

Part II

Tracing paths of history

Rudolf Straubel, Walter Bauersfeld, and the projection planetarium



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Editor's Note:

The following is the second and final part of an article begun in the December 2013 issue that reviews the history of Rudolf Straubel, Walter Bauersfeld, and development of the first projection planetarium by the Zeiss Optical Company starting in 1914.

Briefly summarizing, the first article included the founding of the Zeiss Optical Co. in Jena, Germany in 1846 and its leadership; the formation of the Carl-Zeiss-Siftung, and the employment of the key figures in the development of the planetarium. It also includes the company's relationship with the Deutsches Museum and its quest for a better portrayal of the stars.

The first part concluded with the first of three discussion sections examining the lack of mention of Rudolf Straubel in the historical documents surrounding the planetarian, specifically the lack of credit given by Franz Fuch in an article written in 1955.

This particular discussion section erroneously concluded with these words: "Although it is not known with certainty why Fuchs did not give Straubel the warranted credit for his contributions, we will offer a possible explanation at the end of this article." The correct conclusion instead should read: "We have no explanation why Fuchs did not credit Straubel for his contributions; this mystery will require further research."

Please note that the sentence had been changed earlier by the author, a change that had been missed by the editor.

Discussion: Bauersfeld's account of the "birth moment" meeting

Some obvious inaccuracies in Bauersfeld's article from 1957 have been discussed by others, especially by Ludwig Meier. For example, Bauersfeld placed Oskar von Miller as representative of the Deutsches Museum at the meeting, instead of von Miller's envoy, Franz Fuchs, as evidenced by the correspondence. As well, Bauersfeld took some liberties in the time line of the planetarium development progression (17 Meier pp. 97-98).

Yet, it is Bauersfeld's singular mention of Straubel's active, shared role in originating the concept of the projection planetarium which is most important: "Then of course, also the fixed stars should be projected from the central apparatus." Coming from the person generally considered the "inventor" of the projection planetarium, Bauersfeld's attribution to Straubel of the projection of the fixed stars is particularly significant, and further underscores Straubel's crucial role, as we will discuss below.

Bauersfeld's proposal "to optically project the pictures of the heavenly bodies onto the interior surface of the sphere" from a central apparatus was intended to replace the compli-

cated mechanical arms with the planets, sun and moon located at their ends, as originally designed. But it left in place the need for the rotating sphere signifying the night sky, with hundreds of holes in it, lit from behind, simulating the fixed stars.

Straubel's contribution that "also the fixed stars should be projected from the central apparatus" meant combining, into the device at the center of the sphere, all the mechanics required for the presentation. It also rendered the sphere's design (hundreds of back-lit holes) and its rotational mechanics obsolete.

Now a simple, fixed dome structure could be used, to project both the heavenly bodies and the fixed stars onto its interior surface. The size of the sphere was no longer limited by the mechanics of rotating it. Many more people could be placed inside the hemisphere and watch the presentation than with the original design.

Bauersfeld's assertion that Straubel considered the projection of the fixed stars an essential element in the concept of the projection planetarium indicates that Straubel saw the big picture, and had the vision, to conceive an optical projection apparatus that was entirely self-contained and did not require any mechanical, movable parts outside of the device. This defining "birth moment" in the projection planetarium's origin has been likened to a "gestalt switch" by historian Jordan Marché. (16 Marché, p. 13)

In early publications about the planetarium from the 1920s, no attributions were made as to the origin of the idea. Instead, the projec-

Peter Volz (born 1950) is a grandson of Zeiss optical physicist Ernst Wandersleb (1879-1963), whose family had close ties to the Straubel and Langer families. During his childhood in Germany Volz met the two Straubel sons Heinz and Harald. It was only after more recently contacting Straubel's great-nephew Gerhard Langer in the US that Volz became interested in the persona of Rudolf Straubel. This then led to a visit to the archives of the Deutsches Museum in Munich and further research. Volz wrote the article on the suggestion of planetarium historian Jordan Marché, a former editor of the *Planetarian*.

Opening page of the US patent issued for the "Device for Projecting Stars." Public record from the United States Patent and Trademark Office

Feb. 8, 1927. W. BAUERSFELD 1,616,736
 DEVICE FOR PROJECTING STARS
 Filed Oct. 13, 1925 4 Sheets-Sheet 1

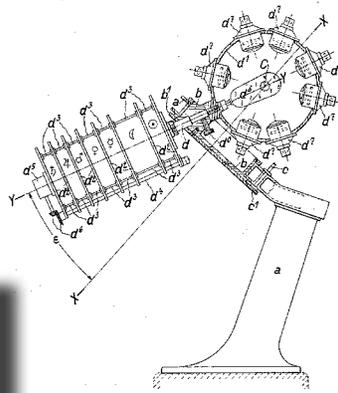


Fig. 1

Inventor:
 Walther Bauersfeld



Rudolf Straubel



Walther Bauersfeld

tact with the Straubel family. He reports of a visit as a youngster with his school class to the Jena planetarium in the 1930s.

After the visit, he excitedly told Werner Straubel about the planetarium. At that time Werner, Rudolf Straubel's son, was in his thirties. Gerhard remembers Werner telling him that he should know that the planetarium was Uncle Rolf's (Straubel's) idea. (15 Linda Langer Snook, p. 122)

It should also be noted that Werner Straubel himself played a role in the history of the planetarium. He had become a physicist and had joined Zeiss in the early 1920s. Coinciding with the issuance of U.S. patent no. 1616736 for the projection planetarium on February 8, 1927, while active in international sales he spent an extended time in the United States as Zeiss representative for the planetarium.

His presence at the 39th meeting of the American Astronomical Society in New Haven, Connecticut (December 29-30, 1927) is documented (24 Popular Astronomy). So too are his efforts, in 1927, to bring a Zeiss planetarium to Chicago, three years before the opening of the Adler Planetarium, as evidenced by Werner Straubel's correspondence with Leo Wormser, attorney of Julius Rosenwald, vice-president of Sears, Roebuck and Co. and Max Adler's brother-in-law. (14 MSI Archives) Werner Straubel's statement to Gerhard Langer should therefore be regarded as quite significant.

F. Jentsch, in his 1934 article on Straubel, described Rudolf Straubel's task as scientific director of Zeiss in these terms: "to spread seeds and present new ideas everywhere, but seldom to be able to execute a project by himself." (13 Jentsch, p. 217) This statement sounds like an accurate description of Straubel's role in the development of the projection planetarium concept.

Scope of Straubel's work at Zeiss and main accomplishments

Siegfried Czapski described how, upon joining Zeiss management, Straubel immersed himself "in commercial and organizational issues, scientific issues and technical and design issues, all at the same time... That is Abbe's spirit." (11 Hermann, p. 122) Friedrich Schomerus summarized Straubel's work at Zeiss "in two points: Straubel as a technical physicist and as an entrepreneur who is looking far ahead and is pushing ahead." (20 Schomerus, p. 95) Markus Becker concluded: "The breadth of tasks that Straubel was involved in as a top manager seems to replicate Abbe's." (5 Becker, p. 22)

As the scientific director of Zeiss, following in Ernst Abbe's footsteps, it was Straubel's responsibility to ensure that product develop-

tion planetarium was simply presented as a Zeiss project. (4 Bauersfeld; 25 Villiger) While Bauersfeld publicly received credit in 1924 for the construction of the projection planetarium (2 Auerbach pp. 193-194), it was likely Straubel's own modesty which prevented him from claiming credit for his contribution to the concept of the device.

After World War II, of the participants in the early discussions only Franz Fuchs and Bauersfeld were still alive. Given that in Fuchs's account Straubel is almost completely gone from the history of the planetarium, it is Bauersfeld's co-attribution to Straubel which makes his account so significant. Published when Bauersfeld was 78 years old, it is his only public statement giving credit to Straubel that we know of.

Discussion: Origin of the idea of projection for the planetarium

As reported earlier, in February 1913, von Miller had been made aware by Eduard Hindermann that "the idea of using light projection can of course be applied and used with advantage when simulating the view of the world according to the Ptolemaic system" (9 Fuchs p. 58). Yet in his 1957 article, Bauersfeld presented the optical projection of the pictures of the heavenly bodies onto the inner surface of the sphere in such a way that it appears to be his original idea.

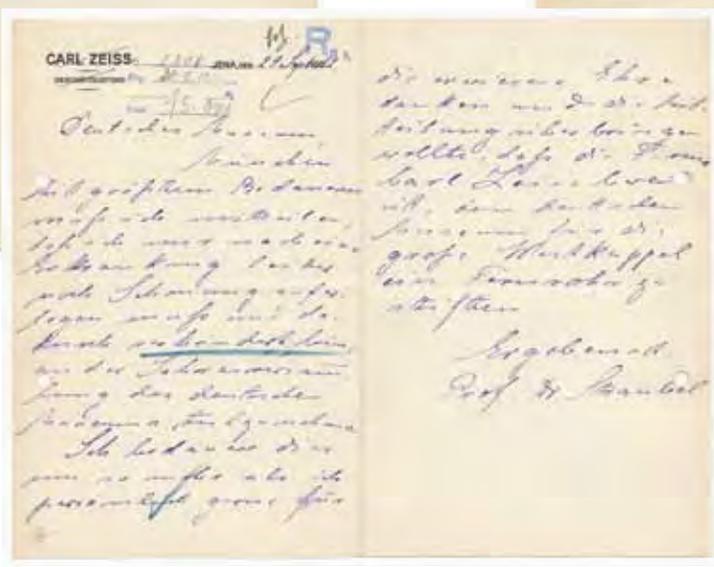
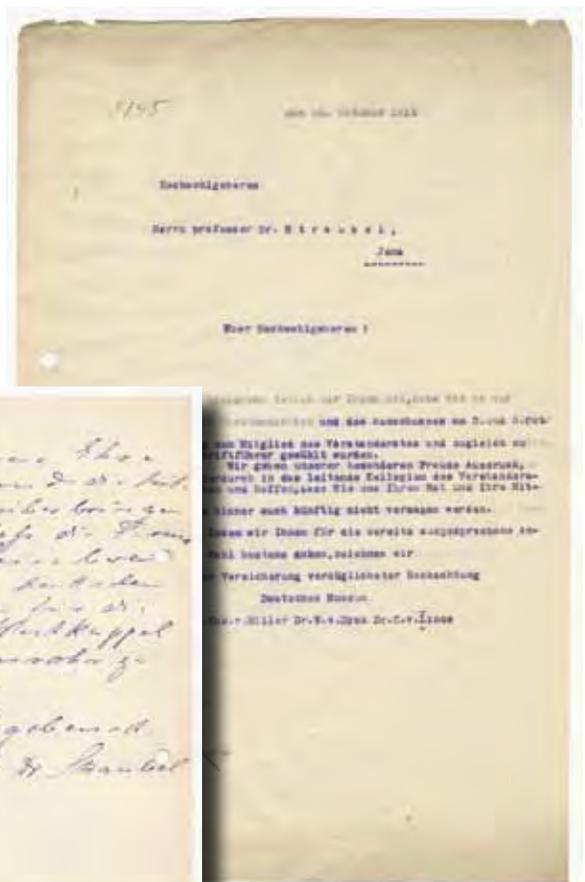
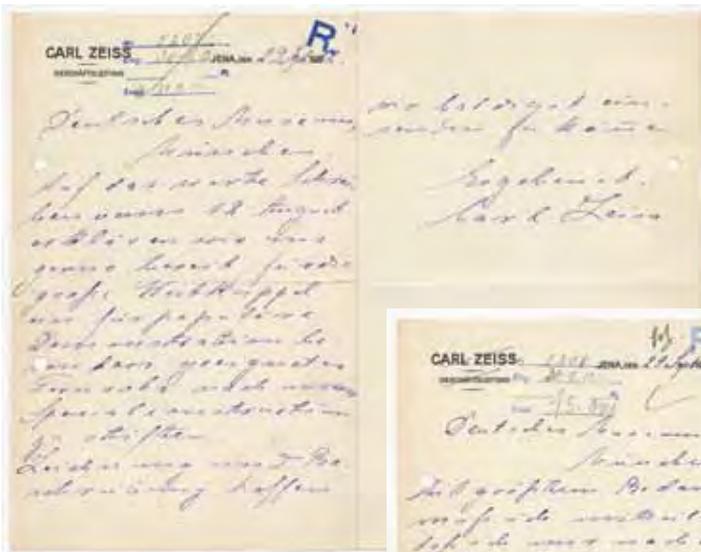
A slightly different course of events is sug-

gested here by the author of this article, who believes that, during the extensive conversation with Straubel in Munich on September 30, 1913, von Miller not only discussed the plans for the two planetariums prepared by the museum, but also other approaches and concepts, such as the shadow projection of the planets as conceived by Hindermann.

For Straubel, scientific director of a worldwide optical firm and professor of physics with specialty in optics, such a mention of optical projection must have been particularly interesting and enlightening. Furthermore, using an optical projection concept in the design of the Ptolemaic planetarium would enable Zeiss to showcase its capabilities in its specialty—the most advanced optical instruments.

It is thus conceivable that Straubel brought to Zeiss from Munich the idea of using projection, and then, in internal discussions at Zeiss, encouraged the engineers, especially Bauersfeld, to apply the projection idea to the Ptolemaic planetarium. If that were the case, Bauersfeld could have adopted the projection idea then made it his own. And it could have set the stage for Straubel's later suggestion to apply projection techniques to the planetarium stars themselves.

A story told by Gerhard Langer, a nephew of Prof. Straubel, now 90 years old and living in Boulder, Colorado, is of interest to us in this context. Gerhard Langer grew up in close con-



Above, right: Two letters by Straubel to the Deutsches Museum, one letter thanking for being invited to join the museum's presidium board, both letters announcing the donation by Zeiss of a large telescope for demonstrations to the public. Both letters are handwritten on the same date (September 29, 1912) and on the same Zeiss management stationery, one signed "Professor Dr. Straubel," the other signed "Carl Zeiss."

At far right: Letter dated October 23, 1912, undersigned by the three directors of the Deutsches Museum, informing Prof. Straubel of his unanimous election to the presidium board of the museum and to its secretary. Fotos Deutsches Museum

ment and fabrication processes were based on scientific principles.

Maximilian Herzberger, a Zeiss research staff member from 1928 to 1934, described Straubel's significance: "During Straubel's reign, a staff of scientists was assembled that made Jena the center of the optical industry in the entire world and made optical progress and Zeiss almost synonymous. Under Straubel, the Zeiss laboratory did not limit itself to practical problems but extended its studies into theoretical research, a procedure that is followed by only the largest research laboratories today." (12 Herzberger, p. 589)

While most of Straubel's numerous scientific papers had been written prior to his joining Zeiss, about six of his theoretical research articles were published while he was in office, between 1903 and 1933. His theoretical work has been described elsewhere. (6 Boegehold, 12 Herzberger, 13 Jentzsch)

However, it was practical optics that became his foremost responsibility. As mentioned in connection with the projection planetarium, his task was to present new ideas and initiate projects, then guide and assist oth-

ers with project execution.

There may be countless examples of Zeiss projects in which Straubel was intricately involved, but for many of them his involvement will never be known since he called so little attention to himself and typically preferred to work behind the scenes. Usually, the final product was credited to another Zeiss scientist or engineer.

Nevertheless, more than thirty patents are issued to Straubel directly, including patents (to name a few) on: prismatic reflector, reflector spotlight, telescopes, objectives and lenses, projection (as used in a projection apparatus for university auditoriums), accessories for microscopes, and production processes. (13 Jentzsch, pp. 217-218). As should be evident from this list, he was intimately familiar with the various optical elements that found their way into the projection apparatus for the planetarium.

Among his entrepreneurial achievements, these stand out:

- Internationally, the alliance formed in 1908 by Straubel with the U.S. optical firm Bausch & Lomb, giving Zeiss access to the U.S. market for its products;
- Domestically, it was his leadership in 1909 in the consolidation of four German camera manufacturers into the ICA Dresden.
- Then again, after World War I, in 1925-26,

in an effort to counter the economic difficulties of the German camera and optical industry, Straubel led the even larger consolidation of ICA and several other major German camera and photo-technical equipment manufacturers into the Zeiss-Ikon AG, under the umbrella of the Carl-Zeiss-Stiftung. (12 Herzberger p. 589) Straubel became chairman of the board of the new company.

Two of Straubel's special interest projects are presented here individually.

In 1921, his research into the use of solar energy led to the first modern furnace of the reflecting type, the "Straubel Solar Furnace." With a system of mirrors and lenses using solar energy, he was able to generate focused heat and temperatures of up to 3,000° C (10,000° F). (7 Duwez p. 14)

Secondly, starting in 1916, much of Straubel's time away from the Zeiss premises was spent designing an extensive system of reservoirs and dams along the upper Saale River to generate clean and reliable hydroelectric energy for the Zeiss works, the city of Jena, and a major area of middle Germany. For an in-depth description of the "Plan Straubel, Hydroelectric Power from the Saale River", see Linda Langer Snook, *The Langers of Jena*, pp. 118-121 (15). Straubel's pursuit of this project, as

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well as his continual support of the University of Jena, are further indications as to how personally he took the Carl-Zeiss-Stiftung's principle to "support science and technology outside as well as within the enterprises, and the participation in projects that served the general good."

Straubel's forced retirement, final years, and fate of his family

The ascent of National Socialism in Germany, and the election of Adolf Hitler in January, 1933 brought Straubel's distinguished career at Zeiss to an abrupt end. In a letter dated October 17, 1945, quoted throughout this section, Straubel's son Werner wrote (23): "My father had to retire from office in 1933. . . . He had to retire from office solely on account of being married to my mother who was Jewish."

In turn, Werner's brother Harald recounted the events in a typed and signed statement, dated January 15, 1988, when he was 82 years old (22):

"My father, Prof. Dr. Rudolf Straubel, had been hired in 1903 by Ernst Abbe as Scientific Director for Life. Later he also became Bevollmächtigter (Power-of-Attorney) of the Carl-Zeiss-Stiftung. When on Jan. 1, 1933 (the Nazis) assumed power, initially nothing happened at Zeiss. On a day in the middle of June 1933 my father returned home at noon and said, literally: 'So that you don't hear about this in town, the other partners in management (Prof. Bauersfeld, Herr Henrichs and Herr Kothaus) have given me the choice of getting divorced or leaving Zeiss. I have refused getting divorced and must be out by Sept. 30, 1933.' However my father was allowed to retain his position on the board of Zeiss-Ikon AG in Dresden which he had founded. Of the above mentioned other managers, no-one has expressed his regret, or even tried to reverse this order which had been mandated by the regional (Nazi) government in Weimar. My father's pension privileges remained intact."

Straubel's forced retirement was just the beginning of a progression of persecution for the Straubel family. Straubel's son Werner was permitted to continue working for Zeiss. But, like other employees of a "questionable racial background" or with non-conformist political views, he had to take on a less-visible role than before.

From 1935 on, after Hitler had successfully consolidated his power, the racial agenda of the Nazis became more pronounced. In February 1938, Prof. Straubel's name was removed from the role of professors at the University of Jena. The reason was his "45 years of Jewish relations," referring to his marriage to a wife who was of Jewish heritage.

Werner Straubel: "I do not want to tell you about the many sad events which my parents

had to endure for that reason."

Prof. Straubel continued writing papers and conducting experiments from his home after his forced retirement from Zeiss. Werner Straubel: "He dedicated himself entirely to the development of science. . . . Father derived from the occupation with mathematical and physical problems the evenness of mind necessary to live through the difficult times which lie behind us."

In the late 1930s Straubel developed kidney cancer. In 1943 he became ill, and died on December 2, 1943. Werner Straubel: "He had worked to the very end. In fact, the printers received the last of his manuscripts the day after he died." Between 10 and 13 people are reported to have attended Straubel's funeral service—only close relatives, and Frau Grete Unrein (Ernst Abbe's daughter). (26 Wandersleb)

The systematic expulsion, expropriation and finally annihilation of German Jews started in November 1938 with "Kristallnacht." On November 10, 1938, Straubel's wife Marie was arrested by Nazis in uniform, incarcerated for one night, and then released. (22)

Gerhard Langer, the then 15-year old son of Marie Straubel's niece, Helene Langer, was able to escape from Germany in August 1939, on one of the last ships leaving Hamburg for New York before World War II broke out.

Werner Straubel: "(Gerhard) had...the luck to escape from the horrors of war and the great, the very great privilege to live in a country 'where liberty prevails.' What that means can only be fully understood by someone, who had to spend the last years—12 long years—in this country."

When mass deportations began in 1942, Marie's sister, Therese Zuckerkandl, widowed and also living in Jena, was the first of the family to face deportation. Werner Straubel: "[She] was to be transported to [concentration camp] Theresienstadt by the Gestapo solely on account of being a Jewess. She knew full well what that meant and ended life by her own



The Straubel family. Top: Prof. Straubel with son Harald and wife Marie (1937), in front of the Wisenta power station, part of an extensive system of reservoirs and dams along the upper Saale River designed by Straubel to generate hydroelectric energy for Zeiss and beyond. Below: Marie Straubel and Werner Straubel. Courtesy Linda Langer-Snook family archive, used with permission.

hand. She died in dignity and peace on September 9, 1942."

Her niece, Dr. Helene Langer, for the same reason, had to end her own life on June 16, 1944. Werner Straubel: "While he [Prof. Straubel] lived, the Gestapo did not dare to touch my poor old mother, but a few months later she was informed that she was to be 'deported' and just like her sister and niece, ended her life by her own hand. What tragedy behind those few words! But there is no use to say more about those things, except perhaps, that she too, 'died in perfect dignity and in absolute peacefulness.' My brother and I were at her bedside." Marie Straubel died on April 20, 1944.

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In October 1944, Werner Straubel and his brother Harald were sent to a forced labor camp, where they spent the last seven months of the war. In May 1945, as the war ended, Werner, who was fluent in English, rushed back to Jena to offer his services as interpreter in the negotiations between Zeiss and the U.S. army, which had just liberated Jena.

He ended up assisting the U.S. army in compiling a list of valuable Zeiss scientists and managers to be moved from Jena to the west, before the Soviet army would take over that part of Germany as had been agreed in the treaty of Yalta. Included in the move from Jena to Heidenheim were the Zeiss managers Bauersfeld, Henrichs, and Küppenbender (who had joined the management ranks after Kotthaus's death in 1941).

In the post-war years, all three managers went on to form Zeiss West in Heidenheim, then later Oberkochen. Werner Straubel also joined in the move to Heidenheim while his brother Harald remained in Jena. Perhaps Werner had hoped that, in the west, he would be able to help revive the legacy of Zeiss and Abbe and restore his father's dignity? Yet, this hope did not materialize in a timely manner. Emotionally exhausted from the preceding 12 years, and feeling very alone, Werner Straubel committed suicide in Heidenheim on November 6, 1945.

Why Straubel might have been forgotten

Like his predecessor, Zeiss co-founder Ernst Abbe (11 Hermann p. 107), Rudolf Straubel detested any cult of personality. "His aversion to any personal exposure, to any cult around his person grew increasingly stronger over time", writes Jentsch. "Up until his retirement from Zeiss management on October 1 1933, there would have been numerous occasions to honor and celebrate Straubel; he avoided each such occasion, either by very forcefully asking in advance not to pursue those plans, or by suddenly going on travels, or even by keeping strictly secret all his personal data." (13 Jentsch p. 219)

Signing business letters with "Carl Zeiss" instead of using his own name, as we saw in the

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kraft, als ich 1823—24 das Glück hatte, in seinem Privat-Laboratorium zu arbeiten, ist lange Zeit von mir gebraucht worden; den kleinen Plattiegel hat Sainte-Chaire-Deville aus geschmolzenem Platin für sich machen lassen; die Gewichtszuge gehörte zu meiner Oertlingschen Waage, das Aluminium ist von meinem ehemaligen Schüler Bull in dessen Fabrik zu Newcastle dargestellt.

Göttingen, November 1878.

Herrn Dr. Julius Post

in Göttingen.

gez. Wohler.

Während für die physikalischen Museen die Sammlungen im wesentlichen als abgeschlossen zu betrachten waren, sind für den Museumsneubau die Gruppenpläne, die Listen wünschenswerter Gegenstände usw. in voller Arbeit begriffen.

Es hat sich schon beim provisorischen Museum sehr gut bewährt, daß die Aufnahme der Museumobjekte nicht dem Zufall oder dem Wunsche der verschiedenen Firmen, bestimmte Objekte zu stiften, überlassen bleibt, sondern daß von vornherein genau festgestellt wurde, welche Objekte als historisch und technisch wichtige Meisterwerke aufgenommen werden dürfen.

Das künftige Museum wird in 67 Gruppen zerfallen. Davon sind 20 Gruppen bereits fertig durchgearbeitet, so daß die Pläne und Listen demnächst an die Herren Sachverständigen zur Verbesserung und Ergänzung überandt werden können.

Weitere 20 Gruppen sind in Angriff genommen, die übrigen 27 Gruppen werden im Laufe dieses Jahres bearbeitet werden.

Einige der ausgearbeiteten Pläne sind im Saale aufgehängt und einige Wunschlisten angelegt, um ein allgemeines Bild über die Art der Ausführung zu geben.

Unter diesen Plänen befindet sich auch die Gruppe Bergwesen, für die, wie Sie sehen, eine sehr eingehende Darstellung gewählt ist. Selbstverständlich können wir diese weitgehenden Pläne nur verwirklichen, wenn uns hierfür die Unterstützung der Rat und die Beihilfe der großen Bergwerkbetriebe in ähnlicher Weise zuteil wird, wie ich dies für die Gruppe Papierfabrikation erwähnt habe.

Hand in Hand mit der Bearbeitung der Pläne und der Listen geht für die einzelnen Gruppen die Beschaffung der Museumobjekte, deren Aufnahme zweifellos feststeht und deren Ausarbeitung längere Zeit in Anspruch nimmt.

Zu diesen Gegenständen gehören insbesondere die beiden großen Planetarien, für welche wir, wie Ihnen bekannt, die Mittel im Vorjahre gestiftet erhalten.

Merkwürdigerweise fand sich trotz vielfacher Bemühung keine Firma, welche die Herstellung dieser umfangreichen und völlig neuartigen Einrichtungen übernehmen wollte.

Da gelang es gestern Herrn Professor Straubel davon zu überzeugen, daß diese Arbeit für die Zeitwerke, welche über hervorragende wissenschaftliche und technische Kräfte, sowie über die besten mechanischen Einrichtungen verfügen, eine besonders geeignete Aufgabe bilden würde, die ganz im Sinne der Begründer der Werke, Zeiß und Abbe, gelegen wäre. Herr Professor Straubel sagte die Unterstützung seiner Firma bei Ausführung der Riesoplanetarien zu und ich zweifle deshalb nicht mehr daran, daß wir eine Musterleistung auch bei diesen Museumobjekten erwarten dürfen. (Bravo.)

Meinen Bericht über den Museumsneubau selbst muß ich leider mit der sehr traurigen Mitteilung von dem Ableben unseres silberwürdigen Bauleiters, Herrn Professor Dr. Gabriel von Seidl beginnen, der nach einer schweren mehrmonatlichen Krankheit am 27. April d. J. verschied.

Die hervorragenden Dienste, die der Verstorbenen dem Deutschen Museum seit seiner Begründung geleistet, mache ich nur in wenigen Worten hervorheben.

Wie Ihnen bekannt, war die Errichtung eines eigenen Museumsgebäudes von Anfang an geplant, so daß bereits im Jahre 1903 generelle Baupläne unter Mitwirkung des damaligen Bauministers Herrn von Neumann in München aufgestellt wurden.

Gabriel von Seidl hatte die Liebenswürdigkeit, ein auf Grund dieser Unterlagen durchgearbeitetes Vorprojekt auszuarbeiten, welches eine geeignete Unterlage für unsere Verhandlungen mit der Reichsleitung, der bayerischen Staatsregierung und der Stadt München bildete.

Die Übertragung der Detailprojekte und der Bauleitung an Herrn Professor Gabriel von Seidl erfolgte jedoch nicht auf Grund dieses Vorprojektes, sondern auf Grund eines unter den sämtlichen deutschen Architekten ausgeschriebenen Wettbewerbes, aus welchem nach dem einstimmigen Urtheil des Preisgerichtes Herr Professor Dr. von Seidl mit einem von seinem Vorprojekt wesentlich abweichenden neuen Projekt als Sieger hervorging.

Als bauleitender Architekt hat es Professor G. v. Seidl in meisterhafter Weise verstanden, die vielen und oft ganz neuartigen technischen Bedürfnisse des Museums mit den künstlerischen Anforderungen in Einklang zu bringen. Leider war es Gabriel v. Seidl nicht mehr gegönnt, die künstlerische Ausgestaltung der Innenräume, des Ehrensaales usw. zu vollenden, bei welchen sein künstlerischer Geist und seine besondere Eigenart erst recht zum Ausdruck gekommen wären.

Page from the proceedings of the 1913 annual meeting of the museum's presidium board. Highlighted is the paragraph that mentions Straubel's acceptance of the planetarium plans by Zeiss. Foto Deutsches Museum

correspondence with the Deutsches Museum, illustrates Straubel's aversion to personal exposure. It is unlikely that he himself would have drawn attention to his contribution to the invention of the planetarium.

Another cause for Straubel's lack of renown can be attributed to his forced retirement in 1933, and, especially, to how this event was later used in the post World War II legal battles between Zeiss East and West. This is a rather complicated story.

In 1933 the new Thuringian Nazi Interior Minister Wächtler intended a "reform from head to toe of the Zeiss Works which are infested with Marxists and Liberals." He wanted to force its management out of office. An

immense pressure was exerted, with daily intimidations, threats and intrusions. (20 Schomerus p. 276) The management team was even threatened with concentration camp.

It is in this climate that Rudolf Straubel was forced into retirement. As a member of the management team and married to a Jewess, Straubel was particularly vulnerable. Friedrich Schomerus, in his centennial corporate history of Zeiss published in 1952, does not give details about the event, he simply writes: "The distinguished member of management Prof. Straubel had to retire." (20 p. 276)

As well, no material could be found in the Zeiss archives concerning this event, which breached the statutes of the Carl-Zeiss-Stiftung since members of management were chosen for life, and discrimination based on race was forbidden.

An impossible choice

According to Harald Straubel's statement, it was "on a day in the middle of June 1933" that his father was given the choice of either getting divorced or to retire. (28) Given that the Nazi commissioner in charge of overseeing Zeiss had been assigned to his post by Minister Wächtler on June 1 1933 (20 p. 275-276), it appears that Straubel was forced into making his choice during the first month of Nazi interference into Zeiss.

Schomerus goes on describing in a long chapter how, from December 1933 until May 1934, Zeiss management, in a united front, heroically and successfully fought back in the courts against intrusive meddling into Zeiss internal affairs by Nazi officials, leading to the eventual removal of the Nazi commissioner assigned to the Zeiss Works. (20 p. 275-299)

During the following years, Zeiss management succeeded in retaining a significant number of scientific and other staff members who were endangered due to their racial status, affiliation or political persuasion, often by giving them less visible assignments. (19 Müller)

It was in the aftermath of his forced retirement that Straubel received the most written accolades of his entire life. On October 3, 1933, Straubel's retirement was announced by Zeiss in a press release, written by Friedrich Schomerus, long-time director of the Zeiss personal department. (27 Zeiss Archive Jena)

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In 1934 two articles, most likely written on the suggestion of Dr. Schomerus, appeared in German scientific magazines in honor of Prof. Straubel's 70th birthday.

After Straubel's death, a third article, written by Schomerus himself, appeared in a Zeiss internal publication (March 1944), largely reiterating what had been written in the two previous articles. The press release and all three articles praised Straubel's accomplishments. However, they did not say anything about Straubel's wife or the reasons for his retirement in 1933. (6 Boegehold; 13 Jentsch; 21 Schomerus)

In his centennial corporate history from 1952, Schomerus reprinted his article from 1944 in honor of Straubel's death, in a slightly shortened version whose content remained largely unchanged. (20 Schomerus, p. 312-318) Only one sentence of the reprinted article made reference to Straubel's fate: referring to his retirement, Schomerus changed the wording to "his retirement forced upon him by National Socialism." (20 Schomerus, p. 317)

One last article honoring Straubel was published in 1954 in the United States by Langer and Straubel family friend Maximilian Herzberger, previously cited. It is the only article that has appeared in English. (12 Herzberger)

Separated in the east and west

The Post World War II era featured two separate Zeiss companies: the original Zeiss Works in Jena, in the Soviet occupied zone, and a new company, founded in the west by the Zeiss management team and scientific staff evacuated by the U.S. army in 1945. The ascent of Zeiss West, narrated from Zeiss West's perspective, and based on material from Zeiss West's own archives, court records, and conversations with former and current members of Zeiss West's management and staff, has been well described in Armin Hermann's book from 1989, *Nur der Name war geblieben*. (11 Hermann)

An initial period of cooperation between the two companies was soon replaced by decades-long legal battles concerning issues such

as: Which side had the right to be considered seat of the Carl-Zeiss-Stiftung and to use the name Carl Zeiss? Which side could claim the assets of Zeiss in various countries, and use the Zeiss trademarks?

The case had to be decided using the statutes of the Carl-Zeiss-Stiftung. The arguments gave neither side a clear advantage. According to the statutes, the seat of Zeiss had to be Jena, which favored Zeiss East. On the other hand, the statutes demanded that Zeiss management make all decisions independently. This was no longer the case in the east, where the communist state mandated control over industry, which was now centrally managed. Zeiss West's claim to legitimacy was that it was headed by the original management team, evacuated by force from Jena to the west. (11 Hermann p. 168-221)

It was in this context that the east attempted to undermine Zeiss West management team's legitimacy, by claiming that during the Third Reich its members had voluntarily adapted to the new rulers, and had modified the statutes of the Carl-Zeiss-Stiftung to accommodate Nazi ideology.

The east called the west management team "war criminals" and "capitalist bosses." Straubel's forced retirement was used to support the case that the management team had violated the foundation statutes from 1933 onwards. The following quotation, from a communist pamphlet from 1958, "Mit klarer Sicht," may illustrate the argument:

"Among the men who had essentially contributed to the worldwide reputation of Zeiss products were also several who were disapproved of by the Nazis because of their racial or political affiliation. Due to the significance of the Zeiss Works for war production, the Zeiss managers would have had many opportunities to stand up for and protect these men. They did the opposite. Among others, they forced Prof. Dr. Rudolf Straubel into retirement, power-of-attorney of the Carl-Zeiss-Stiftung and member of Zeiss management for more than three decades, owner of 32 German Reich patents, and initiator of the Wisen-ta hydroelectric power plant." (18 p. 29)

Conversely, Armin Hermann's account of Straubel's forced retirement, in his book about the history of Zeiss West from the west's perspective, appears to play down the event's significance as well as Straubel's importance:

"Rudolf Straubel whose wife was Jewish had to resign in 1933 from his exposed position in [Zeiss] manage-

ment. At the time he was 69 years old and not unhappy about the unsolicited time of leisure. After solely having been a manager for three decades, he welcomed his return to science. Nevertheless his colleagues felt a sense of disgrace for having to accept his resignation." (11 Hermann p. 147)

These two very different accounts of the same event need to be seen in the context of the legal fight between the two opposing companies. Given what was at stake, one can conclude that Zeiss West tried to avoid even the appearance of having given in to Nazi pressure, by underplaying Straubel's importance and the significance of his forced retirement. This, in turn, may have contributed to the decline of his renown during that period.

The increasingly costly court battles between Zeiss East and West, begun in 1954, were finally abandoned in 1971 and replaced by an out-of-court settlement between the two sides that specified the geographic areas in which each were authorized to do business and use the Zeiss trademark to market their products.

Summing up, a current lack of familiarity with Straubel's name and accomplishments can be attributed to both personal and historical factors: personally, his aversion to any cult around his persona; and historically, his renown/recognition declining in the west as a result of the Cold War legal battles between Zeiss East and West.

Conclusion

Rudolf Straubel shunned publicity, yet worked tirelessly behind the scenes to help others. It is hoped that this article may help revive interest in the man and his work, notably his contribution to the invention of the projection planetarium, and his overall impact on the advancement of optics at Zeiss in the first third of the 20th century. Taking over the baton from Ernst Abbe and Siegfried Czapski, Rudolf Straubel, in exemplary fashion, continued the tradition of scientific leadership at Zeiss. He offered inspiration and support to a whole generation of scientists. Just as Zeiss and Abbe before him, he deserves to be included in the select group of Zeiss personalities who, during their lifetime, elevated Jena into becoming a vibrant epicenter of scientific, technical and social innovation.

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(Straubel, continued from page 34)

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