In May, 2007, a 1918 Franklin was donated to the Toyota Automobile Museum by Waseda University. This Franklin was in bad shape; leather interior and seat trims were worn out, body paint was peeled off, and electric components and wiring harnesses malfunctioned.

Six years later, in July, 2013, the Toyota Automobile Museum launched a Franklin restoration project. This restoration was completed in May, 2015. Upon the completion of the restoration, I would like to re-evaluate this Franklin, Series 9, and also like to make a report on the restoration project.

The overviews of the Franklin Automobile Company and characteristics of Franklin models in each generation were already described in detail in the "Furanklinni Tsuite (About Franklin)" in publication No.18 by Koji Yamada. Therefore, this report is specifically focused on this 1918 Franklin, Series 9, describing the history of the car, people involved in the car, the overall background and the restoration project. — Nobuyuki Kawashima

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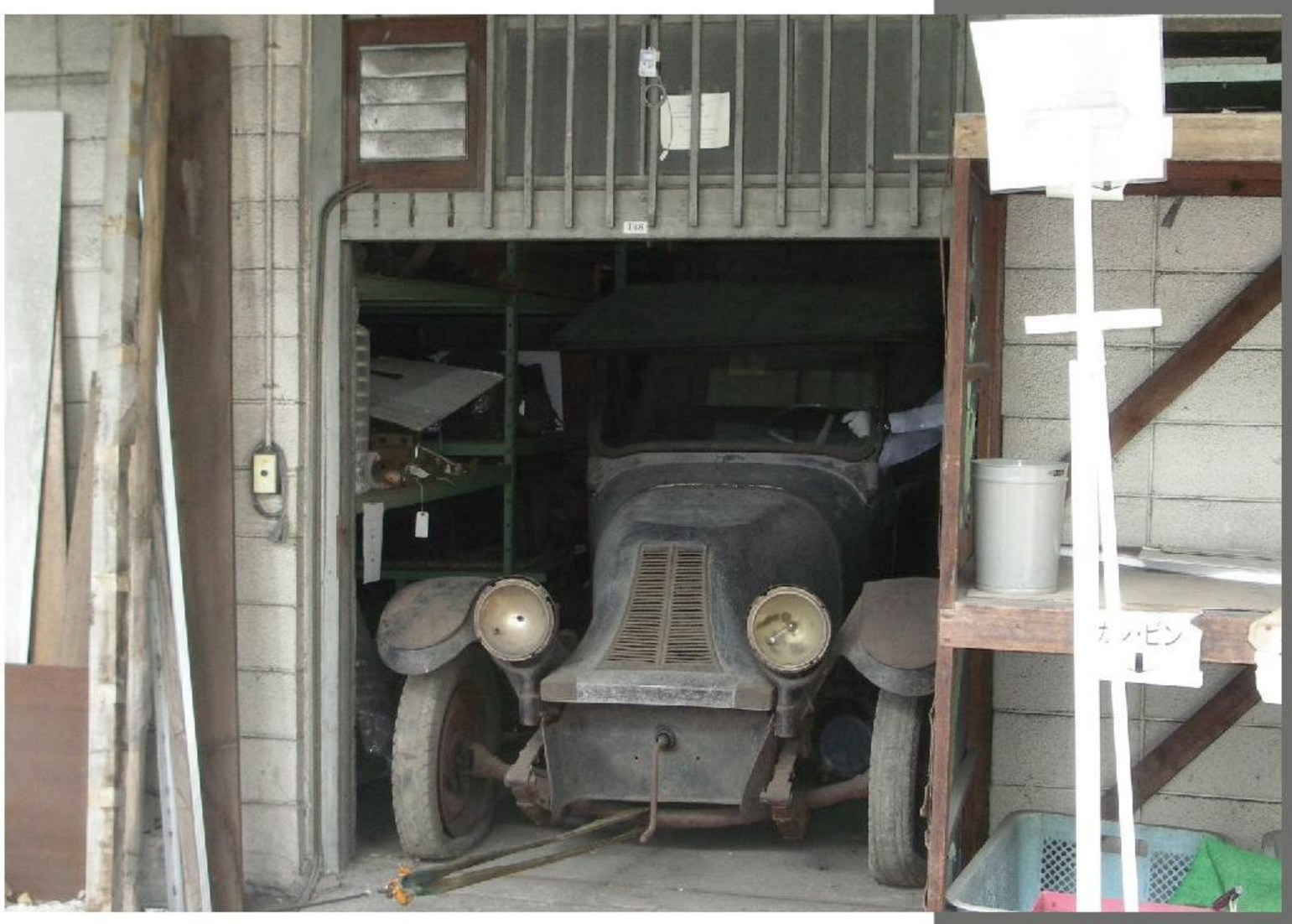
A Japanese Franklin

The Restoration of a 1918 Franklin Series 9-B

HISTORY

First of all, the history of this 1918 Franklin is unknown prior to its arrival at Waseda University. Documents and publications for the Franklin published during the days of Waseda University ownership did not describe the history. The late Professor Emeritus Saito of Waseda University was present and remembered when the Franklin was donated to Waseda University; however, the history prior to the arrival at Waseda University was not found from the interview of Professor Saito, either. Only one clue was a comment by Professor Saito. He said: "This Franklin was donated for research to the late Professor Torajiro Watanabe from parents of one of his students not long after WW II." How had the 1918 model car been used until late 1940's? The only way to find the answer is to make assumptions from the condition of the car, the engine cut section model donated with the Franklin, and Japan's domestic affairs around 1918.



In 1918, the Japanese Imperial Army established an automobile troop. They had purchased many vehicles from overseas including 2 Franklin cars for testing purposes. These Franklin cars were shipped to Northern Manchuria, and they were used for the "Cold Climate Function Test" in February, 1920.[1] A research report shows that air-cooled Franklin cars achieved high scores on the trials.[2] Another document notes that three Franklin cars were returned to the Army Armory in Tokyo in 1924.[3]

Is the Franklin at the Toyota Automobile Museum one of Franklin cars owned by the Japanese Army? No specific clue was found from documents at the National Institute for Defense Studies of the Ministry of Defense. However, there is a strong possibility that this Franklin was one of them because the frame number was removed from the vehicle, and the engine cut section model, which was considered to be used for training purposes, was retained with the car.

There is no clear evidence of how extensively this Franklin had been driven while owned by Waseda University. Waseda University documented a trip to the 5th Automobile Show held at the Korakuen in Tokyo from October 10th to 20th in 1958. There is no driving record showing that the Franklin was run thereafter. This trip was described by Professor Saito as an episode in the "Tsuioku (Remembrance)" published around 1983.[2] This episode was also described by Professor Saito when he visited the Toyota Automobile Museum to see the progress of the restoration on October, 2013.

The 5th Automobile Show had an event entitled "The Exhibition of Classic Cars". When the Waseda University group drove the Franklin to this event, event staff thought the Franklin was one of the exhibits for the event and they guided the Franklin to the exhibition area.

After a time, the Franklin was placed on the aisle in the Thermal Engineering Laboratory building on the old campus of the Science and Engineering Graduate School of Waseda University. After the Science and Engineering campus was moved to the current Shin-Okubo campus, there was no place for the Franklin to be displayed. Therefore, Waseda University donated the Franklin to the Transportation Museum in Tokyo on December, 1983. The Franklin had been displayed on campus for about 30 years including the period of being driven. Perhaps many students of those days who are now 50 to 80 years old would have seen it!

In 2006, the Transportation Museum was closed and moved to Saitama city to become the Railroad Museum. Since the museum changed its focus to specialize in exhibits of rail transport, the museum offered to return the Franklin to Waseda University. However, Waseda University did not have a place for the Franklin on campus. Professor Saito selected some potential candidates for the Franklin's new home, including the Toyota Automobile Museum. As a result of negotiations with these candidates, Waseda University eventually reached an agreement with the Toyota Automobile Museum, and the Franklin was donated on February, 2007.

RESTORATION

PARTNERS

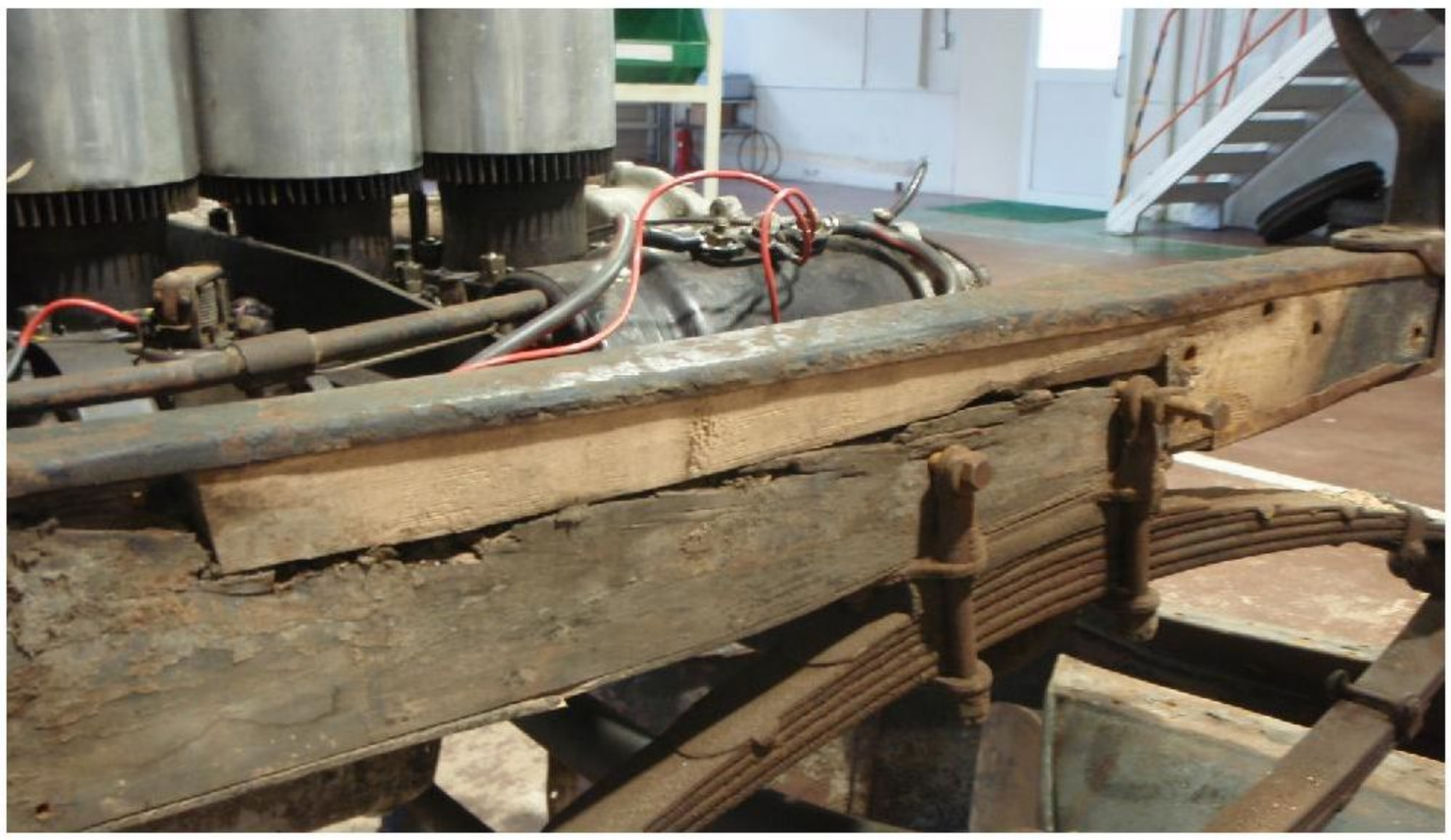
The main restoration work was outsourced to the Vehicle Restoration Division of Shinmei Industry, which performs major repairs and restorations of cars for the Toyota Automobile Museum. Restoration work for interiors and seats was performed by Toyota Boshoku, an automotive interior systems manufacturer. "Himawari Network", a local cable TV company in Toyota city made a documentary program, broadcasting 12 series of the Franklin restoration project.

SEPARATION OF BODY AND CHASSIS

Body panels and frame were only attached with dozens of through bolts. First, accessories were removed from the vehicle, and then body panels and frame were separated. Finally the engine was unloaded. It took approximately 2 weeks to complete this process.

DAMAGE ON RIGHT FRAME

After separating body panels from the frame, a trace of a repair was found on the right wood frame rail. Wood frames are a characteristic of the Franklin. A joint portion of the wood frame where leaf springs were installed had been broken and repaired before. Therefore, the wood frame was restored with new wood.



In this overhaul, cylinder bores were honed to remove the rust, and pistons were reused by eliminating carbon on top of the pistons. Some damage was seen on valve springs and rocker arms, and these damaged parts were replaced with parts from the engine cut section model.

A Franklin Series 9 parts catalogue was available during the restoration. This 254-page catalogue contains the list of engine numbers corresponding to body types. According to the catalogue, the engine with No. 57572, which was

One of the most famous episodes in the days of Waseda University ownership of the car was an accident which happened in 1953, when the Franklin fell off the bank of the Tone River.[4] This was the largest accident after the Franklin was donated to Waseda University. There is a possibility that the damage on the wood frame was caused by this accident. After the accident, the Franklin was brought to Nasu Jidosha for repair, but no repair record exists. If we had been able to interview Reiji Nasu, a shop general manager of Nasu Jidosha, we could have obtained more detailed information about this Franklin. Unfortunately Mr. Nasu passed away in 2012. It was in 2015 that we found that Nasu Jidosha, in Itabashi ward, Tokyo, had provided maintenance and repair services to the Franklin in the days of Waseda University ownership.

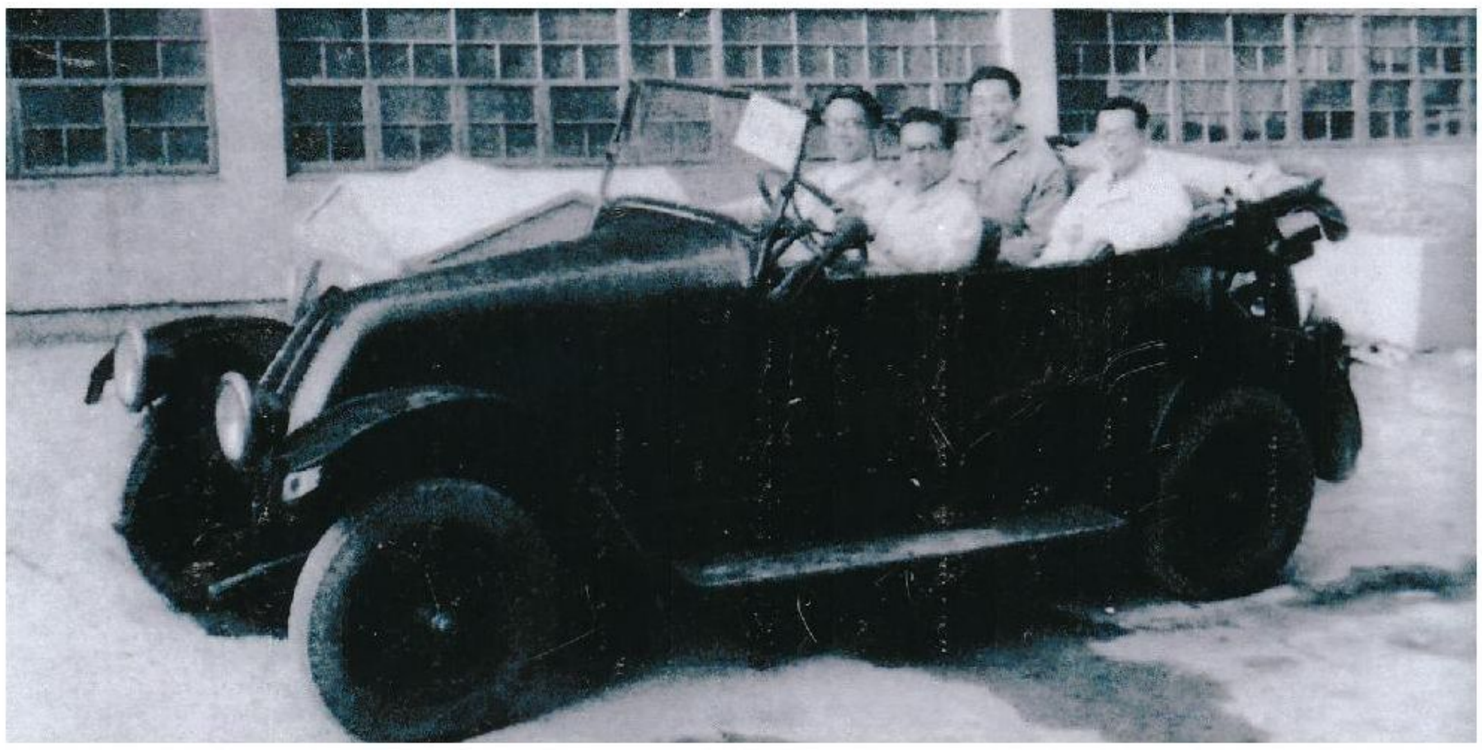
When the accident happened, Prof. Torajiro Watanabe was driving the car, and Reiji Nasu was in the passenger seat. Their sons, Akira Watanabe, Chokyo Watanabe and Kenichi Nasu were riding in the rear seat. There were opportunities to meet and interview these 3 people who were in the rear seat at the time of the accident. When the accident happened, Kenichi Nasu was 5 years old. Although there is no way for him to know about the repair work of the Franklin, he provided valuable information including pictures of Nasu Jidosha before WW II and in later days.

ENGINE OVERHAUL

The crankcase of the air-cooled inline 6-cylinder Franklin engine was designed with 7 crankshaft bearings. This represents a technology-oriented design concept of the Franklin Automobile Company. As a reference, the inline 6-cylinder Chevrolet engine and Toyota AA engine, which was developed based on the Chevrolet engine in the 1930's, had only 3 bearings.

This Franklin engine did not have any scratches or symptoms of galling on metal parts. Therefore, smooth engine performance was achieved by cleaning-up and re-assembling the engine.

This engine condition likely benefited from a past overhaul by 5 students of Waseda University in the summer of 1957. The episode of the previous overhaul was also found during the restoration activities. Tadanori Ooishi, an alumnus of Waseda University, told the story and provided a picture of those days.



mounted on this Franklin was used for the Touring car model. On the other hand, the engine cut section model with No. 42369 was developed for the 4-passenger Roadster model. The Franklin at the Toyota Automobile Museum is a "4-passenger Roadster" model, and engine numbers for the 4-passenger Roadster models range from No. 40001 to 43000. Pistons assembled with the engine mounted on this Franklin are different from drawings in the parts list, and pistons used for the engine cut section model are for the Series 9. It is unknown whether the original engine was replaced before being donated to Waseda University, or if the engine was not manufactured with items corresponding to the parts list. In any case, this parts catalogue was very useful for the restoration and assembling of components because it contains illustrations.

SEATS AND INTERIOR TRIMS RESTORATION

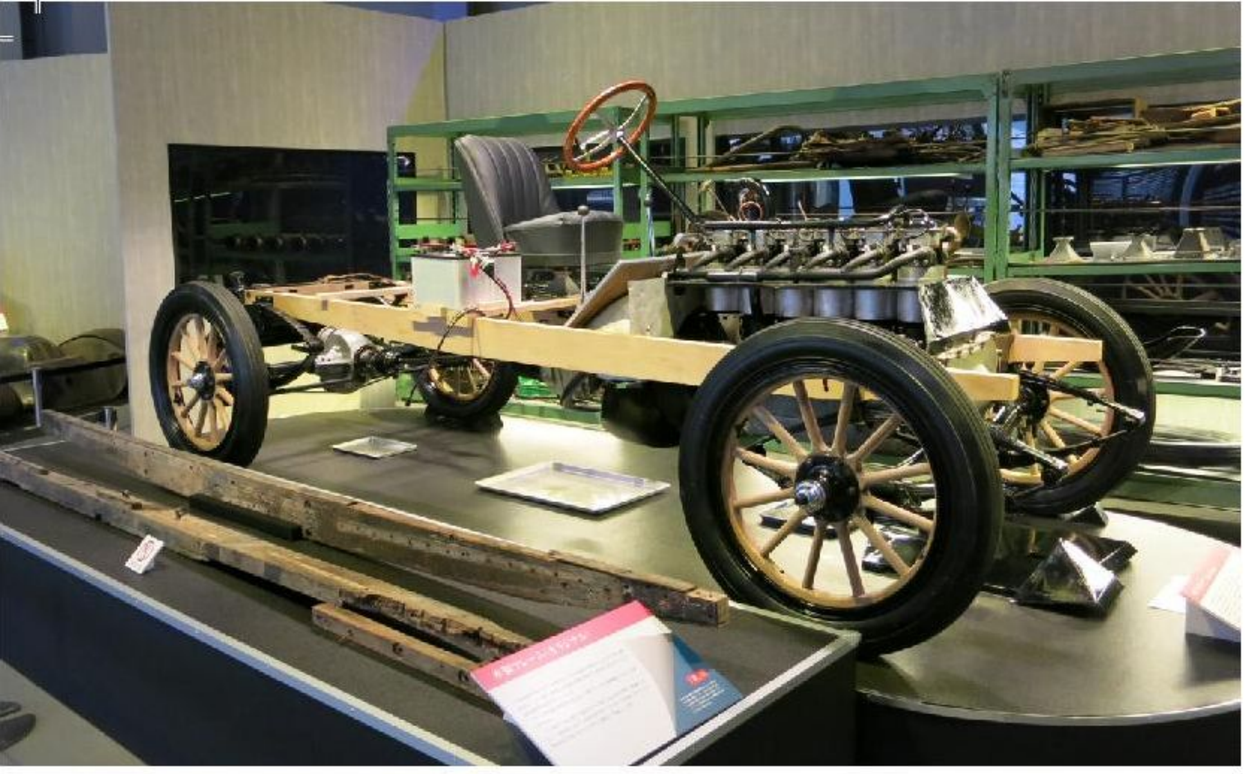
The restoration of seats and interior trims was outsourced to Toyota Boshoku. Toyota Boshoku performed the restoration work on their site while Shinmei Industry restored the body on its site simultaneously. Toyota Boshoku manufactured a simplified jig, which was designed by precisely tracing the original body shape. This was a new effort to try out and examine the assembly process of the interior systems without an actual body on site.

Basically, original seat components used for the inside of the seats such as springs, belts to fix seats and cotton were reused. Seat trims were severely deteriorated so they were replaced with a similar pattern of leather.

MANUFACTURE OF NEW WOOD FRAMES

Original frames were made of white ash, fraxinus of oleaceae family, which grows widely in North America. However, fraxinus mandshurica, fraxinus of oleaceae family, which is available in Japan was used for the frames. Both white ash and fraxinus mandshurica are hard elastic wood and are used for baseball bats.

When an engine and a body are installed, frames warp downward. Therefore, the frames were designed to warp upward by 8mm to stay flat in the drawing, and they were processed by the 3D CNC machine.



COMPLETION OF BARE CHASSIS

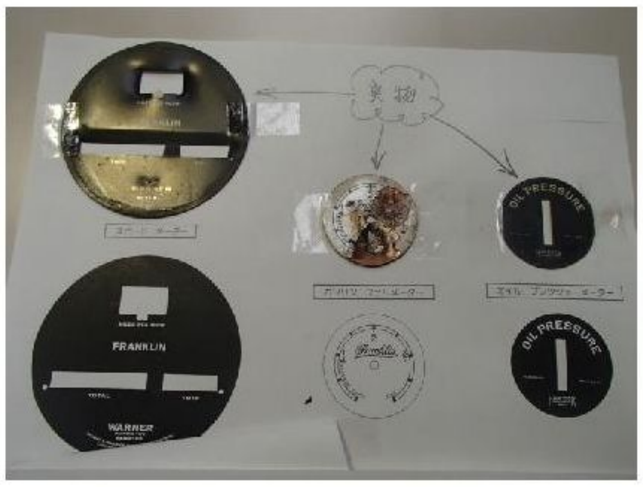
When the Toyota Automobile Museum held the "Ura (Behind-the-scenes)" exhibition on April, 2014, the bare chassis of the Franklin was exhibited as behind-the-scenes of the restoration project. Furthermore, the Franklin ran with the bare chassis for the demonstration on the first day of the "Ura" exhibition as one of events. When the press release for the demonstration was issued, the engine was not even able to run! There was a concern about the restoration being completed for the demonstration. Since Shinmei Industry accelerated the restoration work, the Franklin was able to be demonstrated at the big moment.

BODY REPAIR

Repair work for aluminum body panels requires high-level technique. The repair work for the aluminum body involved utilizing hand-made jigs needed for this restoration. During the process of the repair, additional old damage was found. There was a trace of a repair on the A pillar mounted area on the right side of the body. It is quite possible that the A pillar was broken when the accident happened in 1953.

INSTRUMENT RESTORATION

Basically, the speedometer, oil pressure gauge, fuel gauge and other instruments were overhauled in order to make them functional. A dial plate was newly added. An ammeter was removed from the instrumental panel because this made-in Japan ammeter was retrofitted in the past.



SOFT TOP RESTORATION

According to the plan, soft top frames were supposed to be reused while the soft top fabrics were to be replaced. However, damage was found on 2 wood frames when disassembled. Shinmei Industry was working hard to meet the deadline for the demonstration run at the Nagakute Classic Car Festival on May 24, 2015. They needed to work on the repair of the soft top frames, while they were finishing up other work for the demonstration. Thus, Shinmei Industry made great efforts to meet deadlines for the project again as they had done for the bare chassis run demonstration.

ACKNOWLEDGMENTS

The restoration of the 1918 Franklin car now has been completed. The Franklin has been run in demonstrations before many people. Persons related to Waseda University, particularly those involved in the Thermal Energy Conversion Engineering Lab, have been strong supporters of the restoration project. Some have provided information for Franklin cars, while others shared memories and stories of the 1918 Franklin from their experiences. Through the Franklin I was able to interact with these people, and was able to come to know the life of this 1918 Franklin. Generally speaking, recognition of the history of the life of a car through some 97 years further enhances the value of the contents at the museum. Furthermore, I am glad to enlarge such knowledge by giving background, which can tell a story of the car. As a report of the restoration of a car, this account perhaps also should have focused on the original condition of each part and the restoration technique. However, for this Franklin project, many people put passion into the restoration and supported the project. Therefore, I also included the interaction with these people in this report. I would like to express my appreciation to all persons who supported this project.

Nobuyuki Kawashima

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3. Kazutsugu Inoue, "Heiki Kansono Ken Tucho", Ministry of War of Japan, 1924 (Japan Center for Asian Historical Records, National Archive of Japan, Ref. C07061712600)

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How Miho Ohsawa introduced us to a Japanese Franklin

I am a Japanese automotive consultant in Ann Arbor and I have been conducting powertrain researches, so I have developed relationships with Japanese academics and OEM engineers. I know some faculties at Waseda University including Prof. Saito.

In August, 2013, Taro Ishi, one of visiting researchers at Waseda University told me the restoration project of the Franklin car. He briefly told me the story about this Franklin. I also know a son of Prof. Torajiro Watanabe very well, too. He is a visiting researcher at Waseda University also. I had known Franklin cars, but I was not aware of detail technologies and history. I only knew Franklin cars had air-cooled engines. I was surprised at the fact that such an old Franklin exists in Japan. So I was fascinated by this Franklin.

Mr. Ishi told me that the Toyota Automobile Museum was looking for the information about the Franklin. Initially, they were not able to identify the model year of this Franklin since the engine number was removed, and further, there was not enough information about Franklin cars in Japan. They are not sure if the model year was 1918 or 1919.

Therefore, I started gathering information about the Franklin cars to identify the model year. Mr. Ishi was leading this project from Waseda University, so I wanted to help him out. Since I perform researches and I have lived in US for a long time, I believe I have better networks and have more advantages to find extensive information about the Franklin than other people in Japan.

I found and contacted the Franklin Club. The Franklin Club introduced Tom Rassmussen to me. I contacted Tom and he gave me a lot of useful information. I went to libraries such as Detroit Automotive Library to see some documents and I asked information about the Franklin through my LinkedIn group (Automotive Historian group). A lot of people gave me information, but I was not able to find any valid data and clues to determine the model year of this Franklin. I went to Gilmore Automobile Museum and met Dick Bowman. Dick helped me for the research at their library.

There is a classic car show called the Rolling Sculpture Car Show in downtown Ann Arbor every July and I go there every year. In 2014, I went to this show and talked to some people who exhibited their old classic cars. One guy told me that Sinclair Powell was showing his car at this event, so I looked for him. Eventually I found him and told him about the project. I told him we are trying to find the model year of the Franklin in Japan. Fortunately, he lives nearby my house, so I visited his house. He provided me some useful information.

Mr. Kawashima is an engine engineer, so he is very familiar with engine technologies. While working on the restoration, Mr. Kawashima and Shinmei Industry came up with some questions about Franklin technologies, so I asked Tom Rassmussen. Tom's knowledge and expertise were very helpful for the restoration project. We have found very interesting facts about the Franklin from Tom.

I went to the Air-cooled Show at the Gilmore last year. I talked to one of Franklin owners, Chuck Johnson. I told him the story about the Japanese Franklin and I also told him Mr. Kawashima is writing the story about the restoration project. He was very interested in this project and he said he would like to suggest the Franklin Club publish the story of the Japanese Franklin in their magazine. At the same time, Tom also said he would like to have the article of the Japanese Franklin to publish in the air-cooled car magazine.

I asked Mr. Kawashima if he can provide an English article. He told me it takes time to translate the article, so I volunteered to translate his article since I have some knowledge about this Franklin including technologies and the restoration. I asked Sinclair to edit the English article when I saw him at the Orphan Car Show in Ypsilanti last year.

I visited the Toyota Automobile Museum and Shinmei Industry in February, 2015 when I went to Japan. They were working for the final process, restoring the soft top. They showed me some original parts, too.

In January this year, I went to Nagoya, Japan to visit some automotive companies, so I visited the Toyota Automobile Museum. Mr. Kawashima took me to their backyard and showed me the restored Franklin. He even ran the engine, too. When I made a presentation at Waseda University on this trip, I bumped into Mr. Kinugawa, a retired Toyota advanced engine engineer. Since I had not seen him for a while, I did not know he was also involved in this Franklin project. He sent me a CD with a lot of pictures and I copied and mailed it to Chuck and Tom.

I was so glad to be involved in this Franklin project because I have learned about Franklin's outstanding advanced technologies. Their technology concepts are very similar to today's technologies, maybe even better.

Last year, Mr. Ishi came to Detroit to receive the award at the International ITS Conference. I took him to Gilmore. He was also amazed at the Franklin's technologies. I also influenced one of the former Sr. general managers of Toyota on Franklin cars. After I told him about the Franklin restoration project, he went to Franklin bare chassis event and he learned about the Franklin's technologies from his friend who is working for the Toyota Automobile Museum. As Mr. Kawashima described in his article, many people have been fascinated by Franklin and have interacted with each other.

I'd like to say "Thank you" to Franklin!

Miho Ohsawa