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## Chapter 2

# André Louis-Hirsch (1899–1962)— A Sponsor for Early Astronautics in France\*

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### Abstract

André Louis-Hirsch (initially André Hirsch), the son of an important Parisian banker, Louis Hirsch, showed interest in science from an early age (he joined at 13 the *Société Astronomique de France* – the French Astronomical Society). During World War I, in January 1918, as a 19-year-old, he applied for a patent for a secret long-distance telegraphy technique using infrared radiation. The scientific reputation of Hirsch made him a close friend of French engineer Robert Esnault-Pelterie. André Louis-Hirsch is well known for organising with Esnault-Pelterie a dinner for several prominent French men on 26 December 1927, in order to discuss the future of the emerging science of space travel. The guests decided on a plan to establish an annual award in astronautics: the REP-Hirsch International Astronautics Prize, or Prix REP-Hirsch. Hirsch and Esnault-Pelterie provided funds, 5.000 francs annually for three years, to the French Astronomical Society. The guests also discussed the name that should be given to the new science of space-flight: the word *astronautique* (astronautics) proposed by the science-fiction writer J.-H. Rosny aîné, was adopted. The Prix REP-Hirsch was awarded for many years and Hirsch remained a strong sponsor for astronautics. He was a wise counselor for another French

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pioneer, Alexandre Ananoff, when he started to promote astronautics in the 30s. He participated in the first International Astronautical Congress Ananoff organized in Paris from 30 September to 2 October, 1950. The purpose of our paper is to present a complete biography of André Louis-Hirsch (probably for the first time) and particularly his contributions to early astronautics in France, from 1926 until his death in 1962.



**Figure 2–1:** Alice Hirsch and her children.  
© Collection Anne-Marie Iourtchenko.

## **I. A Family of Bankers—Commitment**

Son of Louis Julien Hirsch (1862–1932) and of Alice Louise Hermann (1874–1965), André Jean Henri Louis-Hirsch<sup>1</sup> was born on 28 March 1899, in Paris. He is the second child of a family of three children.<sup>2</sup>

His mother was born in Paris, but she was from Bavaria, while his family on his father’s side had been Parisian for several generations. Most of all, his family had a long-standing tradition for banking: during the second half of the 1820s, his great-grandfather David<sup>3</sup> became manager of the “Hirsch-Hatzfeld” House in Paris and took over the activities of his father-in-law John Martin Hatzfeld.

In 1858, after David’s death, his grandfather Henri (1828–1893) inherited the business, which then became a real bank under the social name of “Hirsch Fils Ainé, Maison d’or et d’argent.” In 1871, with all the difficulties of the Franco-Prussian war, the Hirsch family provided services to the young Third Republic by participating in the loan of Release.

In 1884, the bank was put into the hands of Louis, André’s father, under the name of “Louis Hirsch & Co.” He made it grow and provided services to the

State and the Bank of France, during and after the First World War. In 1924, Louis started working with his son André, and then in 1926 with his son-in-law Jean de Gunzburg; both later became, after Louis's death, the managers of the family bank. Since its beginning, Hirsch Bank had specialized itself in the precious metals business, exchange, discount, or credit, but had also played an important role in state affairs by providing services repeatedly to the Bank of France or State services.<sup>4</sup>

Passionate about science since he was a kid, André Louis-Hirsch joined the Astronomical Society of France (SAF) at age thirteen.<sup>5</sup> Full of inventive ideas, he submitted six years later, in January 1918, a patent on "secret telegraphy and in distance by infrared rays" which, according to his friend Henri Moureu,<sup>6</sup> "*will be longly experienced by the services of the National Defence.*"<sup>7</sup>

But, in the perspective of investing in the family bank alongside his father, it is law studies that the young man started,<sup>8</sup> while the first world conflict took place. He had to stop on 19 April 1918, the date of his incorporation to the 8th Regiment of Engineering and officially became a banker only starting from 13 April 1926.

Meanwhile, André Louis-Hirsch attended classes of military training in the center of Cesson, near Paris. The armistice on 11 November made it impossible for him to be sent to the front, but he nevertheless continued his training and, on 1 January 1919, he joined the center of radio telegraphy of Paris. On 21 March 1921, he returned to his home, waiting to enter the Active Army Reserve, which intervened on the next 15 April.

## II. Meeting with REP

Direct witness of the beginning of aeronautics<sup>9</sup> and growing up in a family of which some members took part from near and far in the adventure, the young André Louis-Hirsch was also interested in the discipline. Just after World War I and thanks to his reputation acquired with the filing of his patent, he discovered the scientific world. This was how he met and became friends with the pioneer Robert Esnault-Pelterie, known as REP (1881–1957), also a member of SAF. All his life, he never stopped showing him a real and deep admiration.

Henri Moureu set the meeting between the two men in 1925.<sup>10</sup> At that time, REP wanted to abandon the question of interplanetary navigation,<sup>11</sup> and it was Louis-Hirsch who convinced him to carry on his research. As countries like Germany, Austria, or the United States were moving fast on the question, only a great scientist like Esnault-Pelterie<sup>12</sup> could help France catch up.<sup>13</sup>

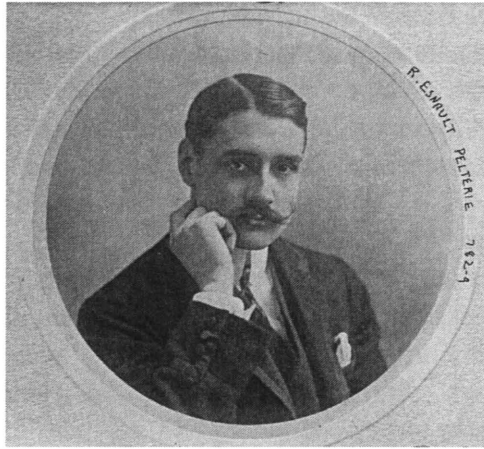


Figure 2-2: REP. ©DR.

### III. The Establishment of the Astronautics Committee and the Invention of the Word *Astronautics*

In 1926, André Louis-Hirsch and Robert Esnault-Pelterie decided to set up a structure which would support studies in favor of rockets. For this, they relied on the support of the SAF. Surprisingly, they managed to quickly convince General Ferrié,<sup>14</sup> who was its president: “*When we talked to him in 1927, we felt a little astonished of his courage. The word ‘Astronautics’ did not exist yet. People at the time still had a romantic conception of astronautics,*” confided Louis-Hirsch.<sup>15</sup> On 8 June 1927, in the great amphitheater of the Sorbonne, in front of several members of the SAF (including General Ferrié), REP made a new and highly noted conference titled “*L’exploration par fusées de la très haute atmosphère et la possibilité des voyages interplanétaires*” (Rocket exploration of the very high atmosphere and the possibility of traveling interplanetary). Thanks to this intervention, a previous taboo had disappeared, and the question of interplanetary travel was then taken seriously: it was time to go further. At first, Louis-Hirsch and REP worked to create a specialized fund at SAF. It was initially constituted with documentation from the two men,<sup>16</sup> who were hoping to enrich it with work carried out in France and abroad. Louis-Hirsch said: “*We all acquired both the belief that this research was taking shape, and that it would have been interesting to group and coordinate scattered works...*”<sup>17</sup> But how to attract and consolidate studies from all around the world?

Louis-Hirsch and REP then had the idea to create a “Scientific group of various researchers,”<sup>18</sup> assigning a prize rewarding research on rockets, in France

and abroad. Emile Fichot,<sup>19</sup> the new president of SAF, was really enthusiastic at the time and announced that SAF would host the group, which would be constituted in the last months of 1927.<sup>20</sup> However, one question remained: what to call it? “Committee for Interplanetary Navigation”? “Space Travel Committee”? Such a denomination could hardly play in favor of the young discipline, and they had to find a more serious name.

On the invitation of André Louis-Hirsch’s mother, who provided the family home, a meeting was organized on 26 December 1927.<sup>21</sup> André Louis-Hirsch invited eight personalities: Henri Chrétien (engineer optician and professor at the College de France), Ernest Esclangon (mathematician and astronomer director of the Observatory of Strasbourg and then of Paris), REP, Charles Fabry (physicist and member of the Academy of Sciences), General Ferrié, Jean-Baptiste Perrin (physicist and chemist, Nobel Prize of Physics in 1926), Emile Fichot, and Rosny Elder (writer, president of the Académie Goncourt in from 1926). At the end of the dinner, the guests debated, and discussions led to the question: how to encourage research? They agreed on creating an award of recognition and encouragement that received the name of the promoter (REP) and the sponsor (Hirsch), the “REP-Hirsch Award.” The evening ended with the question: what name should be given to that new science called “interplanetary navigation”? Several terms were suggested but, in the end, it was “astronautics” that was kept (proposed by Rosny Elder). Esnault-Pelterie and Louis-Hirsch hurried to publish that new word in *l’Astronomie*, the official bulletin of the SAF, in February 1928. The goal was to let the world know that interplanetary navigation was, therefore, a science in its own right, with a precise and serious name. As for the specialized group, it was renamed “Committee of Astronautics,” and its main action was the creation and the award of the REP-Hirsch Prize.



**Figure 2–3:** The first members of the Astronautics Committee. © SAF.

During the first months of 1928, Esnault-Pelterie and Louis-Hirsch did everything to recruit important personalities in order to give credibility to their initiative: Jules Baillaud (astronomer), Emile Belot (polytechnician), Joseph Bethenot (transmission engineer close to Ferrié), André Bing (doctor, pioneer of astronomical studies), the commander Charbonnier (marine engineer-general), Henri Chrétien, Henri Deslandres (captain of the *Genie*, astronomer), Ernest Esclançon, Charles Fabry, General Ferrié, Emile Fichot, Léon Gaumont (inventor and industrialist), Armand Lambert (astronomer), Charles Maurain (physicist, specialist in the upper atmosphere), Jean Perrin (chemist and physicist), Rodolphe Soreau (polytechnician, specialist in air navigation), and Georges Urbain (physicist and chemist).

Of the seventeen personalities, six were members of the prestigious Academy of Sciences. The Presidency of the Committee was entrusted to General Ferrié, while Perrin and Fichot were vice presidents.<sup>22</sup>

As for Esnault-Pelterie, Louis-Hirsch, and Rosny Elder, they were considered as “Founding Members for Life.” The first played the role of honorary president (without the official title) and the second of secretary-treasurer.

#### IV. The First Assignments

Once set up, the Astronautics Committee paid attention to the institution of the REP-Hirsch Prize for “*rewarding the better or the best original scientific work, theoretical or experimental, capable of advancing one of the questions on which the realization of the Interstellar Navigation depended or to increase the human knowledge in one of the branches regarding astronomical science.*”<sup>23</sup>

A precise regulation was adopted, composed of eleven articles grouped in two titles, the first explaining the ins and outs of the Prize, while the second specified the methods of attribution. It was important to remember the “universal” side of the prize, since it was not only reserved for French researchers, but for those of the whole world. As a result, applicants could submit their work in English, German, Spanish, Italian, or French,<sup>24</sup> even in Esperanto! This is how the REP-Hirsch Prize took the name of the International Astronautics Prize sometime later.

The Astronautics Committee was, on the one hand, responsible for selecting the various works that were theoretical or experimental<sup>25</sup> and, on the other hand, to issue the prize in question.<sup>26</sup> The latter was endowed by André Louis-Hirsch with a substantial annual sum which, from 1928 to 1930, amounted to 5,000 francs. The submitted work had to be “‘clear and explicit’ and should not contain any ambiguity or reservation; if it referred to previous work, it had to



specify the dates, places, and means of publication to discuss any important issue.”<sup>27</sup> Louis-Hirsch and REP insisted on intellectual honesty, since it was required for academic work. Therefore, any production suspected of copying or taking back ideas from other people was not accepted. The two founding members of the Prize undertook not to compete for obvious ethical reasons.<sup>28</sup> As for the submission of the works, they had to be submitted to the Committee by 31 December at the latest, the result of the award being awarded in June of the following year.<sup>29</sup> The prize might be awarded for one or more works, and secondary prizes might also be rewarded as an incentive. Finally, there was no reward if there was no work deemed worthwhile and, in this case, the amount allocated was carried over to the following year, representing more than the amount provided. In any case, once the prize was awarded, “*the Astronautics Committee reserved the right to publish in extenso or in summary any work rewarded by it.*”<sup>30</sup> Thus, the laureates could benefit from a certain notoriety but, at the same time, the prize allowed the organizers to be aware of the astronautical research of other nations.

In the spring of 1929, the first selection took place. Only nine files out of twenty or so<sup>31</sup> were considered serious: the Germans Hermann Oberth and Walter Hohmann; the Austrians Max Valier and Franz von Hoefft; the Italian Luigi Gussalli; the Soviets Alexander Schershevsky, Nikolai Rynine, and Constantin Tsiolkovski;<sup>32</sup> and the American John Deisch. It is worth noticing that the Committee had considered soliciting the American Robert Goddard<sup>33</sup> but reconsidered that idea at the last moment, considering that the work of this engineer was not advanced enough.<sup>34</sup> On 5 June, the Astronautics Committee and representatives of the SAF met in a protocol session at the Sorbonne to designate the winner of the first REP-Hirsch award: Hermann Oberth.<sup>35</sup> The choice was legitimized by the fact that he gave “*a remarkable work on the ‘Possibility of interplanetary trips using rockets.’*”<sup>36</sup>

Later in 1950 at the first International Astronautics Congress, Louis-Hirsch said: “*It was ... the first work—I will even say a sensational work—that we received.*”<sup>37</sup>

In addition, the Committee also issued two “special mentions” to Hohmann and Deisch, because of the seriousness and interest of their work. In 1930, for lack of “valuable work ... submitted in time,” the Committee did not award a prize. André Louis-Hirsch bitterly observed that astronautical studies were more likely appreciated by the Americans and Germans than the French,<sup>38</sup> except from Esnault-Pelterie, who published his major work, *L’Astronautique*.<sup>39</sup>

Moreover, André Louis-Hirsch was convinced that it was necessary to support and finance a form of propaganda in favor of astronautics, and asking

journalists in particular to “*awaken the cause.*”<sup>40</sup> He also sought to identify and financially assist potential new talents, such as Alexandre Ananoff,<sup>41</sup> spotted at the SAF in 1934.<sup>42</sup>

In parallel, REP multiplied its interventions. Thus, on 28 April 1930 on the occasion of a luncheon, he organized an informal meeting with various members of the Academy of Sciences, but also with civil engineers and members of the press. He deployed all his talent to convince their auditors of the merits of astronomical research and the REP-Hirsch prize. He stated that “*within fifteen years, on condition that there would be a patron who could give some of his time to search 2 million dollars, that is 50 millions of francs and ... the journey from the Earth to the Moon would be solved.*”<sup>43</sup>

In the spring of 1931, the second prize was awarded to a French researcher: Pierre Montagne. He then carried out theoretical research on the balances and the temperature of the gases in a combustion chamber. Members of Committee of Astronautics, but also the ones responsible for SAF were particularly happy to reward a French man. Mastering English and German, André Louis-Hirsch kept abreast of activities linked to astronautics across the Atlantic, across the Channel, and in Germany. He even went several times to Germany to monitor progress.<sup>44</sup> He stated through *l’Astronomie* bulletins that American research was making progress very quickly, especially under the action of Robert Goddard. He noted that a “*new company had just been created under the name of American Interplanetary Society,*<sup>45</sup> *whose purpose was to centralize American astronomical researches ... It planned to set up a laboratory and publish a newsletter monthly. We had received its statutes, being in relationship with it and we were looking at its work with curiosity.*”<sup>46</sup>

On the other hand, Louis-Hirsch did not seem to have heard about the creation, in the USSR in 1931, of the Study Group of the Reaction Movement (GIRD), confirming that the information was hardly spreading to the West because of the Stalinist regime being more and more repressive.<sup>47</sup>

## **V. Succession of the Bank— the Third, Fourth, and Fifth REP-Hirsch Prize**

On 31 August 1932, Louis Hirsch passed away. It was his son André who replaced him at the head of the Louis Hirsch & Cie Bank, the younger Robert not showing any interest in finance. However, André Louis-Hirsch worked with his brother-in-law Jean from Gunzburg as partners.

With Hitler gaining power in early 1933 and the military’s handling of studies on rockets, contact with German researchers became more and more dif-

ficult, if not impossible. André Louis-Hirsch quickly understood the stakes and, with REP, repeatedly recommended French military authorities quickly support the development of war flares. Then, the two men also warned of the potential dangers of German work on rockets, still in vain. Journalist Pierre de Latil remembered later that forgotten action: “*Just before the war, the two friends ... tried to warn the public concerning the future of the new artillery which was being prepared in Germany: they handed over their file to the Ministry of War and they held a press conference. But they unfortunately preached in vain.*”<sup>48</sup>

Also in 1933, the Committee heard about a young Polish mechanical engineer, Ary Sternfeld, who was at the time at the University of Nancy.<sup>49</sup> He worked then on issues concerning “interstellar navigation,” but also concerning orbitography and trajectory in particular. He then received an incentive award (representing an amount of 2,000 francs)<sup>50</sup> in the spring of 1934. “*I will keep forever in my heart that it is France, its scholars, such as Robert Esnault-Pelterie, Jean Perrin, Ernest Esclangon, you André Louis Hirsch and many others who encouraged me in my first steps on the upward path but not less arduous of astronautics,*”<sup>51</sup> Sternfeld said.

The following year, in June 1935, the REP-Hirsch was awarded for the third time. It went to the Frenchman Louis Damblanc,<sup>52</sup> an engineer who worked on powder-propulsion rockets and performed static tests at the Aeronautics Institute of Saint-Cyr.

In 1936, the fourth REP-Hirsch prize was jointly awarded to the American Rocket Society and to one of its members, the engineer Alfred Africano.<sup>53</sup> He was interested in the ways of cooling the combustion chambers for a rocket engine operating with liquids. At the time he was awarded the prize, he was working to achieve a stratospheric rocket with the American Rocket Society.<sup>54</sup> But, it was Robert Goddard who should have been awarded that year. The Committee regretted it in the bulletin of the SAF: his “*important work*” arrived too late for him to obtain “*the award he would have deserved by the exceptional value of his achievements.*”<sup>55</sup>

As in the previous year, 1938 did not come with any laureate, with the exception of an incentive award given to Giovanni Serragli<sup>56</sup> for a publication on research on slow powders and their use for exploration from the upper atmosphere.<sup>57</sup> Moreover, André Louis-Hirsch encouraged the initiative of Alexandre Ananoff, who on 3 May 1938 set up within the SAF an Astronautical Section. The goal was not to compete with the Astronautics Committee but to support the dissemination of astronautical science to a public as wide as possible. However, Ananoff, victim of his self-taught status, faced severe criticism from some scientists, neutralizing the action of the Section. Louis-Hirsch, despite all the friend-

ship he showed to Ananoff, did not seem to support him much more, afraid of being on bad terms with some scientists.

A few months before the outbreak of the war, the Astronautics Committee awarded the fifth REP-Hirsch prize<sup>58</sup> to Americans Nathan Carver and Frank Malina.<sup>59</sup> They would only be informed about it in 1946 and would receive it in 1958...

## VI. The War Years

On 24 August 1939, André Louis-Hirsch was recalled to the army as Radio Assistant of the 8th Regiment Signal Commander of the 58th Division Genius. He then rallied Versailles with the rank of lieutenant.

In the spring of 1940, events accelerated, and the Germans suddenly went on the offensive. Caught up in turmoil, André Louis-Hirsch was captured on 22 June in Toul in Lorraine; he was interned at Frontstalag 121 in Saint Mihiel, in the middle of the Meuse, at 45 kilometers from Toul in the northwest.

Although being Jewish (but not practicing), Lieutenant Louis-Hirsch was then transferred, on 9 November 1940, to an officer detention camp in Austria: Oflag XVII A (OFLag, Offizier-Lager), near Edelbach (now missing), in the military camp Allensteig, 110 km northeast of Vienna. The living conditions were relatively correct, the Geneva Conventions being almost respected. He was then transferred, on 13 August 1941, to Oflag IV C, at Colditz Castle, 50 km away from Leipzig (Saxony).<sup>60</sup> There were only ten months left, before being again transferred, on 29 May 1942, to Oflag X C from Lübeck, Schleswig Holstein, where he stayed until the end of the war. When he got there, he discovered prisoners of various horizons (French, Belgian, Polish, and even some Yugoslavs), “*stunned by the defeat,*”<sup>61</sup> and who suffered many pressures. But a real solidarity was created and the fear of being denounced by a collaborator did not seem to exist. From time to time, the camp showed a unique atmosphere with its discussions, its meetings, and even its lectures organized by the prisoners.<sup>62</sup> André Louis-Hirsch, as for him, made a very nice impression towards his companions of misfortune: “*He was a talker like no other, using different registers, and so subtle that just by listening to him, his interlocutors discovered new knowledge and wisdom,*”<sup>63</sup> people said after his death.



**Figure 2–4:** André Louis-Hirsch under the flag, in 1939.  
© Collection Anne-Marie Iourtchenko.

During the winter of 1943–1944, bombings were more and more numerous and news about them more or less contradictory. The prisoners suffered more, and there was a real lack of food.<sup>64</sup> Until the summer of 1944, André Louis-Hirsch exchanged several letters with a part of his family, who had taken refuge in London. Of all the packages that were delivered at the camp, some facilitated the introduction of radios, extremely useful to stay aware of political and military events.

During the summer of 1944, the Lübeck camp got rid of its foreign prisoners, and the discipline became softer as the end of the war approached.<sup>65</sup> In February 1945, there was a rumor in the camp: in retaliation for the Allied bombing on Dresden, Hitler was said to have ordered mass executions in the camps of prisoners.<sup>66</sup> Nevertheless, in March, the lives of prisoners was improving somehow, because of the presence of food stocks brought by the Red Cross. On 2 May, Oflag X C saw the arrival of the troops from the Second British Army. The German guards were disarmed without any resistance.

## **VII. A Difficult Return to Civilian Life and the Latest Actions in Favor of Astronautics**

As he returned to France, André Louis-Hirsch discovered that during his captivity, his wife Olga<sup>67</sup> was deported to a concentration camp in Germany<sup>68</sup>

and that his family was robbed by the Nazis. He then worked to recover confiscated property, starting with Parisian and Chesnay houses, but also classic paintings, while taking over the reins of the Louis Hirsch bank.

Regarding astronautics, the appearance of the V-2 rocket and the stranglehold of the military led to the standby of the Astronautics Committee. The REP-Hirsch prizes fell into disuse, explained Louis-Hirsch in late September 1950 at the first International Congress of Astronautics (IAC), organized by Alexandre Ananoff in Paris in September–October 1950: *“We had once founded a full French Committee, as you know. In 1947, that Committee had temporarily completed its task. The Astronomical Society of France, in fact, had considered that since the war, it had no reason to award—at least for the moment—the REP price, which by the way still exists. And that for the simple reason that formerly while we only thought about the technical work, we wanted to reward convenient work. Today, researches are between the hands of different scientists who work in America and in Russia—in laboratories whose location we do not know), and who work in England, for the purposes of National Defense. We therefore receive very few works and we prefer to wait for the day when scientific research or, more precisely, communication about scientific research will be easier. We will then be able to reward the work which will seem to us the most interesting.”*<sup>69</sup>



**Figure 2–5:** Opening session of the first IAC in Paris 1950. Louis-Hirsch is second from left. © IAF.

At the inaugural session of that first IAC, André Louis-Hirsch was one of the first important personalities to speak up. The invitation really touched him, and it was with modesty that he made a confession in his speech: “When my comrade Ananoff asked me to make a speech tonight, I had the impression that he was speaking to an ancestor to whom he asked, in a way, to tell his memories.”<sup>70</sup> It was an opportunity to pay tribute to his friend RFP and to remind about the role of the Astronautics Committee and the REP-Hirsch prize. He concluded, hoping that *“this congress would be followed by several other ones and that, thanks to the efforts of Mr. Ananoff, astronautics makes progress over the years.”* Seven years later, the Soviets would put into orbit the first artificial satellite in history.



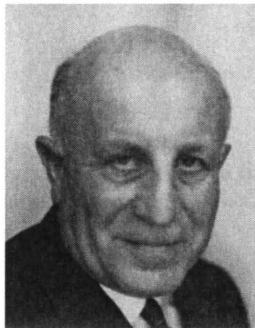
**Figure 2–6:** A. Louis-Hirsch at ORTF, May 14, 1959. © INA.

### **VIII. The Last Years**

The year 1957 was literally a horrible year for André Louis-Hirsch: he lost successively his brother Robert, with whom he was very close, then Robert Esnault-Pelterie. He then came out of his retirement on several occasions to pay tribute to the pioneer of French astronautics, especially during a television interview given to ORTF in May 1959.<sup>71</sup>

It was in this context, in 1958, that André Louis-Hirsch welcomed in Paris Frank Malina, who came to pick up the REP-Hirsch Prize that he had been awarded in 1939. The meeting between the two men led to a new friendship. The following year, they founded the Electra Lumidyne International (ELI) company.<sup>72</sup> Passionate about the interaction of art and science, Frank Malina then wanted to develop electric lighting kinetics systems for artistic and advertising purposes. The system was made with translucent colored disks around bulbs and painted plates. Once again, André Louis-Hirsch seemed to be a sort of patron.

He passed away on 15 December 1962, at five o'clock at his house, 24, Quai de Bethune, Paris.<sup>73</sup>



**Figure 2–7:** André Louis-Hirsch in 1962.  
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- <sup>1</sup> Born with the name "Hirsch," his name changed to Louis-Hirsch on May 31st in 1929.
- <sup>2</sup> His older sister, Madeleine Germain Henriette Fanny Hirsch (1894–1979), married Jean de Gunzburg. His younger brother, Robert Edouard Jean Hirsch (1902–1957), joined de Gaulle in London and took the name of Borel in 1951.
- <sup>3</sup> David Hirsch († 1858), veteran of the Great Napoleonic Army, participated in the Battle of Waterloo.
- <sup>4</sup> "Origine de la Maison de banque Louis-Hirsch & Cie à Paris & continuité de sa gestion par descendance directe remontant à une date qui peut être établie antérieurement à 1799" (Origin of the LOUIS Bank House HIRSCH & Cie in Paris & continuity of its management by direct descent going back to a date that can be established before 1799), document communicated to the authors by the family.
- <sup>5</sup> Moureu Henri, "*Hommage à André Louis-Hirsch*" (Tribute to André Louis-Hirsch), Mairie du Chesnay, 11 March 1971, p. 1.
- <sup>6</sup> Moureu Henri (1899–1978), chemist, is in 1941 the director of the municipal laboratory of the city of Paris. In October 1944, he discovered the existence in France of the German V2 missile. From 1945 to 1948, he worked to promote development of that type of missile. In 1961, he was elected to the Academy of Sciences.
- <sup>7</sup> Moureu Henri, "*Hommage à André Louis-Hirsch*," 11 March 1971, op. cit.
- <sup>8</sup> The law studies were confirmed by the Recruitment form (n° 4708), class 1919, in Military Archives of Caen.



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- <sup>9</sup> Louis-Hirsch André, "*Comment l'aéronautique naquit en France*" (How aeronautics grew up in France), in *La Revue Française*, no. 154, July 1963, p. 35. Article published in posthumous title.
- <sup>10</sup> *Idem*, p. 1.
- <sup>11</sup> REP was interested in the matter as early as 1908 and was the author, on November 15, 1912, of the famous communication to the French Society of Physics (SFP), "*Considération sur les résultats d'un allègement indéfini des moteurs*," (Consideration on Results an indefinite reduction of the engines) otherwise says about the rocket engine technique.
- <sup>12</sup> Communication by André Louis-Hirsch at the First International Congress of Aeronautics, in *Acts IAC 1950*, Paris, p. 24.
- <sup>13</sup> Louis-Hirsch André, "*Comment l'aéronautique naquit en France*," *op. cit.*, p. 37.
- <sup>14</sup> Ferrie Gustave (1868–1932), Ecole Polytechnique, engineer in transmissions, general in 1919, specialized himself in wireless telegraphy (TSF) that he developed during the 1914–18 war. Member of the Academy of Sciences in 1922, he chaired the SAF in 1926–27.
- <sup>15</sup> Communication of Louis-Hirsch during the first IAC in Paris, 1950, *op. cit.* p. 24.
- <sup>16</sup> Louis-Hirsch André, "*Principaux travaux sur l'Aéronautique*" (Main works on Aeronautics), in *Aeronautic Supplement n° 2 of Bulletin l'Astronomie*, volume 42, November 1928, p. 4.
- <sup>17</sup> "*Comment l'aéronautique naquit en France*," *op. cit.*, p. 37.
- <sup>18</sup> Communication from Louis-Hirsch, first IAC, *op. cit.*, p. 24.
- <sup>19</sup> Eugene Fichot (known as Emile, 1867–1939), Polytechnician, General Hydrographer of the French Navy, member of the Academy of Sciences (1926), president of the SAF from 1927 to 1929.
- <sup>20</sup> Ananoff Alexandre, "*La navigation interplanétaire*" (The navigation interplanetary), in *Bulletin l'Astronomie*, September 1935, p. 434.
- <sup>21</sup> Winter Frank, "*The Birth and Early Rise of "Aeronautics." The REP-Hirsch Aeronautical Prize 1928–1940*," in *Quest*, 14-1-2007, p. 36.
- <sup>22</sup> *Bulletin l'Astronomie*, volume 42, February 1928, p. 57.
- <sup>23</sup> "*Prix International d'Aéronautique (Prix REP-HIRSCH)*," in *Bulletin l'Astronomie*, volume 42, February 1928, pp. 57–59.
- <sup>24</sup> Article 6, Title II, "*Prix International d'Aéronautique*," Volume 42, March 1928, p. 140.
- <sup>25</sup> Article 2, Title One, p. 140.
- <sup>26</sup> Article 11, Title II, *op. cit.*, p. 141.
- <sup>27</sup> Article 4, Title II, *op. cit.*, p. 140.
- <sup>28</sup> Article 3, Title II, *op. cit.*, p. 140.
- <sup>29</sup> Article 7, Title II, *op. cit.*, p. 141.
- <sup>30</sup> Article 9, Title II, *op. cit.*, p. 141.
- <sup>31</sup> Chapuis Alfred, "*La fusée et les relations interplanétaires*" (Rocket and interplanetary relationships), in *Feuille d'Avis de Neuchâtel* No. 297, December 20, 1929, p. 1.

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- <sup>32</sup> Upon re-reading the SAF Bulletins, it appears that the Astronautics Committee has information less important than other nations on Soviet astronautical studies.
- <sup>33</sup> Robert Goddard (1882–1945), engineer and American physicist, published in 1909 his first reflections on rocket liquid propulsions. From 1923, he carried out experiments which led him to successfully complete the first shot of a liquid-propelled rocket history, on March 16, 1926.
- <sup>34</sup> Winter Frank, “*The Birth and Early Rise of “Astronautics.” The REP-Hirsch Astronautical Prize 1928–1940,*” op. cit., 14-1-2007, p. 37.
- <sup>35</sup> Oberth Hermann (1894–1989), German physicist, considered as one of the pioneers of the astronautical science. In 1923 he published “*Die Rakete zu den Planetenräumen*” (The Rocket into Interplanetary Space).
- <sup>36</sup> Bulletin l’Astronomie, September 1931, p. 312.
- <sup>37</sup> Report of the intervention of A. Louis Hirsch on September 30, 1950, at the Sorbonne, during the opening of 1<sup>st</sup> IAC, Paris. In Ananoff Funds at the Museum of Air and Space, Le Bourget.
- <sup>38</sup> Louis-Hirsch André, “*Les recherches astronautiques à l’étranger*” (The Research astronautics abroad), Bulletin l’Astronomie, volume 44, septembre 1930, p. 322.
- <sup>39</sup> Esnault-Pelterie Robert, “*L’Astronautique,*” Lahure, Paris, 1930.
- <sup>40</sup> Louis-Hirsch André, “*Les recherches astronautiques à l’étranger,*” op. cit., p. 322.
- <sup>41</sup> Alexandre Ananoff (1910–1992), from the middle of the 1920s to the mid-1950s, dedicated to the popularization of astronautical science. See Mouriaux Pierre-François and Varnoteaux Philippe, “*Alexandre Ananoff (1910–1992): 30 years to promote astronautics before Sputnik,*” in IAC Congress, Naples, Italy, October 2012.
- <sup>42</sup> Note from Madame Flammariion of April 24, 1934. In Ananoff Fund, Museum of Air and Space.
- <sup>43</sup> Guerin Robert, “*De la Terre à la Lune aller et retour, beau voyage et qui est tout à fait possible,*” (From Earth to Moon back and forth, nice trip and that is perfectly possible) in L’Ouest-Eclair, April 29 1930, p. 3.
- <sup>44</sup> See Varnoteaux Philippe, “*When the Studies of German spouses were encouraged by the French Astronautic Pioneers (1927-mid 30s),*” IAC Bremen, Germany, October 2018.
- <sup>45</sup> This is the American Interplanetary Society, founded on April 4, 1930 by a dozen passionates, and the writer G. Edward Pendray was at the head of it. Soon, engineers and technicians joined him, like Alfred Africano or Robert Goddard. In 1934, it became the American Rocket Society. In parallel, in 1932 was created the Institute of Aeronautical Sciences to promote aeronautical science. In 1963, the two organizations are merging to become the American Institute of Aeronautics and Astronautics.
- <sup>46</sup> “*Les recherches astronautiques à l’étranger,*” op. cit., p. 323.
- <sup>47</sup> Thus, in the Bulletin l’Astronomie from October 1931, “*Récents progrès d’Astronautique*” (op. cit.), nothing is exposed about the USSR; only the old works of Tsiolkovsky. In 1928 when the Astronautics Committee is set up, Tsiolkovski’s studies are presented that way: “*Professor Ziolkovsky whose notes from 1896 to 1903 seem to offer only historical interest (...)*” (in Bulletin l’Astronomie, “*A Propos du Prix REP-Hirsch*” (About the REP-Hirsch Award), November 1928, p. 2).
- <sup>48</sup> De Latil Pierre, “*Avec la sidération, Esnault-Pelterie, pionnier de l’astronautique*” (With the sideration, Esnault-Pelterie, pioneer of astronautics), Le Figaro, November 1957, p. 6.

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- <sup>49</sup> Ary Sternfeld (1905–1980), original engineer Polish, became Soviet in 1936.
- <sup>50</sup> Gruntman Mike, “*World Cosmonautics: A History*,” in IAC Congress, Valencia, Spain, October 2006.
- <sup>51</sup> Hamon A., “*Compte-rendu de la séance du 2 mai 1934*” (Minutes of the sitting of May 2nd, 1934), *Bulletin l’Astronomie*, vol. 48, pp. 277–278.
- <sup>52</sup> Louis Damblanc (1889–1969), French engineer, invented in 1936 the concept of stages separation of a rocket. He made rockets (powder) with two and three stories, between 1937 and 1940. See Jung Philippe and Serra Jean-Jacques, “*Louis Damblanc: Multicrack rocket pioneer*,” in IAC, Naples, Italy, October 2012.
- <sup>53</sup> Africano Alfred (1908–1980), engineer, develops different rocket systems. Member of the American Rocket Society he oversees from 1938 the publication of the newsletter in *Bulletin Astronautics*.
- <sup>54</sup> “*Le prix d’astronautique 1936*,” in *l’Astronomie*, June 1936, p. 313.
- <sup>55</sup> Idem.
- <sup>56</sup> Giovanni Serragli, professor of aerodynamics at the Faculty of Science in Florence, Italy.
- <sup>57</sup> *Monthly Bulletin l’Astronomie*, July 1938, p. 290.
- <sup>58</sup> In *L’Astronomie*, vol. 1939, p. 296.
- <sup>59</sup> Frank Malina (1912–1981), engineer in aeronautics, commits himself in 1935 to rocket studies. With Theodore von Karman, he founded in 1942 the company Aerojet and contributes after 1945 to the development of the Wac Corporal sounding rocket.
- <sup>60</sup> McNally Michael and Denis Peter, “*Colditz*,” Oflag IV C, Osprey Publishing, 1990, reissued in 2010.
- <sup>61</sup> Hoop J.-M. (d ‘), “*Lübeck, Oflag X C*,” in *Revue d’histoire de la seconde guerre mondiale*, No. 37, January 1960, p. 15.
- <sup>62</sup> “*Lübeck, Oflag X C*,” in *Revue d’histoire de la Seconde Guerre Mondiale*, op. cit., p. 22.
- <sup>63</sup> Anonymous, “*L’Adieu de ses amis*” (The Farewell of his friends), in the *Bulletin trimestriel de l’Amicale de l’Oflag X C*, No. 74, January 1963, p. 1.
- <sup>64</sup> “*Lübeck, Oflag X C*,” in *Revue de l’histoire de la seconde guerre mondiale*, op. cit., p. 29.
- <sup>65</sup> Idem, p. 28.
- <sup>66</sup> Idem, p. 29.
- <sup>67</sup> Olga Alexandre Kossarevski (1908–1997) was married to André Louis-Hirsch on September 5, 1939 in Paris. The two spouses did not have descendants.
- <sup>68</sup> Information given by Anne-Marie Iourtchenko.
- <sup>69</sup> Report of the intervention of André Louis-Hirsch of September 30, 1950, at the Sorbonne, during the opening of 1 st IAC, Paris. In *Ananoff Funds at the Museum of Air and Space, Le Bourget*.
- <sup>70</sup> Idem.
- <sup>71</sup> Tribute to Robert Esnault-Pelterie, television report with an interview with André Louis-Hirsch, in the program “*En Français dans le texte*” presented by Louis Pauwels, May 14, 1959.

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<sup>72</sup> “Biographie de Frank J. Malina,” in *Leonardo*, vol. 20, No. 4, 1987, pp. 417–425. Founded in 1968 by Frank Malina in Paris, *Leonardo* is a magazine specialized in the fields of art, science and technology.

<sup>73</sup> Civil Status Act of the 4th District of Paris.