure reducers and the related indicators for high and low pressure (**pink**/**yellow**).

Directly below the steering wheel two pressure cylinders are stacked on top of each other, each one fitted with an opening valve. From each of the cylinders a cable (green) runs parallel to the left frame bar above the seat to the back.

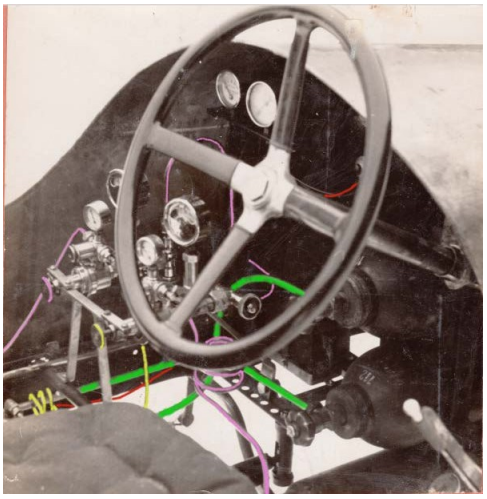


Figure 1–23

The small rectangular box to the left of the lower pressure cylinder could be a battery. A power line (**red**) with push button passes on the top right behind the steering wheel.

Left of the lower pressure cylinder is another large (pressure) vessel of unknown purpose. On the left, below the hand brake, is another round gauge.

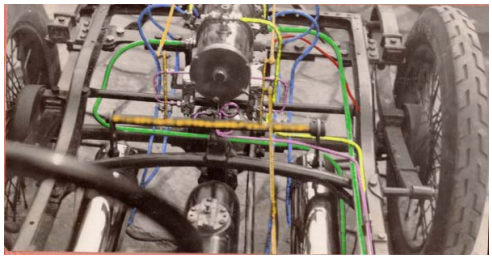


Figure 1–24

Figure 1–24: Within the frame the lower half of the photo shows two shiny tanks and in between them a darker container. It seems that tubes (**blue**) are running from these two shiny tanks to the fuel injection nozzles attached next to each other on the sides in a slanted position.

On the right, near the picture's edge, the two parallel tubes (green) lead along the left frame bar up to the front spring suspension where one of them turns to the left at a right angle, follows a few further bends and is then flange-mounted to the rocket engine at a right angle without any further valve. Also the tube (**pink**) runs along the left frame bar to the control system of the control pin. In the first section a tube (**yellow**) runs parallel to the tube (**pink**) to the cylinder above the combustion chamber. We are not aware of the purpose of that cylinder. The power line (**red**) also runs along the left frame bar to the spark/glow plug on the combustion chamber. The control line (**orange**) for the injection tube's **(blue**) valves runs to the right of the driver's seat to a crossbar which controls the injection nozzles with a lever that in turn connects to one lever each to the right and left of the top cylinder. The purpose of the pressure cylinder that can be seen in the picture's center at the bottom is not known.

Figure 1–25: An enlargement of the above photo reveals, in the center along the left edge, the tubes (**blue**) leading to the fuel injection nozzles attached next to each other on the sides in a slanted position. At this point they are running in parallel and screwed together with a clamping plate. The same arrangement is on the right edge, but almost covered by the crossbeam of the accelerator cable (**orange**).

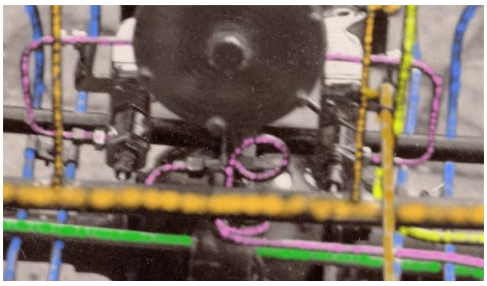


Figure 1–25

Figure 1–26: An enlargement of the photo below reveals, in the center next to the outlet nozzle, the tubes (**blue**) leading to the fuel injection nozzles attached next to each other on the sides in a slanted position, at this point they are running downwards in parallel and are screwed together with a clamping plate. One can see that one of the two tubes leads to the left one of the shiny tanks and the right one runs in the direction of the lower center of the photo and is then covered up by the differential gear. The same arrangement is mirrored next to the shiny tank on the right.

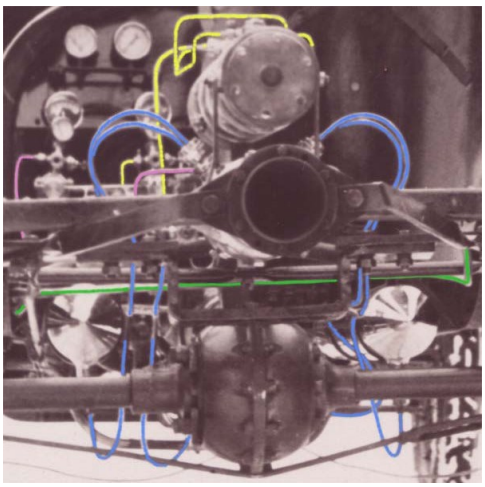


Figure 1–26

Figure 1–27: The rear view allows a good look of the two shiny tanks and the tubes (**blue**) leading from them to the fuel injection nozzles attached next to each other on the sides in a slanted position. The round gauges on the dashboard can be seen very clearly, just as the gauges of the two pressure reducers. The driver's seat and the steering wheel are located left from the vehicle's center.

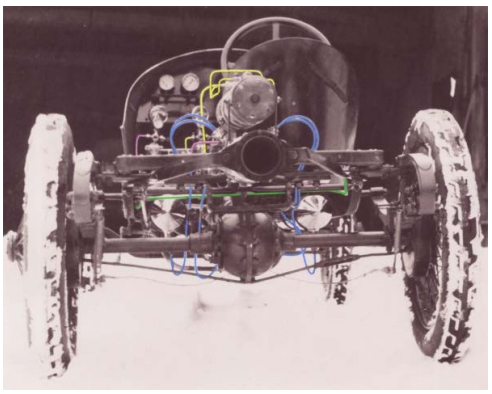


Figure 1–27

Figure 1–28: In this picture the two curved tubes (**blue**) leading to the fuel injection nozzles attached next to each other on the sides of the rocket engine in a slanted position show up very well. To the left is the equivalent of the accelerator (**orange**) that leads to a crossbar via a rod, a lever and yet another rod, to operate the two adjustable valves of the fuel injection nozzles.

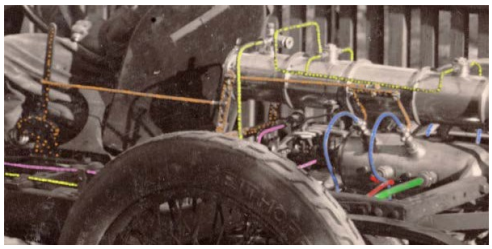


Figure 1–28

Although the lines' and tubes' routings can be traced to a large extent, their specific purpose is still unclear, and any interpretation would be mere speculation.

II.5. Trials

The report of "*Kleines Volksblatt*," Vienna of March 18, 1933, "*The preliminary tests (stationary and tensile tests) had very positive results."* can be verified by the photos available (Figures 1–29 and 1–30).

Figure 1–29

Figure 1–30

Figure 1–29: This photo of February 1933 shows a stationary test of the combustion system. One can see an enormous emission of smoke and mechanic Karl Cerny kneeling to the left of the vehicle wearing a leather jacket and obviously adjusting something with his right hand. The cloud of smoke is rising upward, because the car is not moving, thus this is no indication of an unwanted explosion. The lady on the left seems to have little confidence in the operation.

Figure 1–30: The press photographer Schleich was present during the whole affair that took place in the backyard of the garage and driving school of Franz Bondy.

II.6. Long-Distance Projectile

Karl Cerny's estate also includes the following external view (Figure 1–31) and the related sectional drawing (Figure 1–32) of a draft for a long-distance projectile without any further data. The date it originated can merely be limited by the information on the folder that is designated "1931 to 1935."

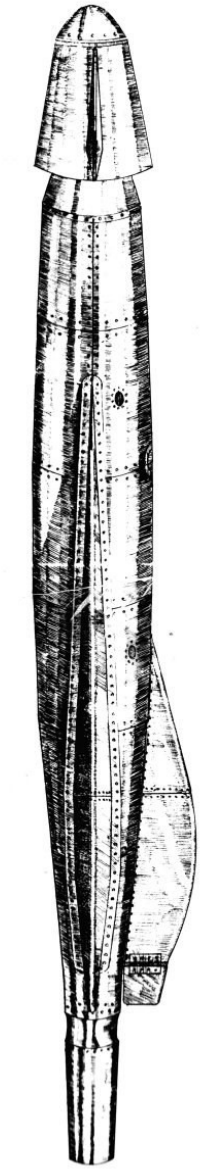


Figure 1–31

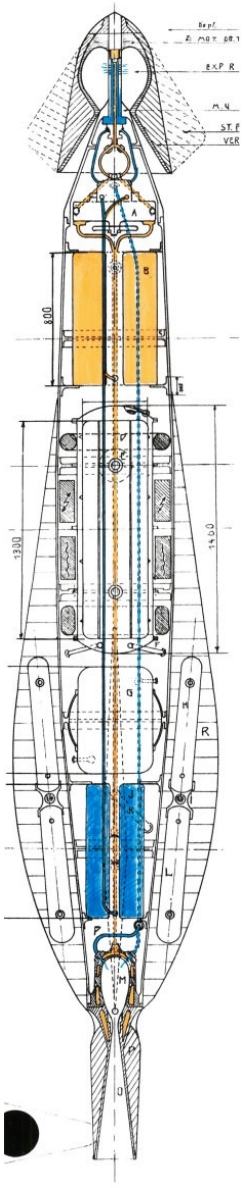


Figure 1–32

The dimensions noted permit the calculation of the height of this long-distance projectile, which would have been approx. 6.9 to 7.0 meters, diameter 70 cm and a span of 1.2 meters.

In the drawing the upper part is designated as “head.” The rocket engine is designated as: Mot. OB. T. It is a traction motor whose thrust is adjustable by moving and thus varying the cross-section of the nozzle throat.

Two stabilizers are mounted to the sides in the wing planes.

The external view looks from the side onto the slim wings which probably have more of a stabilizing effect, since the symmetrical profile used would not generate any uplift.

The steering gear on the right side is fitted with a trimmable stabilizer at the end.

Next to the measurements 800 mm, 1300 mm, and 1460 mm the figures for G and J are cut off, just as the full legend next to the head.

Lines are running from B and J to A and from there to the traction motor and the rear engine.

The purpose of the two annular tanks, the containers D and G and the wing stabilizers H and L is not known.

Considering the symbol near the rectangular boxes arranged around container E these might be batteries and other electrical components.

Short lines E and F are leading from D and G to the projectile's outer cladding, but their purpose is not described.

Nor is there any information about what this long-distance projectile should be used for.

III. Conclusions

In conclusion one must say that despite Karl Cerny's many very extraordinary design solutions (explosion-proof rocket engine by means of a control pin or by making it controllable) did not impact the later development of rockets at all, because his submissions to the Reich Aviation Ministry in Berlin were obviously ignored and he was not employed in Peenemünde.

As many of his contemporaries, Cerny hoped to create a fast airplane that can fly to the stratosphere. In the end he left a mark on aviation with his work in the secret project office of Fieseler. The major element being the work he did in cooperation with the Stuttgart electrical company Niethammer for the launching process of the Fieseler Fi 103 (V-1) by means of the Walter split-tube catapult.

Despite the local support by the Bondy family and the director of Hammerbrotwerke, Franz Gessl, Karl Cerny's ideas have never been really implemented for lack of funds, nor was the installation of a rocket engine in a glider. So he was just one more of those inventors who fail, because they cannot procure enough funds.

Acknowledgments

My special thanks go to the following persons without whose cooperation or support this chapter would not have come about:
Ellen Frank, Mayor Neuenwalde
Dr. Michaela Laichmann, Vienna City Administration, Department 8, Municipal and Regional Archives Vienna
Eva Hehei, Building Inspection Dept.—Archives, Administration of St. Pölten
Ulrike Melchus, Elections and Population Register, Administration of St. Pölten
DSA Irma Wulz, Birth, Death, and Marriage Register of the Jewish Community in Vienna
Fred Dittmann, Author of *Zur Geschichte des Kyffhäuser—Technikums in Bad Frankenhausen,* 2003
Hermann Fischl, Fischl Family, neighbors of the Bondy family, St. Pölten
Florian Franzmann, City of Kassel—Cultural Affairs Dept.—Municipal Archives
Dr. Ulrich Hahnemann, Municipal archivist, Municipal Archives Bad Frankenhausen
Frank-Roland Klaube, City of Kassel—Cultural Affairs Dept.—Municipal Archives
Ursula Mock, Proof reading
Elke Limberger-Katsumi, Translation

Very special thanks go to two persons without whose cooperation or support this work would not have been possible in that way:
Mr. Helmut Dorfner, MSc—Administration of St. Pölten
Mr. Peter Vonwald (godchild)

Appendix

Biographical Data Karl Cerny

Karl Julius Černy was born on May 7, 1908, in Vienna's 3rd district. He was a Roman Catholic and an Austrian citizen. His father Karl Cerny was born in Vienna on September 17, 1885. He was registered as a single coppersmith at Klimschgasse 20/3 in the 3rd district of Vienna from November 1907 to September 5, 1909. [9] He died on March 16, 1955, in St. Pölten. [10] His mother, Juliana Cerny, née Weinkirn, was born on June 18, 1883, in Rainfeld, district of Lilienfeld. She was a housewife and died on January 8, 1943, in St. Pölten [11]. His parents had married on February 21, 1909, in Hainfeld, Lower Austria [12].

Prior to 1907, his father had already worked in Hainfeld and therefore the small family moved to Hainberg after September 1909. This is where his brother Johann (Dec. 17, 1909—March 13, 1964) and his sister Hildegard, nicknamed Hilda, married name Einsiedler (Aug. 18, 1912—Feb. 11, 1971), were born. Karl's youngest brother Franz (Oct. 25, 1916—Feb. 15, 1986) [13] was born in Gutenstein/Lower Austria. As yet it could not be determined when the family moved to Gutenstein. Karl attended the four-year elementary school in Gutenstein.

After November 12, 1919, the family was registered with the address Viktor-Adler-Str. 68 in St. Pölten. In St. Pölten Karl successfully completed the citizen's school and the further training school. While living in Rennbahnstr. 24, Karl started an apprenticeship at the garage of Anton Grill in Danielgran-Strasse on May 24, 1922. He successfully passed the journeyman's examination on May 24, 1925, and continued to work there as journeyman until May 30, 1926. He joined the garage and driving school of Franz Bondy on June 10, 1926, as a mechanic and was promoted to shop foreman one year later. He quit this employment on November 15, 1929, and started in the position of head mechanic at Hammerbrotwerk (bread factory) on November 18. He was responsible for the machine and motor pool and the improvement of the machinery. He terminated this employment on October 18, 1938 [16].

During this time he also traveled to Italy and France to improve his technical expertise. It can be assumed that his destinations in Italy included for instance the Fiat plant in Torino and in France the Renault plant in Paris-Billancourt [17].

Already on April 22, 1929, he moved from Rennbahnstr. 24 to Viktor-Adler-Str. 68/1, then on March 7, 1932, to Wiener Str. 52 and finally he moved back to Viktor-Adler-Str. 66 from May 27, 1936, to Oct. 28, 1938 [18].

In the years 1931 to 1935 he worked on designing and building several rocket engines for liquid fuels with shell cooling and control pin. He completed his first reaction engine with automatic nozzle in 1931. From 1932 to 1934 he built further reaction engines with up to 150 kg thrust. In this period, he completed at least nine test versions. In 1933/34 he built a rocket car for liquid fuels on which this ninth test version is mounted.

He took up employment as designer for apparatus and tools at Arado Aircraft Works in Rathenow on November 1, 1938. As he was not fully satisfied in this job and saw no way to advance his career there, he changed to Fieseler Aircraft Works in Kassel on March 1, 1939. Until January 1941 he worked on various assignments in the design department, e.g. installation of machine guns and aircraft cannons for a 'torpedo carrier' that was under development, design of a

suspension for a torpedo, the torpedo ejection device and the installations for emergency release of the torpedo etc. [19].

From March 3, 1939, Karl Cerny was registered at Mittelgasse 4/II c/o Ewald in Kassel [20]. On May 27, 1939, he married the hairdresser Hermine Blaha, who hailed from St. Pölten, in Kassel [21]. Hermine was born on December 11, 1913, as the second of four children of Franz Blaha, butcher (Jan 18, 1877, in Hlluck ((Hungarian: Magyarhradis))—April 12, 1957, in St. Pölten) and Katharina, née Gissmann, housewife (Feb 21, 1890, in Altenmarkt—Mar 21, 1972, in St. Pölten) [22]. Karl Cerny lost his wife Hermine in the bombing of Kassel on October 22, 1943 [23]. After only four years of marriage Karl lost the love of his life. His sister-in-law Maria (wife of his youngest brother Franz) said, "He came back to his home from the war as a broken man, he appeared kind of cranky." [24].

In the meantime, he took a distance learning course in aircraft engineering with *Kyffhäuser Technikum* in Frankenhausen (Thuringia) and then passed the examination as Ingenieur für Flugzeugbau (aircraft engineer).

After January 1941 he was promoted to "Ingenieur" by the technical management of Fieseler Werke, which meant that he worked in the project office and a short while later in the secret project office. This is where he contributed considerably to the development of the V-1. He designed several devices which were manufactured under his direction at VWW in Stuttgart and Breslau [25] [26].

On March 3, 1942, Karl Cerny applied for a job with Ober-Ing. Walter Riedel, Military Research Center East. Wernher von Braun wrote a reply letter to Cerny on June 12, 1942:

> "On the other hand I would very much like to write to Dir Bachem or Mr. Mewes, whom I am well acquainted with, in the matter of your application and to request your release. However, I doubt very much that this would have much prospect, because I was already unsuccessful in trying to obtain just an extension of the current deployment of your four comrades to Peenemünde." [27].

Cerny wrote to the Reich Aviation Ministry on August 15, 1942, and submitted a draft design for a rocket. This draft also was the subject of his discussion with Wernher von Braun in Peenemünde in September 1942.

A second letter by Wernher von Braun dated September 9, 1942, tells the following:

> "As we are a department of the Supreme Command of the Armed Forces and responsible for the field in question, you may present your ideas to us without any further approval from the Supreme Command. I would especially welcome this, because this would give us the opportunity to discuss the necessary issues related to your imminent transfer to us at the same time. Since the Reich Aviation Ministry has recently awarded us a new

> development assignment and intents to support us with additional staffing to complete it, the prospects of obtaining your release from Fieseler in this context do not seem unfavorable.
>
> So I suggest that you take a few days leave from your company without giving any further reasons and to use them to pay a visit to in Peenemünde. The best connection is from Berlin 1035, change once in Anklam, change once in Züssow, arrival at Wolgast-Hafen station at 1439, where you will be picked up by a car. I would be grateful for early notice of your visit by letter, telegram or telephone so I can ensure the pick-up and accommodation in Peenemünde. Except for a few short business trips to Berlin I will probably be here throughout the entire month of September." [28].

As Cerny stayed on with Fieseler Werke, one can assume that the efforts of the Army Research Center to bring Cerny to Peenemünde failed.

In early 1943, he was sent to Peenemünde for the testing of the V-1 devices. He independently made a number of innovations and improvements of the system and the launching pad, which were decisive in improving the launching process and the initial flight phase of the rocket.

Towards the end of the war, the workforce of Fieseler Werke was evacuated to Neuenwalde (between Wesermünde and Cuxhaven) and because of the further developments in the war, all left the plant on March 31, 1945. Cerny came from Camp Stüh and registered in Neuenwalde as of April 7, 1945, [29], thus he experienced the end of the war in Neuenwalde.

Together with a colleague, he opened a shop for cars and machinery there that repaired cars, agricultural machinery and electrical motors [30]. On May 29, 1946, he deregistered in Neuenwalde [31] and returned to Vienna in the same month. At the beginning of July 1946 he took up employment as foreman in the garage and workshop of company H. Schrack, the main distributor for Renault cars in Austria. One year later he was promoted to plant manager. He developed and tested several operating devices and many special tools for Renault vehicles. At the end of June 1954 his employment was terminated by mutual consent [32].

According to the registration records of the City of Vienna Karl Cerny was registered as widowed mechanic in Teyberggasse 8/5 in the 14th district from November 15, 1947, to August 6, 1949. From August 9, 1949, to October 27, 1951, he was registered in the 3rd district, Streichergasse 7/21, this time as widowed plant manager [33].

On September 26, 1951, Karl Cerny married his second wife, Maria Bogner, née Vonwald from St. Pölten, at the Registry Office of Wien-Landstrasse [34]. Maria, called Mizzi, was born on November 21, 1911, as second child of three to Leopold Vonwald, civil servant (Oct 26, 1881, in St. Veit an der Gölsen—May 24, 1956, in St. Pölten) and Emilia Sofia Katharina Vonwald, née

Hoffmann, housewife (Nov 4, 1883, in Mikuczorice, Poland—April 1, 1950, in St. Pölten) [35].

Karl and Mizzi lived in the 3rd district at Streichergasse 7/21 until June 8, 1956, and then moved to Bachgasse 2/10 in St. Pölten to a flat of the 'Glanzstoff' (chemical textile) factory after March 29, 1956.

Karl Cerny died on March 2, 1967, of cirrhosis of the liver at St. Pölten hospital and was buried at the main municipal cemetery of St. Pölten, Waldfriedhof (XVIII/12—Innen—184) on March 6, 1967. Maria died of cancer at St. Pölten hospital on January 18, 1982. Her urn was interred on January 22, 1982, at the municipal cemetery of St. Pölten in the crypt XV U—77 [37].

No further information is available about Karl Cerny's later career, although he did work on several improvements and inventions for some of which he filed patents:

Improvements and Inventions

- 1951 to 1956—Designing a V-1 with more powerful drive (+45 percent), a tank destroyer (aircraft) with jet pipe and two 42-machine guns automatically controlled towards the rear.
- 3-fold launching pads on an aircraft carrier (March 1952) and the jet pipe (February 1952).
- Development of a water purifier in April 1955.
- 1956 to 1957—Development and construction of wheelbarrows with integrated shock absorbers, types Muli I to III.
- 1957—Design of two jet-powered racing cars: Monoposto type "Torpedo" for 950 km/h; and type "Fangio" for 1100 km/h.

Patents [37]

- DE 735 877 1940-01-14
  Drill head with overload protection
- AT 170 687 1946-08-14
  Smoke emitting toy locomotive
- AT 170 973 1947-03-20
  Flue ducting for stoves and the like
- AT 187 843 1951-04-27
  Tototi pper (Assistant for doing the football pools)
- AT 179 128 1952-09-16
  Instrument for picking fruit
- AT 204 425 1957-03-09
  Tractor seat
- AT 232 302 1960-06-21
  Betting device for the football pools

Franz Bondy (Bondi)

Registration data [38]:

Bondy Franz Karl,
born on October 3, 1884, in St. Pölten
Occupation: Mechanic
The date he moved there is not known. Registered at Rennbahnstr. 24 in St. Pölten, moved to Vienna on May 27, 1939.

PD Dr. Martha Keil, Institut für jüdische Geschichte Österreichs (Institute for Austrian Jewish History), in St. Pölten provided the following information: "Franz Bondy (aka Bondi), born on October 3, 1884, in St. Pölten, occupation mechanic, ran a 'motor vehicle driving school'. Deregistered on May 8, 1939, to move to Vienna; deported to Minsk on May 6, 1942. Married to Frieda, born on August 1, 1889, deregistered to move to Vienna on May 8, 1940, (possibly error in the registry and should read 1939?), deported to Minsk on May 6, 1942. This transport of 994 people was annihilated by shooting or by gassing in vans on May 11, the same day it arrived, except for 80 men who were selected for forced labor. As there were two other women (Margarethe and Rosa) with the last name Bondy who were deported from Wien 2, Novaragasse 32/30 to Minsk on the same day, I assume that they were related to Franz and Fritz and were living in the same collective housing prior to their deportation. (The address is confirmed by another record on Franz Bondy dated November 25, 1941, that we have in our Institute).

Franz Bondy's "Lohnfuhrwerksgewerbe und Lohnkutscherei mit KFZ" (commercial haulage business and carriage providers with motor cars) was located at Rennwegstrasse 24 and was forcibly closed down on January 1, 1939, then on May 24, 1940, "aryanized" by the Reich Ministry of Labor.

An NSDAP record of August 18, 1939, has a note on the subject "Motor car driving school Franz Bondi": "This Jew is a bad and bold enemy of the NSDAP. He is an active communist." (copy of the record at the Institute)." [39].

Fritz Bondy (Bondi)

Registration data [40]:

Bondy Friedrich,
born on September 15, 1888, in St. Pölten
Occupation: Merchant
From December 21, 1934, to April 6, 1935, registered in St. Pölten,
Prandtauerstr. 4, moved to an unknown place.
From December 23, 1935, to January 17, 1936, registered in St. Pölten,
Rathausplatz 8

From January 17, 1936, to August 21, 1936, registered in St. Pölten, Rennbahnstr 24, moved to Vienna.
From August 27, 1938, to September 14, 1938, registered in St. Pölten, Rennbahnstr 24, moved from there.

PD Dr. Martha Keil says of him: "Friedrich (Fritz) Bondy, car dealer. There is no mention of him in the records in St. Pölten, but the database on the Austrian Victims of the Shoa in the documentation archives of the Austrian Resistance Movement (www.doew.at) lists a certain Fritz Bondy, born on September 15, 1888, died in Maly Trostinec, last address also in Wien 2, Novaragasse 32. This makes me think that it is the Mr. Bondy from St. Pölten who was deported on May 6, 1942, with other members of his family, because the 80 men pressed into force labor from this transport were taken to Maly Trostinec where there was a farm run by the SS." [41].

Franz Gessl

The director of Hammerbrotwerke in St. Pölten was born in Linz on July 5, 1880, and died on November 10, 1944, in St. Pölten. On June 6, 1904, he married Cäcilia Winkler, born on June 1, 1884, in Linz. The couple moved to St. Pölten, Neugebäudeplatz 1 in 1906.

They had three children: Friedrich, born on January 18, 1906¸ Alfred, born on October 20, 1908, and Franz, born on January 19, 1919, after 1939 they were in Klagenfurt [42].

The 1949 St. Pölten address directory shows the following on page 191 [43]:

Cäcilia, household,	Neugebäudeplatz 1
Friedrich (Hertha), baker,	Neugebäudeplatz 1
Alfred (Emma), baker,	Linzer Strasse 15
Stephan (Maria), baker,	Neugebäudeplatz 1

References

[1] Journal of the American Rocket Society, "*Astronautics*," No. 48, May 1941, page 11, in Jet Propulsion, author's archives.

[2] *Neues Wiener Tagblatt*—February 3, 1933—No 34—p. 7—Partial estate of Guido von Pirquet—Austrian Central Library for Physics of Vienna University.

[3] Austrian National Library Vienna—http://anno.onb.ac.at—*Wiener Bilder*, February 26, 1933, year 38, no. 9, p. 5.

[4] Austrian National Library Vienna—http://anno.onb.ac.at—*Das interessante Blatt* (Vienna), March 9, 1933, no. 10, p. 7.

[5] Austrian National Library Vienna—http://anno.onb.ac.at—: *Neue Freie Presse*—March 12, 1933—no 24604—p. 14.

[6] *Das kleine Volksblatt* (Wien), No 77, Sat, March 18, 1933, page 5—Helmut Dorfner, MSc, Administration St. Pölten.

[7] Magazine Castrol 1933—April—No 22—Year 3—page 31—author's archives.

[8] *Kleine Zeitung* (Graz), Year 30, no. 154, Tuesday, June 6, 1933—page 11—author's archives.

[9] Magistrate of the City of Vienna, Magistrate Department 8, Vienna City and National Archive—MA 8—B-AW-171499/2014.

[10] E-mail communication of Sep. 7, 2009, from Ulrike Melchus, Elections and Population Register, Administration of St. Pölten.

[11] E-mail communication in 2005 from Helmut Dorfner, MSc, Cultural Affairs, Administration of St. Pölten.

[12] Marriage certificate of Karl and Maria Cerny of Sep. 26, 1951—Wien-Landstrasse Registry Office—no. 813/1951, author's archives.

[13] E-mail communication of Aug. 10, 2009, from Helmut Dorfner, MSc, Cultural Affairs, Administration of St. Pölten with the assistance of Ulrike Melchus, Elections and Population Register, Administration of St. Pölten.

[14] Curriculum vitae of Karl Cerny around 1954, St. Pölten, Bachgasse 2124—author's archives.

[15] E-mail communication of 2005 from Helmut Dorfner, MSc, Cultural Affairs, Administration of St. Pölten.

[16] Curriculum vitae of Karl Cerny around 1954, St. Pölten, Bachgasse 2124—author's archives.

[17] *Neues Wiener Tagblatt*—February 3, 1933—No 34—p. 7—Partial estate of Guido von Pirquet—Austrian Central Library for Physics of Vienna University.

[18] E-mail communication of 2005 from Helmut Dorfner, MSc, Cultural Affairs, Administration of St. Pölten.

[19] Curriculum vitae of Karl Cerny around 1954, St. Pölten, Bachgasse 2124—author's archives.

[20] E-mail communication of June 24, 2005, from Frank-Roland Klaube—City of Kassel—Cultural Affairs Dept.—Municipal Archives.

[21] E-mail communication of Sep 30, 2016, from Florian Franzmann—City of Kassel—Cultural Affairs Dept.—Municipal Archives.

[22] E-mail communication of Dec 23, 2015, from Helmut Dorfner, MSc, Cultural Affairs, Administration of St. Pölten.

[23] E-mail communication of June 24, 2005, from Frank-Roland Klaube—City of Kassel—Cultural Affairs Dept.—Municipal Archives.

[24] E-mail communication of June 8, 2009, from Helmut Dorfner, MSc, Cultural Affairs, Administration of St. Pölten.

[25] Consul Hellmut E. W. Niethammer (Dec. 23, 1920—Feb. 9, 2008) was familiar with the name of Karl Cerny from Stuttgart. Mr Niethammer knew Cerny because his parents' company was a supplier to Fieseler Werke in Kassel and their manufacture of the V-1 (Fi 103). To his knowledge Cerny worked at Fieseler Werke in Kassel during WW II. His wife and children died in a bomb attack on Kassel. Conversation between Consul Hellmut E. W. Niethammer and Karlheinz Rohrwild, at the beginning of the nineties.

[26] In cooperation with Fieseler and Technical Group E8 of E-Stelle Peenemünde-West the electrical engineering firm Emil Niethammer in Stuttgart-Vaihingen developed the entire launching system for the Fi 103. After the completion of the necessary changes and improvements as a result of the launching tests with Walter catapults in Peenemünde-West in 1943/44 company Niethammer became responsible for the series production of the launching plant/note 23) (H. Niethammer—personal communications of August 4 and September 22, 1987) Botho Stüwe, Peenemünde West, Bechtermünz Verlag 1998, ISBN 3-8280-0294-4, S. 500.

[27] Letter by Dr. Wernher von Braun—Peenemünde of June 12, 1942, to Karl Cerny—author's archives.

[28] Letter by Dr. Wernher von Braun—Peenemünde of Sep. 9, 1942, to Karl Cerny—author's archives.

[29] E-mail communication of Feb 11, 2015, from Mayor Ellen Frank—City of Neuenwalde.

[30] see 16.

[31] see 29.

[32] see 16.

[33] Magistrate of the City of Vienna, Magistrate Department 8, Vienna City and National Archive—MA 8—B-AW-1714699/2014.

[34] ibid.

[35] E-mail communication of Dec 23, 2015, from Helmut Dorfner, MSc, Cultural Affairs with the assistance of Ms Melchus, Population Register, St. Pölten.

[36] E-mail communication of Aug 10, 2009, from Helmut Dorfner, MSc, Cultural Affairs, Administration of St. Pölten.

[37] Espacenet—European Patent Office—http://worldwide.espacenet.com.

[38] E-mail communication in 2005 from Helmut Dorfner, MSc, Cultural Affairs, Administration of St. Pölten.

[39] PD Dr. Martha Keil, Institut für jüdische Geschichte Österreichs (Institute for Austrian Jewish History), Dr. Karl Renner-Promenade 22, A-3100 St. Pölten. The information is taken from Christoph Lind, "Es gab so nette Leute dort" (There were such nice people there). Die zerstörte jüdische Gemeinde St. Pölten. St. Pölten 1998, ISBN 3-85326-101-9, S. 198 (on the company), S. 267 (brief biographical data). There were some more people called Bondy in St. Pölten, but it is not known what their relationships were. Two beautiful large Art Nouveau graves of the Bondy family are preserved on the Jewish cemetery of St. Pölten.

[40] E-mail communication of Dec 23, 2015, from Helmut Dorfner, MSc, Cultural Affairs, Administration of St. Pölten.

[41] PD Dr. Martha Keil, Institut für jüdische Geschichte Österreichs, Dr. Karl Renner-Promenade 22, A-3100 St. Pölten.

[42] Data provided by Helmut Dorfner, MSc, (Cultural Affairs) with the assistance of Ms Melchus, (Population Register), Dec 23, 2015.

[43] Address directory of the city of St. Pölten—1949,—author's archives.

Figures References

Figure 1–1: Estate of Karl Cerny, received from his godchild Mr. Peter Vonhof in mid-October 2014 (Karl Cerny's widow kept his documents after his death, they then passed on to her sister and later to Cerny's godchild Peter Vonwald).—author's archives.

Figure 1–2: http://anno.onb.ac.at—Österreichische-National-Bibliothek—Wiener Bilder—Feb. 26, 1933—page 5.

Figure 1–3: http://anno.onb.ac.at—Österreichische-National-Bibliothek—Das interessante Blatt—Mar. 9, 1933—page 7.

Figure 1–4: Author's archives—Mar 8, 2009, (four pictures of press photographer Karl Schleich via eBay).

Figure 1–5: Scan provided to the author by Hermann Fischl (neighboring house) by e-mail on Mar 29, 2009.

Figure 1–6: Das kleine Volksblatt (Vienna), No 77, Sat, March 18, 1933, page 5—Helmut Dorfner, MSc, Administration St. Pölten.

Figure 1–7: Magazine Castrol—April 1933—page 31—author's archives.

Figure 1–8: Popular Science—June 1933—page 29—author's archives.

Figure 1–9: see 1.

Figures 1–10—14: ibid.

Figures 1–15—18: Author's archives.

Figures 1–19—25: see 1.

Figures 1–26—27: ibid.

Figure 1–28: see 1.

Figure 1–29: Author's archives [30—31] see 1.