

# On the authenticity of “the oldest human” Jeanne Calment

Authors: Nikolay Zak<sup>1</sup>, Philip Gibbs<sup>2</sup>

## Affiliations:

<sup>1</sup>Independent researcher [kolyazak@gmail.com](mailto:kolyazak@gmail.com)

<sup>2</sup>Independent researcher [philegibbs@gmail.com](mailto:philegibbs@gmail.com)

**Abstract:** Madame Calment’s extraordinary longevity claim has significantly influenced current estimates of human lifespan. However, recent evidence raises doubts about the authenticity of her record. We compare two competing hypotheses: the base scenario, which assumes that Jeanne’s daughter Yvonne died in 1934, and the switch scenario, which proposes that Yvonne assumed her mother’s identity in 1933. Our analysis suggests that the available evidence supports the switch scenario and contradicts the previously accepted base scenario. This study emphasizes the need to re-evaluate the evidence and highlights the importance of DNA testing (subject to approval by the French authorities). The case of Jeanne Calment was considered the gold standard for age validation. Our research shows that documentation is not always sufficient to verify cases of exceptional longevity. This has important implications for our understanding of the upper limits of human lifespan and demographic patterns in extreme ages.

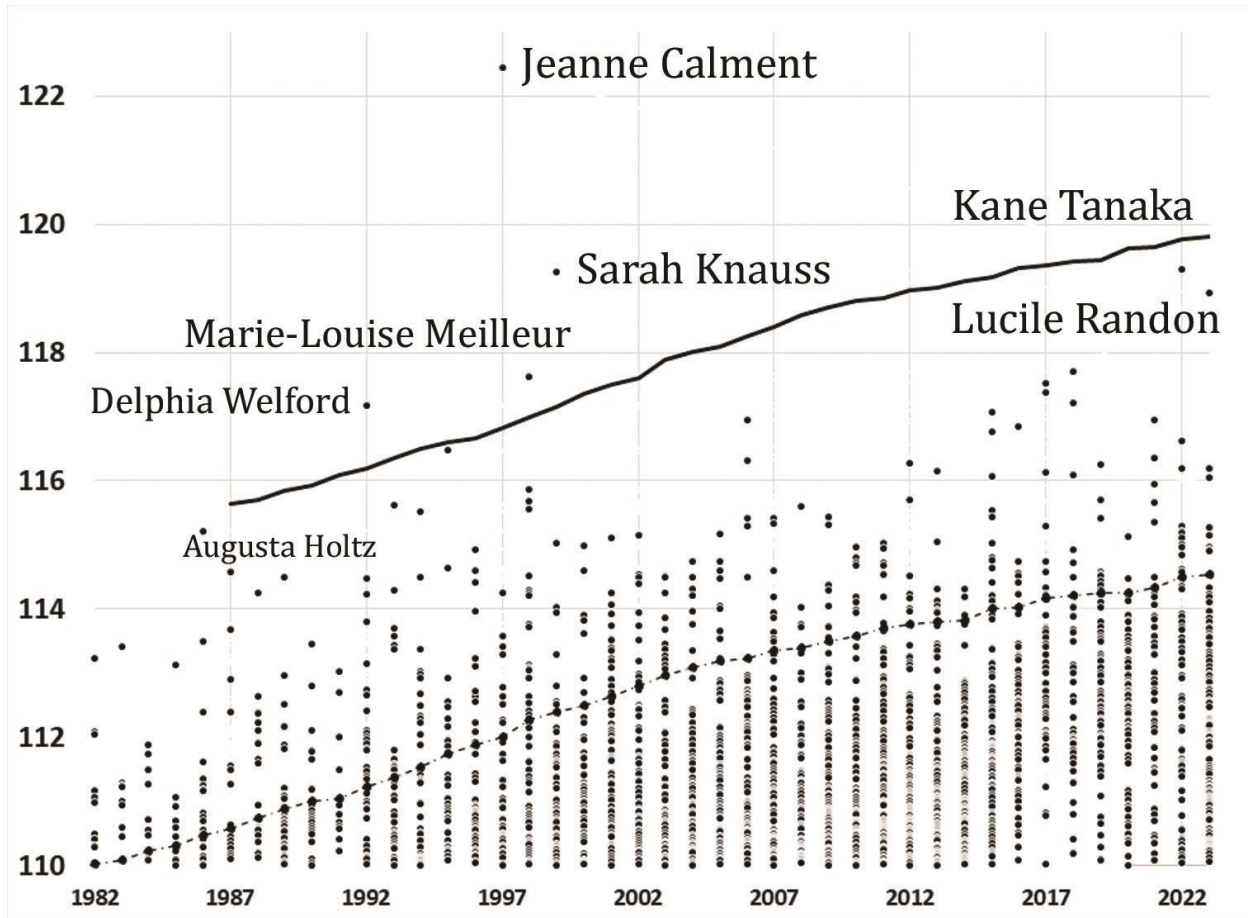
## Longevity outlier

The case of Madame Calment, who set a record for longevity at 122 years and 164 days (1), is a prime example of the principle that a single outlying data point can be statistically significant if it is properly validated. To estimate the expected Maximum Reported Age at Death (eMRAD), we use a synthetic population of 100 individuals from the age of the 100th oldest validated person and conservatively assume a constant mortality rate model with a half-life of 9 months. The eMRAD is then calculated as the expected age at death of the last survivor. As a data source we use the Gerontology Research Group (GRG) table, as of May 2023 [https://gerontology.fandom.com/wiki/Oldest\\_Validated\\_supercentenarians\\_All-Time](https://gerontology.fandom.com/wiki/Oldest_Validated_supercentenarians_All-Time).

Figure 1 shows that in 1997 Jeanne Calment would be an outlier by about 5 years. This does not prove that her longevity was not authentic. It is not uncommon for some records to be exceeded by exceptional amounts.

At the time, the age of the oldest people seemed to be rising rapidly, along with an exponential increase in the number of registered centenarians, and it was thought that Calment was the forerunner of a huge coming wave of supercentenarians who would easily surpass her achievement. However, we can now see that the rise in eMRAD slowed sharply soon after her death.

While it could be argued that a single case should not be relevant, we have noticed that eminent scientists such as James Vaupel who were directly involved in the validation of Calment’s authenticity have been influenced by her longevity.



**Fig. 1. Jeanne Calment versus eMRAD. The dots represent the ages of the supercentenarians validated by GRG as having died in the given year. Dashed line represents the age of the 100th oldest person validated up to the given year (see supplementary text).**

Vaupel, a proponent of the plateau hypothesis for human mortality at advanced ages, maintained that “the annual risk of death after age 114 cannot rise much above 50% unless Jeanne Louise Calment’s rigorously documented lifespan of 122.45 years is fraudulent” (2). He also suggested that the observed linear trend in increasing life expectancy (3) will continue for the foreseeable future, as there is no insurmountable barrier below Calment’s recorded age (4), with profound implications for retirement and other policies (5).

More recently, as the increase in life expectancy seems to have come to a halt, the apparent significance of Calment’s record has been reversed. Some researchers now say that it represents a soft limit to human lifespan, as no one has verifiably come within three years of her longevity 25 years on (6). Extraordinary claims require extraordinary evidence, and this is especially true for assertions of extreme age. The holders of the accepted longevity records before Calment were Carrie White for women at 116 years, 88 days and Shigechiyo Izumi for men at 120 years and 237 days. Both have since been debunked and it is now believed that Calment has beaten the record set by her eldest predecessor, Augusta Holtz, by more than seven years (2). To avoid

making significant decisions based on inaccurate information, it is crucial to uncover and establish the truth.

## The switch scenario

In 2018 the first named author revived a hypothesis that Jeanne Calment's identity had been switched with that of her daughter Yvonne Calment when Jeanne died of tuberculosis (7). Several subsequent papers were published presenting evidence on either side (8–10). It is widely agreed that the problem would be settled via DNA testing (7–9), but the original validators were against (11). Immediately after the publication of their response paper (10), the French court, which had initiated the review of the death certificates in the beginning of 2019, decided to halt the process.

Over the past four years, we have extensively researched the remarkable life of the Calment family. They were well known in Arles, a town renowned for meticulous record-keeping. Although most of Mme Calment's archives were reportedly destroyed at her request (7), in 2019 some photographs resurfaced thanks to her extended family, and others were discovered in old news reports and flea markets. In addition, 15 hours of recordings of her interviews were released by INSERM in January 2022 (12). With this wealth of material, it was possible to reconstruct much of her life in some detail. If she were genuine, one would expect it to become increasingly difficult to support the case for the identity switch as more evidence emerged, but instead we found ourselves constructing a remarkably detailed story of how and why Yvonne assumed her mother's identity. Everything we observed was either consistent with the switch hypothesis or strengthened the case against her authenticity. The quantity of evidence we found was unusually high, so we have selected only the most important components for this report.

In the **base scenario** Mme Calment who died in 1997 was indeed Jeanne Calment born in 1875 as she claimed. This scenario reflects events as reported by her validation team (10).

In the **switch scenario** Mme Calment was Jeanne's daughter Yvonne born in 1898 who had assumed the identity of her mother.

We show that, contrary to the claims of the validators (10), the available evidence is consistent with the switch scenario, while much of the evidence is incompatible with the base scenario.

## Testimony

Mme Calment's exceptional longevity attracted the attention of the gerontologist Michel Allard of the IPSEN Foundation, and the demographer Jean-Marie Robine of INSERM, who undertook to verify her age. Caroline Boyer, a genealogist, scrutinized Calment's family history and official documents such as birth, marriage, and census records (13). Assisted by Calment's doctor, Victor Lèbre, the validators conducted interviews with her from 1992 to 1995 and published a book with selected and heavily edited transcripts (14). Mme Calment's testimony is very useful because she was perfectly lucid. Her high intellectual capacity was confirmed by a neuropsychological study (15) and by her doctor (table S1).

The book praised her prodigious memory and seemed to support her authenticity, but still led to some discoveries that raised doubts (7). For example, Madame Calment said that she was taken to school by a maid called Marthe Fousson, but the census showed that Fousson was a younger servant of Jeanne after her marriage and could only have taken Yvonne to school (fig. S1).

Nevertheless, Marthe Fousson appears in the original validation paper, available on the website of the Max Planck Institute for Demographic Research (13) and again in the response paper of 2019, co-authored by the original validators (10), without mentioning the impossibility of the story of her walking to school with Jeanne (table S2).

In a television interview, Mme Calment correctly gave the profession of Jeanne's maternal grandfather, Claude Gilles (9), but she thought he was her paternal grandfather. She had faulty recollections of her first childhood home (7), was unaware of her siblings who died before her birth (13) and gave the wrong occupation and address of Jeanne's godfather (fig. S1, table S2).

The declassification of the tapes in 2022 allowed us to study the interviews in their original form. It turned out that many of the arguments used by the validators and other supporters of her record were based on the incorrect transcripts published back in 1995 (14). For example, it was claimed (9) that Mme Calment's recollection of the death of the torero Espartero in front of her in Nîmes favoured her authenticity. However, this story does not match the published tapes where her account clearly corresponds to the well-known death of another, much more famous Espartero, who was killed in Madrid before Jeanne's marriage. Mme Calment never claimed to have witnessed this event (table S3).

Jeanne was known to be talented in art and Mme Calment said that she painted a lot in her youth. When asked who taught her before marriage, she named the famous sculptor Férigoule. This impressed her validators, but in their book, they changed the transcript to make it seem that Jeanne had painted with Férigoule after her marriage in 1896 (table S4). This makes much more sense, as Férigoule only came to Arles in 1897, but this is not what she is recorded as saying.

Similarly, her supporters argued that Mme Calment spoke of going to Benet's Pensionnat where Jeanne made her First Communion (9), but the tapes show that she said that this pensionnat was in the old archbishop's palace in place de la République (table S5). However, the actual location of the Benet Pensionnat was Hotel de Cays at the intersection of rue de la Calade and rue du Cloître (fig. S2). In the switch scenario, Yvonne was unlikely to remember such details, as both Férigoule's arrival and Mme Benet's departure happened before she was born. In fact, the former archbishop's palace has housed the girls' primary school since 1909, and this is probably where Yvonne made her First Communion. Mme Calment has also suggested that the Arlaten Museum (inaugurated in 1899) was on the site of her college (table S6), but in fact it was on the site of the boys' college attended by Jeanne's future husband Fernand. In the base scenario, it is unlikely that Jeanne would be so wrong about the location of all the schools she frequented over many years.

In the switch scenario, for the events that took place before Yvonne's birth, Madame Calment often substituted her own experiences for those of Jeanne. She spoke at length about her attendance at the Alliance Française Ball before her marriage, but this could only be true for Yvonne, as this organization was founded in Arles in 1895 (fig. S3). She said that she did not remember any friends or suitors at the balls, and that Fernand was not one of her dancing partners because he was still studying while she was dancing (table S7). This could not be true,

as Fernand had joined the family business in 1886, after his father's death, having graduated from the Arles college when Jeanne was 11 years old (fig. S4).

5 Mme Calment said that they had had two servants at home during her childhood (table S2), but this applied to Yvonne and not to Jeanne (fig. S1). She claimed that they had a car from the beginning of their marriage and, in the interview with Paris Match, described her first flight at the age of 40 (table S8). Her memories of Jeanne's wedding were in line with Yvonne's, leading to confusions that were omitted or misspelled in the validators' book (table S9).

10 Mme Calment began her first interview by telling the validators that she had lost all memory of her childhood friends. She also said that she couldn't remember any of her teachers (table S10). When asked about her first piano tutor she said that was more recent than her schoolteachers and named Gachon (1867–1916) who taught her from the age of seven (7), but Yvonne would also have known her. It was claimed in (9) that Mme Calment recalled the bakery of Gachon's  
15 parents but there is no evidence of that on the published tapes. Later she managed to correctly name one teacher, Dubourguet, who was famous for breaking things and whom Yvonne might have known from conversations with her parents. We found the names of the teachers at Jeanne's secondary school that she would be expected to remember (fig. S5), including the headmaster and the painting teacher Dieudonné (who was later replaced by Férigoule), but she never recalled  
20 any of them. These discoveries contrast with the claims of the validators about her extraordinary memory of names and events that only Jeanne could have known.

Mme Calment famously recalled many details of her single meeting with Vincent Van Gogh but claimed to have been introduced to him as a married woman despite having been only 15 when  
25 he died (table S11). She said that she had visited the Eiffel Tower during her honeymoon but maintained that it was only built up to the first floor (12) (25 mai 1994 02:00; 15/22 septembre 1994 23:00). Tour Eiffel would be at that point of construction in 1888 and was completed in 1889, seven years before their marriage. Her testimony cannot therefore be correct.

30 There were a couple of anecdotes that do seem to be consistent with the facts. She described the launch of her father's last ship named after Jeanne, although there were inaccuracies that undermine the claim that she was there (16). She knew about the dressmaker Chambourdon whose dresses were sold at the Calment shop (9). It is not surprising that Yvonne would have heard and remembered some of the stories told by her older relatives.

35 Mme Calment's knowledge of Jeanne's friends and relatives from the generation that had died by the early 1920s was very poor. For example, she had difficulty remembering the famous mayor, lawyer, and historian Emile Fassin (1842–1922) and never mentioned the composer André Marie Bourdelon. Both were very close to the Calments and were witnesses to Jeanne's  
40 wedding. Madame Calment misunderstood Jeanne's family relationship with Nicolas Crouanson, a first cousin and good friend of Fernand. She was also confused about whose wedding Jeanne had witnessed in the Crouanson family (table S12).

45 Mme Calment reminisced about the Dreyfus Affair but could not remember which side of the debate her father was on (29 janvier 1991 02:00). Nicolas Calment was a shipbuilder and municipal councilor, known at the time for his controversial work distributing benefits to the poor at the Bureau de Bienfaisance in the Hôtel-Dieu hospital in Arles. In 1907, Jeanne was listed as an adviser to the Arles Workers' Mutual Aid Society. Later she was involved in the Red



Cross campaign to feed soldiers in the “Cantine du Soldat” at the Arles railway station, run by the Bureau du Bienfaisance. Jeanne followed in her father’s footsteps, but Mme Calment could not remember what he was responsible for.

Madame Calment claimed to have known the Nobel Prize winner Mistral, but her memories of his life and death were too vague. When she spoke of friends and neighbors (such as the “womanizer” Jean Granaud) and relatives (such as Emile’s grandson Pierre Fassin) who were active after 1915, her memory suddenly became much clearer. However, she said that Pierre Fassin was her cousin, which would be correct for Yvonne and not for Jeanne.

In the switch scenario, keeping track of her fabrications while testifying was a feat of mental gymnastics for Mme Calment. Sometimes her mind slipped, and she said what Yvonne would have said instead of Jeanne. These slips of the tongue are the most revealing of her deceptions because they always go in the same direction and therefore cannot be explained by the lapses of her memory.

For example, she often referred to Fernand Calment as her father rather than her husband (table S13). She had also spoken of Yvonne’s husband, Joseph, as if he were her husband, implying that her husband had been with her during the bombing of Arles in 1944 (two years after Fernand’s death) and then pretended to forget when her husband died.

In her recollection of Yvonne’s First Communion (fig. S2, E), Mme Calment found it difficult to tell the story from Jeanne’s point of view. She remembered helping her parents with the preparations and described Yvonne’s communion dress as her own. This apparent confusion was noticed by her interviewer but was omitted in the book (*14*). On several other occasions, she spoke again as Yvonne, talking about her rich parents who lived in the apartment above the store. When corrected she said that it was too long ago.

Mme Calment said that she was about 40 years old when she visited the villa in Paradou with Yvonne and Frédéric (this was in 1933, when Jeanne was 58 and Yvonne was 35 years old). Regarding the First World War, which began when Jeanne was 39, Mme Calment said that she was quite young at the time and had heard about it from her parents.

Some errors in her memory are to be expected, but Mme Calment’s mistakes tend to be correct for Yvonne rather than anyone else (table S14). The exhaustive examination of all available evidence is presented in our books (*16*), but we believe that the confusions mentioned above are enough to show that her testimony is not compatible with the base scenario.

Why were all these confusions ignored or dismissed by the validators? They have argued that it is almost impossible to imagine a scenario in which Yvonne assumed her mother’s identity and no one noticed. Below we describe the historical events, explain the switch scenario, and show that the evidence fits it while being incompatible with the base scenario.

## 1928, Illness of Yvonne Calment

In 1926 Jeanne Calment’s daughter Yvonne married a military officer, Captain Joseph Billot (1891–1963). They had a son named Frédéric (1926–1963) by the end of the year. In 1928, a

letter was written by Joseph's superior indicating that he requested an army leave due to the health of his wife (10). According to the 2019 testimony of some distant relatives, she was believed to have had tuberculosis. In the audio recordings Mme Calment said that Yvonne became ill with pleurisy after giving birth and that she was treated in a sanatorium in France for a short time (table S15).

From 1929 Yvonne reappeared in photographs attending public events such as the wedding of her brother-in-law Jean-Paul Billot and again at the annual costume festival (fig. S6). There she seems to be in good health, confirming that she had recovered. Up to this point both the base and switch scenario are the same.

## 1931, Disease of Jeanne Calment

Dr Maurice Gilbert was the medical director of the Belvedere sanatorium in Leysin, Switzerland. According to his son, Jeanne had tuberculosis and was treated there in 1930s. Luc-Régis Gilbert testified that his father was surprised to learn in the 1970s that his former patient Jeanne Calment, who was much older than him, was still alive and in good health. At that time Maurice Gilbert lived in the family's holiday residence in Gordes not far from Arles and could have heard about Mme Calment from the locals or seen an article about her in the press, perhaps on the occasion of Jeanne's centenary. Mr. Gilbert said that his father had never mentioned Jeanne's daughter, so it is unlikely that she was also his patient. This testimony is available online at <https://youtu.be/8TNrXdagQRM>.

On 19th September 1931 it was reported that Fernand attended a musical festival in Arles, but Jeanne was not mentioned while the wives of other guests were (fig. S6). Fernand could excuse her absence by the death of her father in the beginning of the year – she was still mourning. The evidence suggests that Jeanne was treated confidentially in Leysin, so it was possible to avoid her condition being recorded in France. The pleural sequelae mentioned in medical reports for Mme Calment in the 1990s are consistent with the hypothesis that she had suffered from tuberculosis in the past, whether she was Jeanne or Yvonne (8). Nevertheless, Mme Calment repeatedly claimed that she had never ever been ill.

According to the base scenario outlined by the validators in (10), Yvonne was treated in Switzerland as she was photographed on the terrace of the Belvedere sanatorium in Leysin in August 1931 (fig. S7) and her name was not found in the transcription of the census record for the Calment household in Arles in April 1931. We do not agree with this logic. This census record is unreliable and erroneous (Jeanne's name was mistakenly replaced with that of her mother-in-law, Maria). If Yvonne had stayed in Leysin for such a long time, her name would have been recorded in the local municipal register, which is exceptionally well preserved, but according to the Leysin administration, it has not been found there (fig. S8). Robert Billot, who provided the picture, suggested that Yvonne was on vacation at the time, and indeed she looks more like a visitor than a patient. When Dr Lèbre discussed this photograph with Mme Calment, he thought it was Jeanne, not Yvonne, and praised her appearance. She accepted the compliments, saying that she remembered her parasol from the picture (table S15).

The combination of evidence suggests that it was Jeanne who was ill in 1931, and that her daughter visited her there, as they are pictured together, probably on the same terrace of the

Belvedere (fig. S9), with Jeanne looking underweight compared to her earlier photographs, consistent with her illness (fig. S10). The base and the switch scenarios therefore diverge at this point. However, the base scenario is not consistent with Gilbert's testimony. It is remarkable that Mme Calment deliberately hid the truth about Leysin from her relatives in 1931 and from her validators in the 1990s.

## The identity swap and the change of signature

We know that by the end of 1931 Jeanne was back in Arles because she sold the apartment at 53, rue de la Roquette that she had inherited from her parents. The previous document was signed by her in June 1931, so she had spent no more than a few months in Leysin. This is consistent with the known policy of Dr Gilbert who preferred to keep his patients at home as much as possible.

While some people knew that Yvonne had been ill earlier, almost nobody was aware of Jeanne's disease. It would not be remarkable for one member of a family to be struck by pleurisy. In her later testimony Madame Calment blamed this on Jeanne's mother-in-law Maria exposing Yvonne to the cold waters of the Rhône on a hot day. If Jeanne was known to have a similar condition, it would be harder to pretend that it was not tuberculosis which was stigmatized as an infectious disease of the lower classes. It is reasonable to assume that Yvonne felt a sense of guilt about passing the disease on to her mother and was determined to protect her from any possible gossip. Fernand Calment ran a big store in Arles that had to be kept afloat during the deflationary depression, and such rumors could be a hard blow for the business. It is therefore understandable that in the switch scenario they decided to deceive everyone, including the doctor, by claiming that it was Yvonne who was ill again, while Jeanne was looking after her daughter.

Another strong incentive to pretend that Yvonne had relapsed rather than Jeanne becoming ill was that Joseph Billot was needed in Arles to help with the store and to take care of the family. Joseph would not be granted leave to support his mother-in-law. We know from his military record that the leave was extended in 1933.

Yvonne's son Frédéric, who was four years old when Jeanne returned from Leysin in 1931 had to be made to believe that his mother was now his grandmother. Tuberculosis was rumoured to run in families, so the deception was justified by the desire to protect him from the stigma associated with his mother's and grandmother's illness. In his infancy Frédéric was probably isolated from Yvonne because of the risk of contagion. He might have spent some time with Jeanne before she too became ill, and then with his aunts and other relatives. This appears to have led to some confusion with Frédéric calling Mme Calment *Manzane*, a contraction of *maman Jeanne* (7). As a child he would believe what he was told by his family.

The Calments decided to buy a villa in the nearby village of Paradou where nobody knew Jeanne and Yvonne before. It had a gallery facing South towards the sun very similar to those used in Leysin for heliotherapy (the main treatment for tuberculosis at the time). This property purchase would make sense if the family wanted to care for Jeanne at home without revealing her identity. In Paradou, Yvonne was able to look after her sick mother and all the locals would know her as Jeanne from then on.





This identity card and the observed change in signature have no plausible explanation in the base scenario. It was argued that in the switch scenario Yvonne wouldn't have a chance to fool their notary Lucien Arnaud who had served the family for many decades, but he retired in 1932 and was replaced by Louis David, a young man who had recently arrived from Grenoble.

Jeanne and her husband Fernand were double second cousins, so it is understandable that their daughter was very similar to her mother. There are plenty of occasions where pictures of Yvonne were attributed to Jeanne in newspapers, journals, books, websites, and Mme Calment's recorded dialogues with her doctor, so apparently people saw them as compatible. Even when the original validators were discussing pictures of Yvonne for a TV documentary in 2019, they were still confused about whether they were observing Yvonne or Jeanne. Jeanne had looked young (fig. S11) and there are anecdotes of her being mistaken for Yvonne before (8).

The Calments therefore had both motive and opportunity to temporary switch identities in 1933. In order not to be exposed, Yvonne rarely appeared in Arles at that time and avoided contact with those who knew her well. They probably expected Jeanne to recover as Yvonne had. In that case, with necessary precautions such as avoiding the doctor, notary, and other witnesses, everything could have gradually returned to normal with nobody outside their close circle being aware of what happened. It seemed like a white lie, harming nobody. The action is, however, very unusual, and the circumstances would have to fall into place for them to be able to get away with it.

We believe that the closest family knew what was going on, but other relatives such as Pierre Fassin would need to be duped. Those that did know hid it from their children so that they would not have to carry the burden of the lie.

## 1934, The Funeral

On 19 January 1934, the death of Yvonne was registered by her doctor, priest, and other witnesses. A solemn funeral was held the next day and a large crowd followed the procession through the streets (7). In the switch scenario described above, the Calments led everyone to believe that it was Yvonne who was ill. At that stage, the plan was to reverse the identity swap after Jeanne's recovery. When she deteriorated and died, this was no longer an option. Yvonne had falsely signed documents in her mother's name and Joseph had lied to his superiors to extend his leave. These were very serious matters. If they confessed that it was Jeanne who had died as Yvonne, the legal consequences would be severe, and their business would be damaged by the ensuing scandal. They had to continue acting out the switch, committing more serious fraud to cover their earlier lie.

Could they have gotten away with it? Supporters of Jeanne Calment's authenticity say that it would be impossible. They believe that people would have seen the body and recognized Jeanne, and that they would also have recognized Yvonne. Too many witnesses would have to be involved, including a large list of relatives that was published on the death notice (10).

We do not agree. Such standard notices are not a good indication of close observance. In 1937 Mme Calment was included in a similar announcement on the death of Paul Crouanson, son of Fernand's cousin and close friend Nicolas Crouanson (fig. S12). However, in a conversation with her doctor, Mme Calment said that she had not followed the Crouanson's boys (table S12). This also shows how distant she became even from her closest relatives.

In the months leading up to her death in 1934, Jeanne was probably wasting away from tuberculosis. This would make it even harder for witnesses such as funeral directors to judge her age. They had no reason to be suspicious of a switch, especially since it was known that Yvonne had been ill a few years before. We don't know for sure if the body was on display for the funeral, but even if it was, any discrepancy with Yvonne's appearance could be attributed to illness and death. During the funeral Yvonne was overcome with grief and would hide her face under a veil.

## After 1934

After the funeral Madame Calment left the town and people left her to mourn, believing her to be Jeanne. She lived in Paradou, where everyone knew her as Jeanne, and travelled outside of Arles with Joseph and Frédéric. Most of the friends of Yvonne thought that she had died, so Mme Calment had to break all the ties with them. Instead, she socialized with Joseph Billot's family in Paris (fig. S13).

In 1938, four years after the funeral, Joseph was called back to the army and the family business was shut down. Their main residence remained the apartments over the shop, but Mme Calment was known to prefer living at her villa in the countryside where she developed one of her favourite pastimes – hunting rabbits, wild boar, and partridges with her Jack Russel terrier and 18mm rifle. This marked a notable departure from Jeanne's earlier passions for the arts and music.

Jeanne's husband Fernand died in 1942. In the base scenario Joseph Billot would have lost his wife and would be free to move into his own flat. Instead, in 1949 Joseph sold it to his niece Josette and stayed with Mme Calment. According to the census records, they shared an apartment while Frédéric with his wife lived next door. Photographs seem to show that Joseph and Mme Calment were very close in the 1950s. This is unusual according to the base scenario where Mme Calment would be Joseph's mother-in-law, but it is natural in the switch scenario where she was his wife.

There may have been some rumours in Arles that Jeanne was in fact Yvonne, but without proof it would have been risky to publicly accuse the respectable family of such an improbable fraud. After the death of Joseph and Frédéric in 1963, Madame Calment was known to lead a very isolated life, her main activities being to attend mass at the church of St Trophime and to visit the Calment family tomb, which was inscribed only with the names of Joseph and Frédéric. When seen in town, Madame Calment usually wore a veil and snubbed those who looked at her too closely.

As time passed, Mme Calment's appearance became more and more consistent with that of aged Jeanne (fig. S14). Nevertheless, Joseph's nephew Robert Billot who was born in 1931 and knew her well since 1937 declared that the woman on the photo of Jeanne Calment from 1920s (fig. S10, C) was certainly not the Mme Calment he knew.

## Conclusion

In the past, when information was less abundant, we utilized Bayesian method (8) to evaluate this case. There, the difference in age at death for Mme Calment in the base and switch scenarios was one of the key pieces of evidence. We believe that similar analysis can be used to evaluate other claims of exceptional longevity (17). Calment's validators argue that our skepticism is based on the assumption that people cannot live that long (10), but we have never made such a claim.

We investigated the case of Sarah Knauss (1880-1999), whose age was an outlier for twenty years (fig. 1). Our approach was initially skeptical because Knauss was not known to appear on any document before the age of 19. However, we found a copy of her census record at the age of ten, and indications in the parish registers that the church had checked her baptism record prior to her communion ceremony (fig. S15). As we delved deeper into the case, we uncovered a wealth of evidence contradicting any possibility of identity switch (17).

On the contrary, the totality of evidence gathered for Calment points to the conclusion that Yvonne was the one who died in 1997, validated as her mother Jeanne. You can take each part separately and say there could be an alternative explanation. Perhaps Jeanne changed her signature at the age of 58 because she wanted to refresh herself. She may have fallen in love with her son-in-law, or she may have spent decades looking after his frail health. She forgot all her childhood friends and had multiple false memories of the period preceding her daughter's youth. She had memory lapses that happened to coincide with Yvonne's life and had some unknown mental illness that forced her to speak from her daughter's point of view from time to time. It could be that a hypothetical exceptional genetic inheritance (1) allowed her to live three years

longer than anyone else although none of her ancestors ever lived to be 95 (7). If someone throws two dice and gets a double six, they can say they are lucky. Repeating this many times should eventually lead to the conclusion that the dice are loaded.

5 However, given the natural human bias in favour of the status quo it can be difficult to look critically at many details about Mme Calment's life and testimony. Unfortunately, as of August 2023, Mme Calment's identity has not yet been DNA tested. We continue to advocate for the test to verify the accuracy of the death records of Jeanne and Yvonne Calment, as it could distinguish between the base and switch scenarios in a single throw. Exhumation would have to be ordered  
10 by a judge at the request of the authorities or the scientific community. Alternatively, the sample could be provided by the Dausset Foundation, which has collected it for scientific research (7–9), or by friends and family who have some relevant material, such as letters or clothes belonging to Madame Calment. We believe that the evidence presented here is sufficient to justify this action, but it is also sufficient to question the validation even without the DNA test.

15 The study of individuals with extreme longevity presents a valuable opportunity for gerontologists (18) and demographers (19) to deepen our understanding of aging and mortality. However, it is crucial to thoroughly validate such cases before drawing any conclusions. For example, the life expectancy of Italian semi-supercentenarians, validated using only their death  
20 certificates, has been used to support the hypothesis that human mortality doesn't increase after the age of 105 (19). As we have shown above, even much more extensive documentation is not sufficient to verify extreme age claims.

25 The question of whether there is a limit to human longevity continues to preoccupy scientists (20). Figure 1 appears to show the slowdown of the expected MRAD as it approaches the age of 120 years. Curiously, according to our research, the only confirmed case of exceeding this limit was the result of fraud.

30 Calment's record is cited in over 3000 academic sources serving as evidence for a variety of scientific (2, 6) and social (4) arguments. Some researchers acknowledge that this data point alone significantly affects their analysis but prefer not to even mention the possibility that her age may not be genuine (21). The self-correcting nature of science is important. How can humanity progress if we are unable to establish the foundation of truth, even in science?



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**Competing interests:** Authors declare that they have no competing interests.

**Data and materials availability:** All data and materials used in the analysis are given in the main text and in the supplementary materials. The authors will provide additional relevant information, such as notarial acts, upon request.

### Extended data

Materials and Methods

Supplementary text

Figs. S1 to S15

Tables S1 to S16

# Supplementary information for

## **On the authenticity of “the oldest human” Jeanne Calment**

Nikolay Zak, Philip Gibbs

5

Materials and Methods

Supplementary text

Figs. S1 to S15

10

Tables S1 to S16

## Materials and Methods

### Materials

We obtained copies of the civil records and notarial acts related to the Calment family from the Department Archives of Bouches du Rhone <https://www.archives13.fr/>. Mme Calment was reported to have destroyed most of her photographs and documents (7), but in 2019 some pictures were published by her extended family, and some were found in old news reports and flea markets. 15 hours of recordings of her interviews were released by INSERM in January 2022 (12). The vast material related to the history of Arles was studied through online libraries such as <https://gallica.bnf.fr/>, <https://www.retronews.fr/>, <https://bibliotheque-numerique.citedulivre-aix.com/presse-ancienne-aixoise> and other sources. We have also considered all relevant testimony (including that of the son of Dr Maurice Gilbert and Joseph Billot's nephew Robert) in order to improve our understanding of the possible scenarios.

### Methods

We define and elaborate two competing scenarios.

In the **base scenario** Mme Calment who died in 1997 was indeed Jeanne Calment born in 1875 as she claimed. This scenario reflects events as reported by her validation team (10).

In the **switch scenario** Mme Calment was Jeanne's daughter Yvonne born in 1898 who had assumed the identity of her mother.

To evaluate the plausibility of these scenarios, we carefully examine the most relevant facts and review them within the framework of each scenario. Specifically, we analyze each piece of evidence to determine whether it supports or contradicts the base or switch scenario.

### Supplementary Text

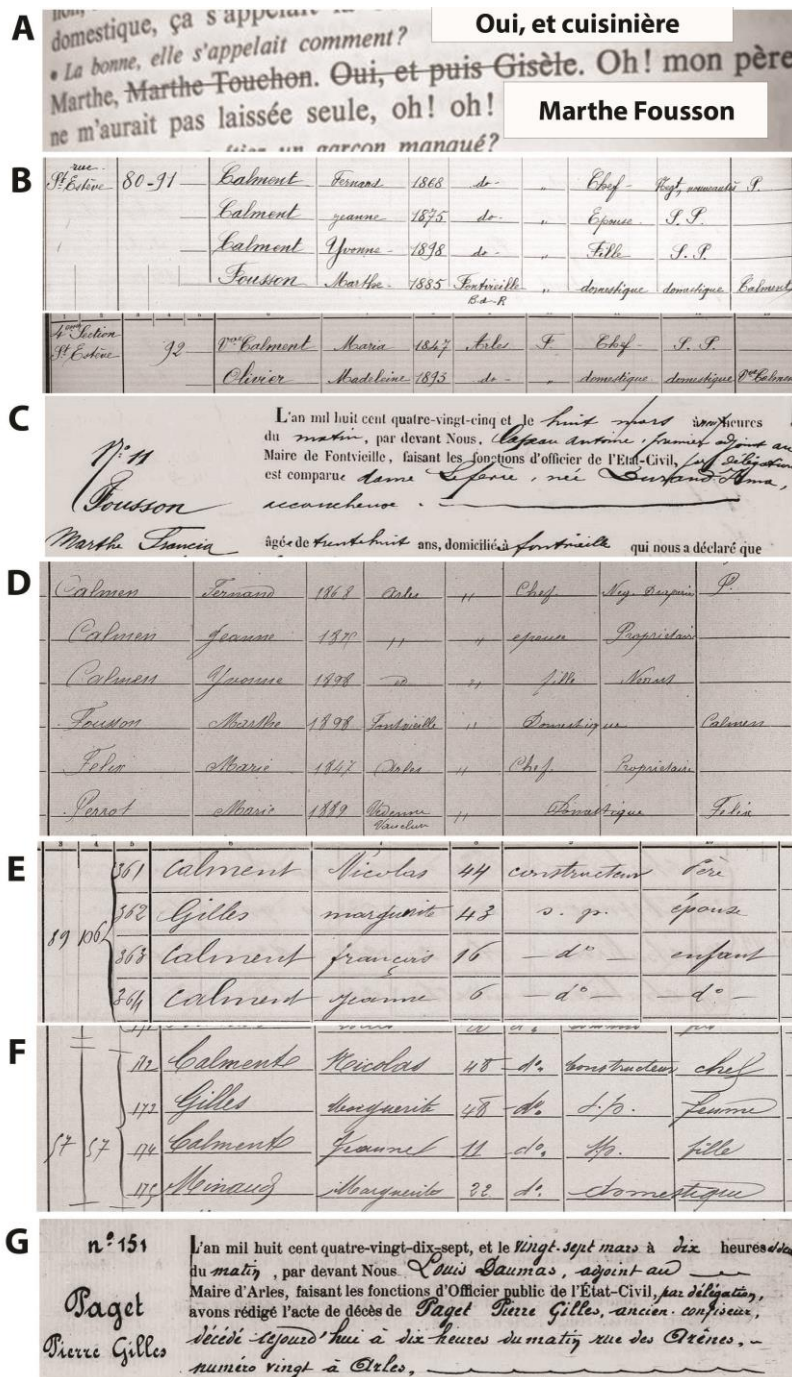
The GRG table is subject to some unavoidable age-attainment selection bias with multiple omissions for ages below 114, but as a source for the validated human lifespan it is what is required. As an alternative we have looked at the IDL data (2). IDL extends to lower ages (from 110, and from 105 for some regions). It purports to have less bias but also has less complete coverage than GRG by date (up to 2007-2017 depending on country). IDL also contains more known false positives (e.g., Hannah, Beard) and omissions (e.g., Meilleur, Brown, Capovilla, Ikai).

Assuming a mortality plateau (2, 18), given a population of  $n$  supercentenarians with a half-life of  $H$ , each of them has a probability  $1/n$  to become the last survivor and is then expected to live  $H/\ln 2$  after all the rest have died, so by induction the expected time until all die is given by

$$T(n) = \frac{H}{\ln 2} \sum_{k=1}^n \frac{1}{k}$$

If the age of the  $n$ th oldest person  $A(n, t)$  is verified then the expected maximum age can be plotted as  $eMRAD(n, t + T(n)) = A(n, t) + T(n)$ . In fig. 1 we set  $n$  to 100,  $H$  to 9 months and plot a graph for  $eMRAD$ :

$$eMRAD(t) = A(100, t - T(100)) + T(100).$$



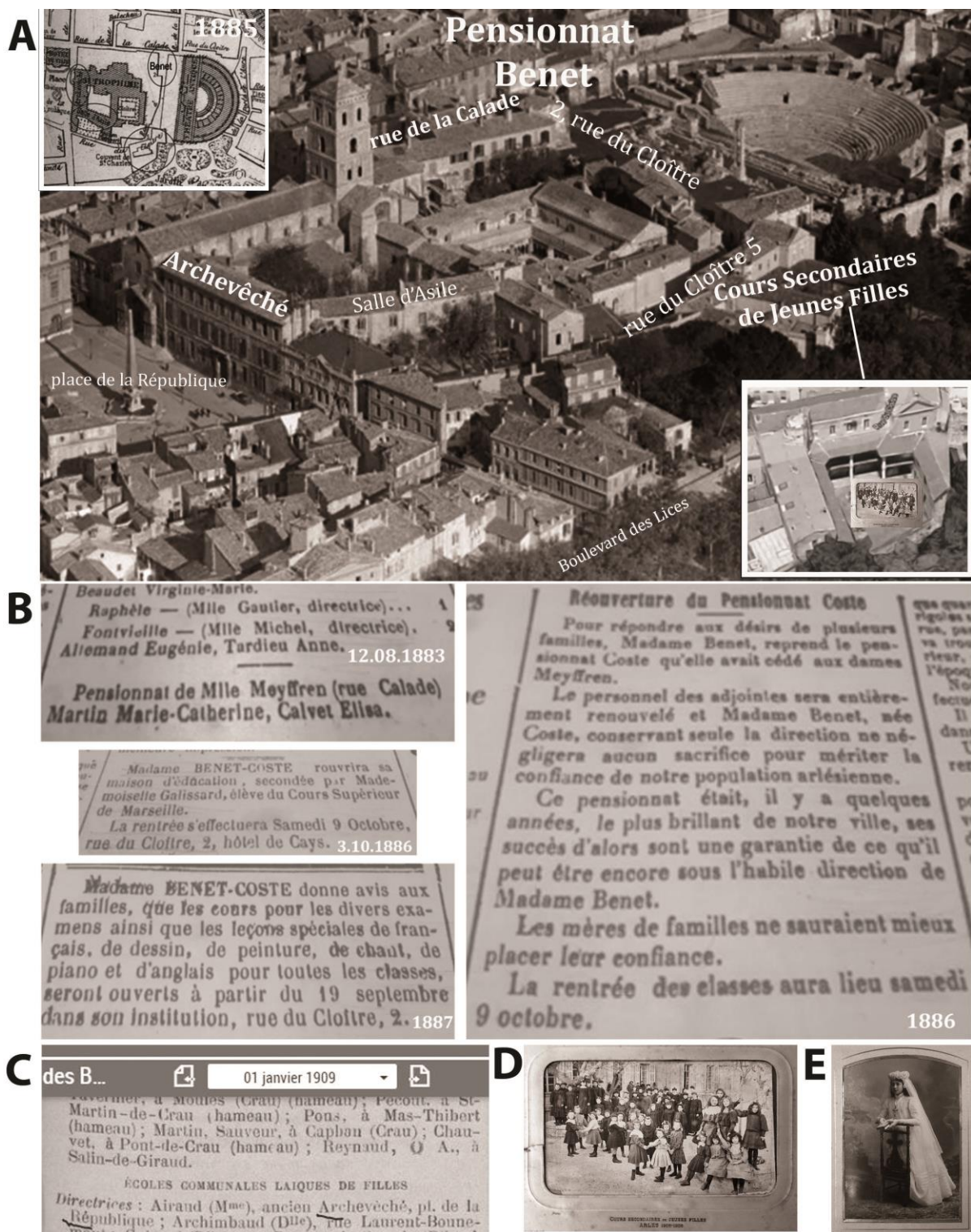
**Fig. S1. Marthe Fousson, other servants and Jeanne's godfather.**

**A.** Fousson misspelled as Touchon in the validators' book (14). **B.** Fousson, born 1885 (and another maid, Olivier) registered with Calments in 1911 census. **C.** Fousson's birth record from 1885.

**D.** Fousson (and another maid, Perrot) registered with Calments in 1906 census.

**E.** No maids lived with Jeanne's family in 1881 census. **F.** In 1886, a relative, Marguerite Minaud, lived with the family as a maid. **G.** Jeanne godfather's death record, 1897. He was a confectioner (not diplomat) and lived at rue des Arènes (not rue du Théâtre).





**Fig. S2. Benet Pensionnat.**

A. Locations of the Benet Pensionnat, girl's secondary school and the former archbishop palace.

B. Captions from *L'Homme de Bronze* newspaper articles on Benet/Meyffren's pensionnat.

C. Girl's school in archbishop palace in 1909, trade directory *Indicateur Marseillais*.

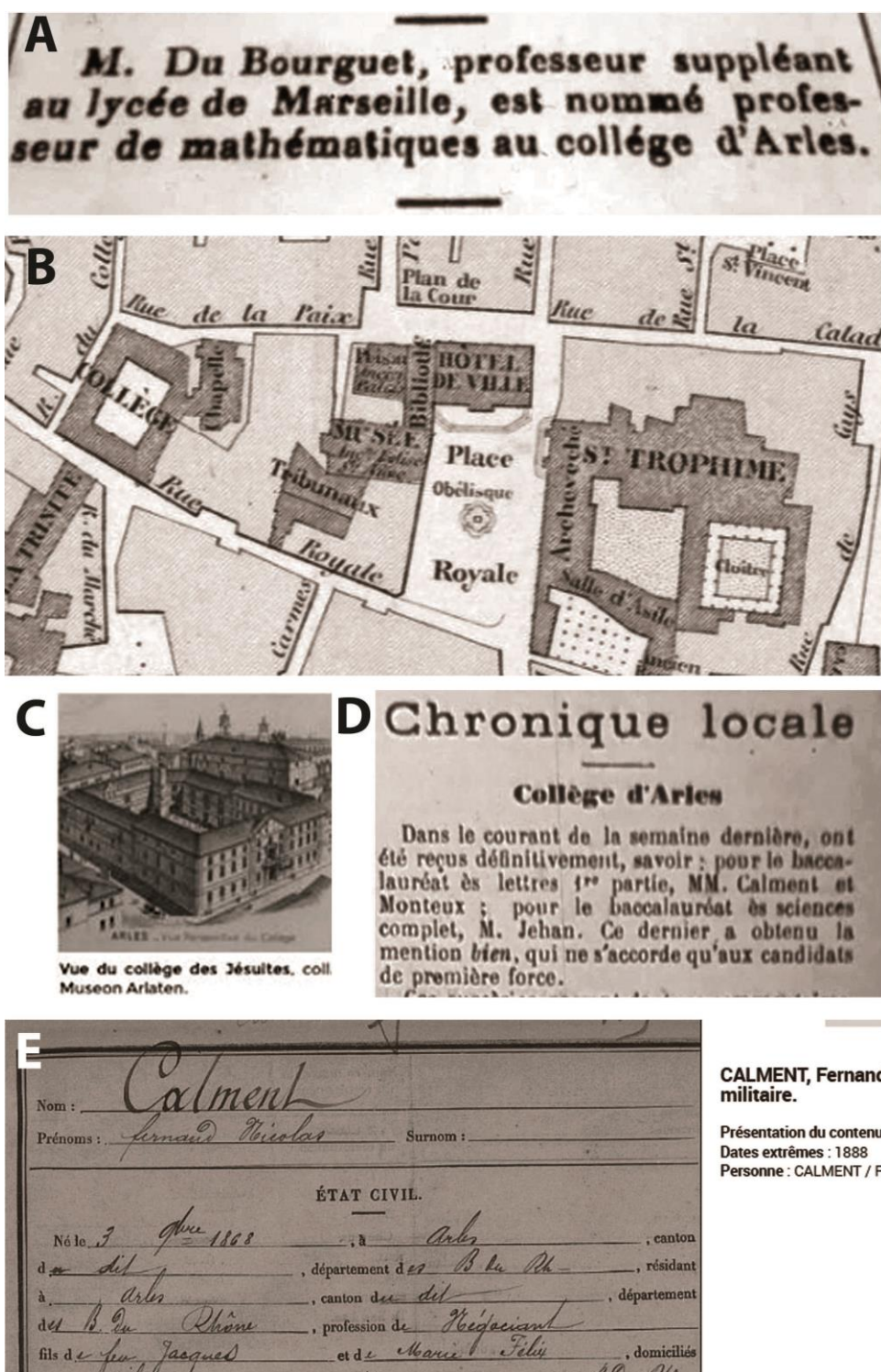
D. Yvonne and other girls pictured at girl's school at rue du Cloître. E. Yvonne's communion.



**Fig. S3. Alliance Française ball.**

Jeanne couldn't attend the Alliance Française ball before marriage since the Alliance Française was established in Arles in 1895. Captions from *L'Homme de Bronze* newspaper articles and trade directory *Indicateur Marseillais*.





**Fig. S4. Fernand's college.**

**A.** In 1885 *L'Homme de Bronze* newspaper reported that Du Bourguet became a mathematics teacher in the Arles boys' college. **B.** The boys' college on 1870 map. **C.** Until 1904 the boys' college was located in what was to become the Museon Arlaten. **D.** Fernand graduated from the Arles boys' college in 1886. He was later head of the college's alumni association. **E.** According to his military documents, at least since 1888 Fernand was a *négociant* (trader) in Arles.

A

... rue Saint Paul.  
 Nous applaudissons à ce choix bien fait pour  
 assurer le succès de ces cours qui seront si utiles  
 aux demoiselles désireuses de recevoir une ins-  
 truction solide et semblable à celle qui est donnée  
 dans les collèges de jeunes filles.  
 Voici le nom de tous les professeurs chargés  
 de ces cours :  
 Mathématiques et Histoire Naturelle : M. Tho-  
 ris, principal du collège;  
 Physique et Chimie : M. Du Bourgnet, profes-  
 seur au collège;  
 Français et Littérature, 1re Division : M. Alet,  
 professeur au collège;  
 Français et Littérature, 2e Division : M. Mail-  
 laud, professeur au collège;  
 Histoire et Géographie : M. Magnas, profes-  
 seur au collège;  
 Dessin : M. Diudonné, professeur;  
 Gymnastique : M. Sabatier, Directeur de l'école  
 du Haras.  
 Musique vocale : Mlle Gachon, professeur.  
 Mme de Saint-Léger, Directrice, est en outre  
 chargée des cours de Morale et Economie domes-  
 tique, Français et Littérature, Arithmétique, Ecrit-  
 ture, Langue Anglaise et Couture.

1886

B

Allez.  
 Prix d'excellence dans les diverses  
 classes : Mlles Archimbaud, Fumet, Thérè-  
 rèse Cartoux, Calment Brun et Elise Pi-  
 gnard.  
 Elèves le plus souvent nommées :  
 3e année : Mlles Archimbaud, Salles et  
 Martin, 12 fois nommées.  
 2e année : Mlles Fumet, 15 fois nommée,  
 Blanc, 12 fois nommée, Calment et Tenot,  
 11 fois nommées.  
 1re année : Mlles Cartoux, 11 fois nom-  
 mée et M.-L. Schenetz, 10 fois nommée.  
 Classe primaire : Mlles Calment, 9 fois  
 nommée, Brun et Lucie Pignard, 8 fois  
 nommées.

1891

C

Cette semaine ont eu lieu les obsèques de  
 M. Diudonné, directeur de notre école de  
 dessin, officier d'académie, et conservateur  
 des Musées.  
 M. Diudonné, que tous les collégiens petits  
 et grands ont connu, était un homme modeste  
 mais de talent; sculpteur et modelleur, il a  
 laissé quelques œuvres d'un réel mérite.  
 Nous adressons à la famille nos sincères con-  
 doléances.

1897

D

Cours secondaires  
 On nous signale qu'on vient de nom-  
 mer à notre Cours secondaire de jeunes  
 filles un professeur de musique en rem-  
 placement de M<sup>lle</sup> Gachon, décédée.  
 Il faut que notre ville manque vrai-  
 ment de musiciens pour...

1916

Fig. S5. Jeanne's teachers.

- A. Secondary school teachers that Jeanne would have known, *L'Homme de Bronze* newspaper.  
 B. Jeanne Calment mentioned among best students of girl's secondary courses in 1891.  
 C. Diudonné's obituary states that everybody knew him.  
 D. Gachon, piano teacher at girl's secondary courses, dies in 1916.





**Fig. S6. Yvonne's recovery after 1928 and Jeanne's absence.**

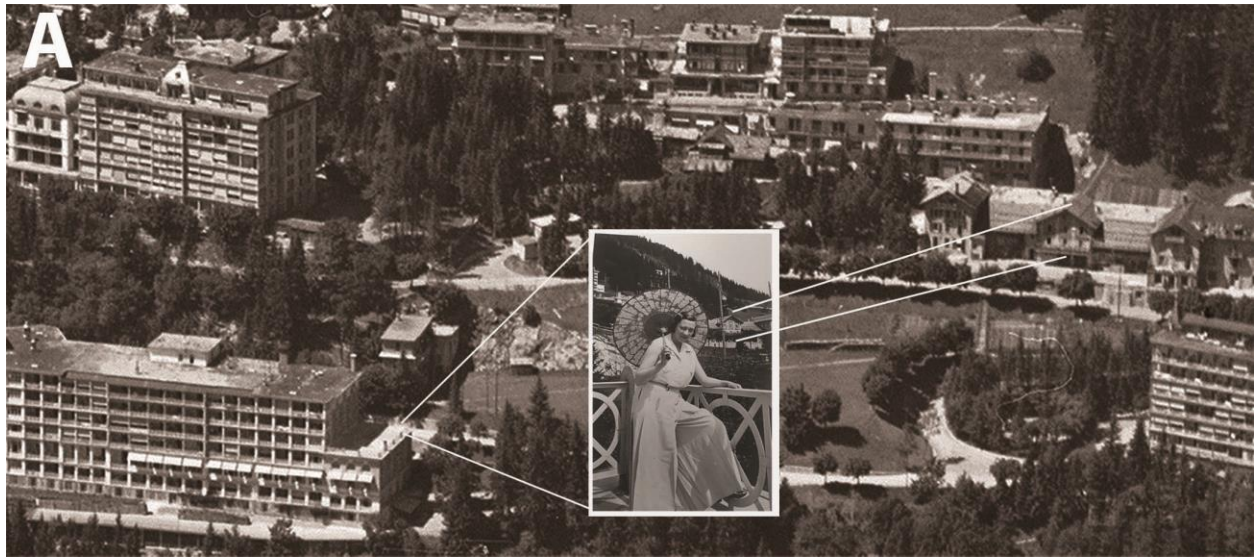
**A.** In 1929 Yvonne was seen in Arles attending Jean-Paul Billot's wedding.

**B.** Yvonne (according to the Fassin family), attending a costume festival in St. Trophime. The landmarks in the picture suggest it was taken around 1930.

**C.** Possible Yvonne, attending costume festival in Arles in July 1931. Her dress matches earlier confirmed pictures of Yvonne from costume festivals.

**D.** A newspaper article mentions Fernand Calment, but not Jeanne, at the music festival in September 1931 in Arles.





**Fig. S7. Yvonne in Leysin.**

**A.** In 2019, after the release of the picture of Yvonne with parasol, dated August 1931, Nadine Lefevre was the first who noticed that the balcony railing was similar in style to those in Leysin, and we were then able to geolocate it to the terrace of the Belvedere sanatorium there.

**B.** Same picture without background was published in Figaro in 1995 as the picture of Jeanne Calment.

**C.** The corresponding view from Belvedere in 2020.

**A**

1893	1924	DEF RANCE	Victorine	1884	Le Puy	F	Ch de m	Négociant	Patron
		DEF RANCE	Fernand	1868	Arles	F	Spouse	Néant	
1894	1925	CALMENT	Maria	1872	Arles	F	Cendre	Néant	
		CALMENT	Joseph	1891	Arles	F	Mère	Néant	
		BILLOT	Maria	1847	Arles	F	Petit file	Néant	
		BILLOT	Frederic	1928	Arles	F	Domestique	Cuisiniere	CALMENT
		BAUZANQUES	Louise	1894	Arles	F	Domestique	Bonne	CALMENT
		CHETLAN	Pauline	1895	Arles	F	Ch de m	Négociant	Patron

**B** Véronique Vaudroz

De: Véronique Vaudroz  
 Envoyé: mardi, 12 mars 2019 13:30  
 À: 'F'  
 Objet: RE: Demande de renseignements

Bonjour,

Nous n'avons rien trouvé dans nos archives concernant le séjour de Mme Yvonne Billot née Calment ou Jeanne Calment.

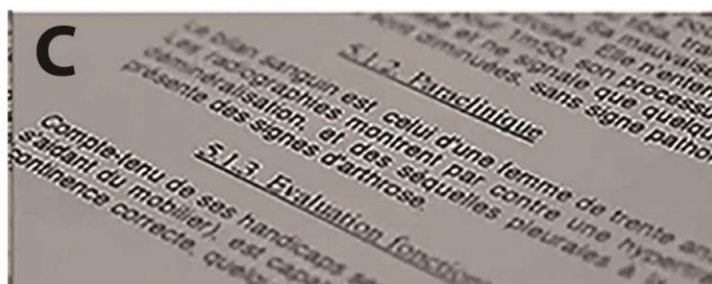
Nous n'avons pas de listes de personnes en cure par année.

Nous avons une cartothèque avec les noms des personnes par ordre alphabétique, cependant nous n'avons rien trouvé au noms demandés.

Avec nos meilleures salutations.

Contrôle des Habitants  
 Police des Etrangers  
 Leysin

Véronique Vaudroz  
 Tél +41 24 493 45 42  
 Fax +41 24 493 45 41  
 Veronique.Vaudroz@leysin.ch



[www.leysin-commune.ch](http://www.leysin-commune.ch)

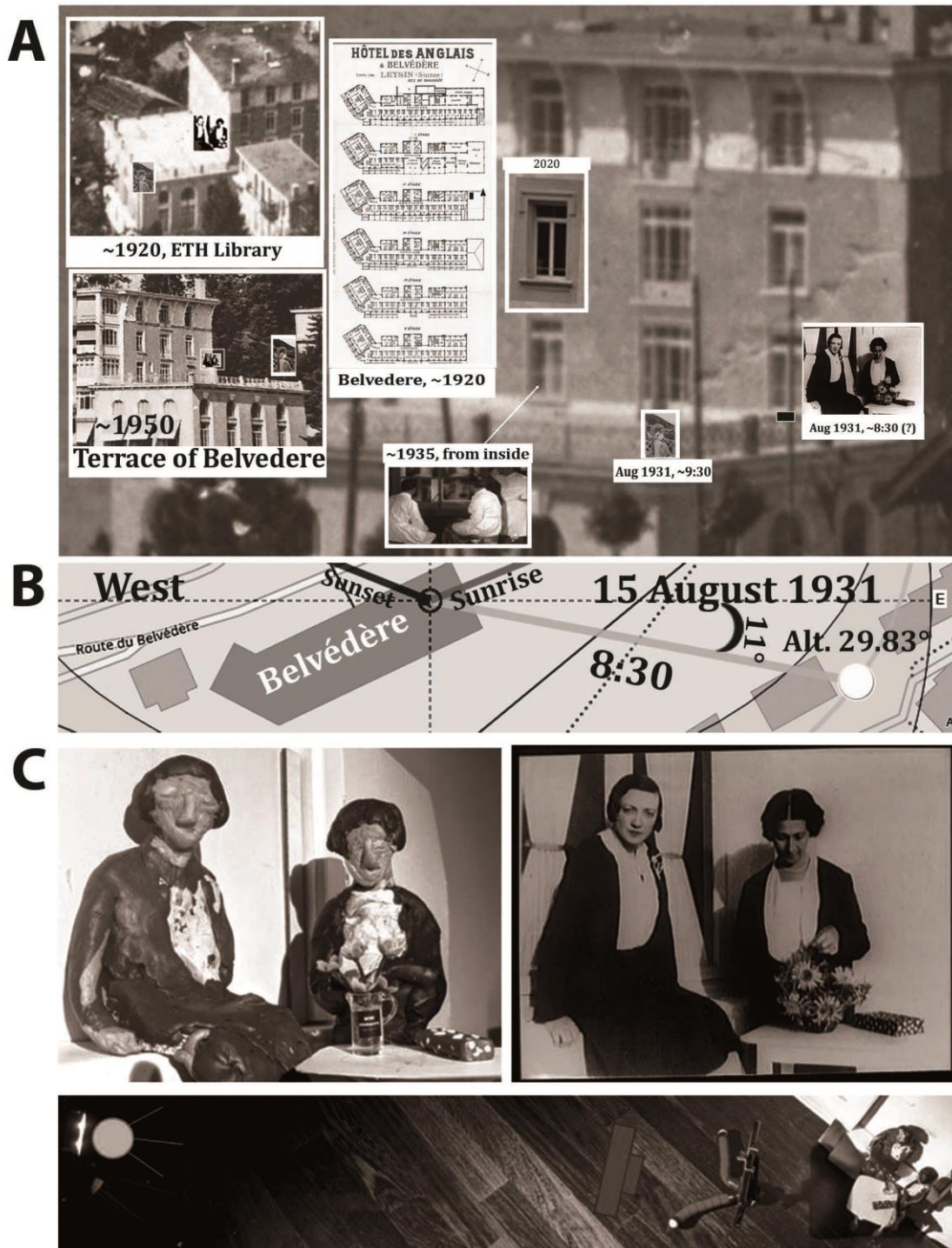
**Fig. S8. Yvonne's and Jeanne's absence and the pleural sequelae.**

**A.** Neither Yvonne's nor Jeanne's names appear in the 1931 Arles census.

**B.** Neither Yvonne's nor Jeanne's names appear in Leysin archives.

**C.** The pleural sequelae mentioned in the medical reports for Madame Calment in the 1990s are consistent with her having had tuberculosis in the past.



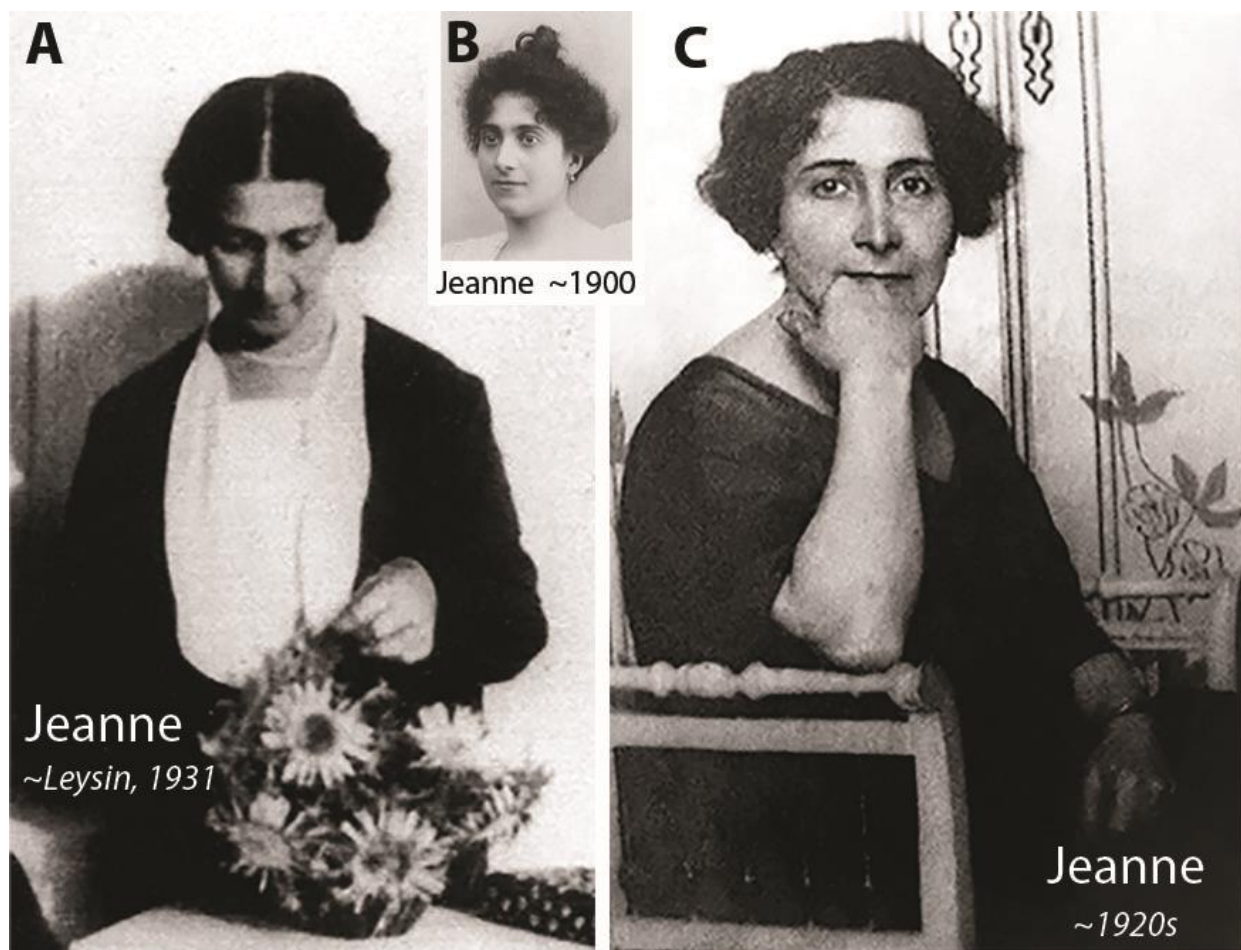


**Fig. S9. Geolocation of the *switch* photo.**

**A.** Possible location for the *switch* photo of Jeanne and Yvonne together on the same terrace of the Belvedere where the photo of Yvonne with parasol was taken.

**B.** Possible position of the sun for the *switch* photo.

**C.** Modelling the shades for the *switch* photo (figures by Agata Zak).



**Fig. S10. On the switch photo Jeanne looks slimmer than on her earlier photo.**

**A.** Jeanne on the *switch* photo, probably taken on the terrace of Belvedere sanatorium in Leysin in 1931.

5 **B.** Signed photo of Jeanne Calment around the time of her marriage, provided by the Crouanson family.

**C.** Photo of Jeanne Calment published in Paris Match magazine in August 1997. Here she looks like the woman in **B**, but Robert Billot, who knew Mme Calment well since the late 1930s, said that she was certainly not the woman he had always believed to be Jeanne Calment.





**Fig. S11. The identity card.**

**A.** The ID card issued in Jeanne's name, face.

**B.** The ID card issued in Jeanne's name, back.

**C.** Young Yvonne in 1910s.

**D.** Jeanne in around 1923, Arles Library.

**E.** In the early 1930s, Yvonne looked sufficiently like Jeanne's photo on the identity card to be able to use it without much risk of being exposed.



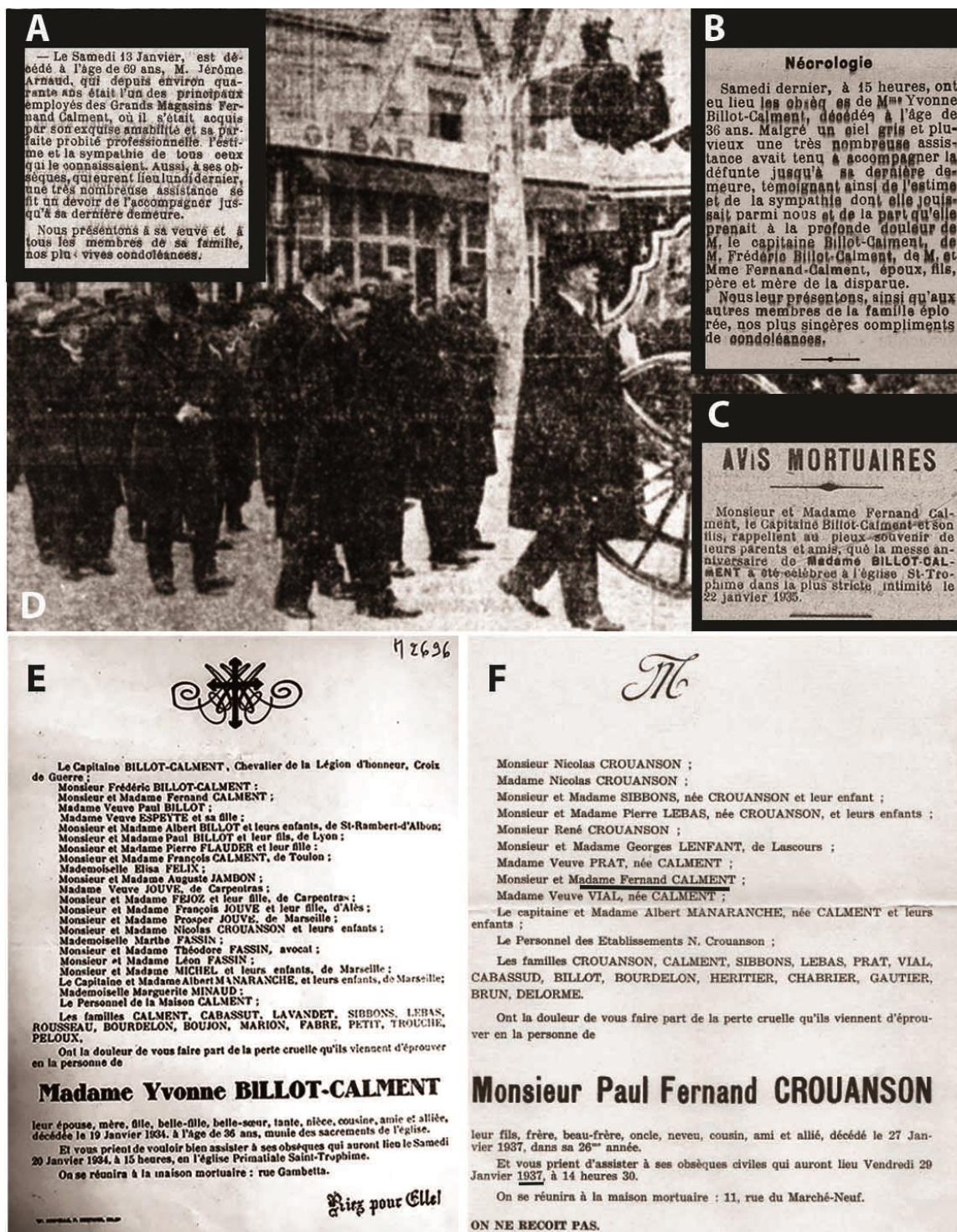


Fig. S12. The funeral.

A. Obituary of Jerome Arnaud, an employee of Fernand Calment, dated 13.01.1934.

B. Obituary of Yvonne Calment, January 1934.

C. January 1935, an announcement of a mass for Yvonne in the strictest intimacy.

5 D. Funeral for former mayor of Arles, Jean Granaud, February 1934.

E. Death announcement for Yvonne Calment, January 1934.

F. Death announcement for Paul Crouanson, January 1937.





**Fig. S13. Mme Calment and Joseph Billot.**

After the funeral, Mme Calment was very close to Joseph Billot and his family.

**A.** Mme Calment in Versailles, 1937. **B.** Yvonne with Joseph's sister Nenette in 1923; Mme Calment with Nenette and her daughter Josette (who, according to Paris Match, destroyed some of the archives on Mme Calment's orders), in the retirement home. **C.** Mme Calment in Paradou. **D, E, F.** Mme Calment and Joseph Billot in Paradou.



Jeanne Calment 1895-1931

Mme Calment 1937-1995



Yvonne Calment 1908-1931

Mme Calment 1937-1995

**Fig. S14. Photographic evidence.**

Comparing photos of Jeanne and Yvonne taken before 1934 with those of Madame Calment after 1934, it is challenging to differentiate between the base and switch scenarios based solely on their appearance. In the switch scenario, Yvonne became even more like her mother as she aged, with a drooping nose, a more prominent nasal bump, deeper eyes, and thinner lips.



A	NAMES.	FAM.	BAPT.	CONF.	COMM.	MAR.	BUR.
	Clark Walter		B				
	Amelia		B				
	Charles		B				
	Sarah		B				
	Walter		554				B
	Edward		632				B <sub>30</sub>

B	Clark Walter 41, carpenter—Amelia 33,
	Charles H 12, Sarah D 10, Foster E
	I. 524 Broad

**Fig. S15. Sarah Clark/Knauss.**

**A.** Church registers for Bethlehem. Clark family in the index of the volume for 1862-1888 with parents followed by the children in age order: Walter, Amelia, Charles, Sarah (baptized), Walter and Edward. It is likely that the rector in Bethlehem would have checked the baptism records from their earlier church. Such checks were important to the church so that the sacraments could be carried out in proper order.

**B.** A scan from 1890 Northampton Directory shows the 1890 census record for Sarah Clark (future Sarah Knauss), age 10.

<p>Recorded interview with Mme Calment's doctor, Victor Lèbre</p> <p>(12) (1995 17:00)</p>	<p>Translation</p>
<p>Dr Victor Lèbre (VL): Ce qui caractérise surtout Madame Calment et c'est à partir de là qu'on lui porte l'intérêt particulier, c'est qu'elle a un cerveau absolument étonnant pour une personne qui maintenant est proche de 119 ans révolus et qui va entamer sa 120<sup>e</sup> année. Et en se rappelant que 120 ans et pour le moment la limite théorique de la vie...</p> <p>Ce qu'est le plus étonnant, qu'elle a une lucidité tout à fait étonnante. Je vais vous en donner 3 exemples.</p> <p>Le premier, c'est qu'elle m'a demandé le prénom de mon épouse. Je lui ai dit que mon épouse s'appelait Marie Paule – pas dans le cadre de, disons des, des prénoms auxquels étaient habitués et elle m'a redemandé comment s'appelait mon épouse. Je lui redis, Marie Paule. Finalement, elle a buté encore une fois, puis elle m'a dit, "C'est Paulette, je lui dis "Oui, effectivement, dans la famille, nous l'appelons Paulette." Et depuis, elle a mémorisé ce nom, donc c'est déjà étonnant à 119 ans de mémoriser quelque chose. Je vous le disais aussi tout à l'heure, il y a exactement 3-4 jours, elle m'a dit à propos... Virgile et Verlaine, je lui ai dit, "C'était deux poètes". Elle m'a dit "Ce n'est pas la peine que je vous pose la question." Voilà. Et elle m'a demandé ce qu'était un 'handicap', je lui expliquais... je lui ai dit "C'est la perte d'une fonction. Et vous avez vu aujourd'hui qu'elle a traduit par, "c'est une faiblesse de l'organisme", donc elle a tout à fait mémorisé ça. Et le dernier incident qui a prouvé toute sa lucidité et tout à fait cocasse, c'est que pendant très longtemps, elle a été soignée par une aide-soignante, qui s'appelait Marinette. Et récemment cette personne est partie à la retraite et c'est maintenant notre secrétaire, Mariette, qui s'occupe du courrier de Madame Calment. Madame Calment, lui dicte les lettres et ensuite Mariette les lui fait signer...</p>	<p>Dr Victor Lèbre (VL): What characterizes Madame Calment above all, and this is where the particular interest lies, is that she has an absolutely astonishing brain for a person who is now close to 119 years of age and who is about to enter her 120th year. And remembering that 120 years is the theoretical limit of life at the moment...</p> <p>What is most amazing is that <b>she has astonishing lucidity</b>. I will give you three examples.</p> <p>The first one is that she asked me the name of my wife. I told her that my wife's name was Marie Paule – not in the context of, let's say, the first names that people are used to and she asked me again what my wife's name was. I told her again, Marie Paule. Finally, she asked me again, then she said, "It's Paulette." I tell her "Yes, indeed, in the family, we call her Paulette." And since then, she has memorized that name, so it's already amazing at 119 years old to memorize something.</p> <p>I also told you earlier, exactly 3-4 days ago, she asked me about Virgil and Verlaine, I told her, "They were two poets". She said, "I don't have to ask you that question." That's it.</p> <p>And she asked me what a 'disability' was, I explained... I said, "It's the loss of a function. And you saw today that she translated it as, "It's a weakness in the body," so she totally memorized that.</p> <p>And the last incident that proved her lucidity and was quite funny is that for a very long time she was cared for by a caregiver, whose name was Marinette. This person recently retired, and it is now our secretary, Mariette, who takes care of Mme Calment's correspondence. Mme Calment dictates the letters to her and then Mariette makes her sign them...*</p>

\* Mme Calment was nearly blind in her last years as she refused cataract surgery.

<p>Et avant hier, pendant qu'on lui faisait la toilette, elle dit "Appelez Marinette", et l'employé lui a dit, "mais Marinette est partie à la retraite." Et à ce moment-là, elle est entrée dans un état de panique. Et quand je suis arrivée, elle était en train de crier. "C'est un abus de confiance; c'est un abus de confiance!" Parce qu'elle a pris conscience qu'elle avait signé 3 lettres. En pensant les signer à Marinette, et elle venait de réaliser que ce n'était pas Marinette qui les lui avait fait signer. Et donc elle avait peur qu'à partir de là, qu'elle soit spoliée de tous ses biens, et tout ça. Donc ce qui prouve qu'elle a une lucidité tout à fait parfaite.</p> <p>Et il a fallu que je fasse avec certains efforts. Je suis arrivé à lui faire comprendre que ce n'était plus Marinette, mais Mariette, et à ce moment-là, elle m'a dit: "C'est la proximité, c'est le rapprochement des prénoms qui m'a fait faire confusion." [...]</p> <p>Elle est, disons particulièrement en bonne santé et elle ne souffre pas.</p>	<p>And the day before yesterday, while she was being groomed, she said, "Call Marinette". And the employee said, "but Marinette retired". And at that point, she went into a state of panic. And when I got there, she was screaming. "This is a breach of trust; this is a breach of trust!" Because she became aware that she had signed 3 letters, thinking she was signing them with Marinette, and she had just realized that it wasn't Marinette who had made her sign them. And so, she was afraid that from then on she would be robbed of all her property and all that. So, that proves that she has perfect lucidity.</p> <p>And I had to make some effort. I managed to make her understand that it was no longer Marinette, but Mariette, and at that moment, she said to me: "It is the proximity, it is the rapprochement of the first names which made me make confusion." [...]</p> <p>She is, let's say particularly healthy and she is not suffering.</p>
	<p>Mental status examination of an exceptional case of longevity J. C., aged 118 years (15)</p>
	<p>The mental status examination of an extreme case of longevity, J. C., aged 118 years and 9 months, is documented in order to further knowledge regarding profiles of morbidity in the extremely elderly. J. C. is presently considered to have the longest authenticated life-span in the history of the human species.</p> <p>The subject's performance on tests of verbal memory and language fluency is comparable to that of persons with the same level of education in their eighties and nineties.</p> <p>Frontal lobe functions are relatively spared and there is no evidence of depressive symptomatology or other functional illness. Cognitive functioning was found to slightly improve over a six-month period. The subject shows no evidence of progressive neurological disease. A high initial level of intellectual ability may have constituted a protective factor.</p>

**Table S1. Mme Calment's intellectual capacity according to her doctor and a neuropsychological study.**



Recorded interview (12) (26 juin 1992 19:00)	Translation
<b>Victor Lèbre (VL):</b> Quand vous alliez à l'école primaire là. Vous étiez petite. <b>Madame Calment (MC):</b> Oui. VL: Vous y alliez toute seule ou vous étiez accompagné? MC: Jamais seule. Mon père ne m'aurait jamais laissé seule. VL: Et qui ce que vous accompagniez? MC: Mon père ou la bonne. VL: Et la bonne, elle s'appelait comment, celle-là? MC: Marthe. VL: Marthe? MC: Oui Marthe Fousson. <sup>†</sup> VL: C'était votre bonne à ce moment-là? MC: Oui, et cuisinière.	<b>Victor Lèbre (VL):</b> When you were going to elementary school there. You were a little girl. <b>Madame Calment (MC):</b> Yes. VL: Did you go by yourself or were you accompanied? MC: Never alone. My father would never leave me alone. <b>VL: And who did you go with?</b> <b>MC: My father or the maid.</b> <b>VL: And the maid, what was her name?</b>  MC: Marthe. VL: Marthe? <b>MC: Yes, Marthe Fousson.</b> VL: Was she your maid at that time? MC: Yes, and a cook.
(25 mai 1994 01:00)	Translation
VL: Quand vous étiez chez vos parents, est-ce qu'il y avait des domestiques? MC: Ah oui, il y avait une femme de ménage. Oui, eu une cuisinière et femme de ménage.	VL: When you were <b>at your parents' house</b> , did you have servants? MC: Oh yes, there was a maid. Yes, <b>we had a cook and a maid.</b> <sup>*</sup>
(14) p45 (this dialogue is not available on published recordings)	Translation
<i>Gilles, c'est le nom e qui ?</i>  C'est le nom de ma grand-mère, de mes grands-parents... du côté de mon père [...] <i>Et votre parrain, c'était qui ?</i>  C'était un... c'était un diplomate... Louis, Louis Pages... Ah ! Je le voyais pas souvent, je ne voyais que ma marraine. Mon parrain, je ne le voyais guère. Il habitait dans la rue du Théâtre. C'était un parent qui voyait mon père de temps en temps. <i>Est-ce qu'il vous offrait des cadeaux ?</i> MC : Pas tellement. Il n'était pas généreux.	<i>Gilles, whose name is that? §</i>  It's the name of my grandmother, my grandparents... on my father's side [...].  <i>And your godfather, who was he?</i>  He was a... he was a diplomat... Louis, Louis Pages... <sup>**</sup> Ah! I didn't see him often; I only saw my godmother. My godfather, I hardly ever saw him. He lived in rue du Théâtre. He was a relative who saw my father from time to time.  <i>Did he give you presents?</i> MC: Not so much. He wasn't generous.

**Table S2. Mme Calment's description of her servants when she was a girl.**

<sup>†</sup> In the book (14) *Marthe Fousson* was transcribed as *Marthe Touchon* (fig. S1).

<sup>‡</sup> The stories about servants match Yvonne's childhood and not Jeanne's (fig. S1).

<sup>§</sup> Gilles was the surname of Jeanne's grandfather on her mother's side.

<sup>\*\*</sup> The account of the occupation and address of her godfather doesn't match the facts (fig. S1).

Recorded interview (12) (29 janvier 1993 20:43)	Translation
<p>MC: Corridas, ça m'intéressait médiocrement, mais enfin, ça m'intéressait quand même.</p> <p>VL: Et vous avez vu de belles corridas?</p> <p>MC: Oui, très belles. Toujours au parterre &lt;incomprehensible&gt;, et des grands gars, des gars.</p> <p>VL: Qui c'était Espartero?</p> <p>MC: Ah, un Espagnol.</p> <p>VL: Vous l'avez vu à quel endroit? À Arles?</p> <p>MC: Il était venu à Arles. Il se déplaçait. C'était un grand matador. Moi-même... Je m'intéressais au monde, les arènes pleines, c'était merveilleux. Je faisais les photos. Pour moi la corrida par elle-même, ça ne m'a jamais intéressée.</p> <p>VL: Vous faisiez des photos à ce moment-là?</p> <p>MC: Comment?</p> <p>VL: Vous faisiez des photos?</p> <p>MC: Oh, non, non.</p> <p>VL: Et d'Espartero vous en rappelez bien?</p> <p>MC: Physiquement non. Mais son travail oui... Il escorté taureau d'une façon magistrale.</p> <p>VL: Et vous savez comment il est mort?</p> <p>MC: Ah, nature. Semble... fatale par le taureau.</p> <p>VL: Il ne lui est rien arrivé à cet Espartero?</p> <p>MC: Comment?</p> <p>VL: Est ce qu'il lui est arrivé quelque chose?</p> <p>MC: Je ne comprends pas, je ne comprends pas.</p> <p>VL: Est ce qu'il lui est arrivé quelque chose à Espartero?</p> <p>MC: Il a été tué par le taureau &lt;crying&gt;, victime de son métier. C'était fatale!! Et il a été tué d'un coup d'épée &lt;crying&gt;.</p> <p>VL: Est-ce qu'il y a eu un service religieux?</p> <p>MC: Comment?</p> <p>VL: Est qu'il y a eu un service religieux?</p> <p>MC: Aa...</p> <p>VL: Vous ne vous rappelez pas?</p> <p>MC: Ça s'est fait en Espagne.</p>	<p>MC: Corridas, I was only mildly interested in them, but I was still interested.</p> <p>VL: And did you see any good bullfights?</p> <p>MC: Yes, very beautiful. Always in the parterre &lt;incomprehensible&gt;, and big guys.</p> <p>VL: Who was Espartero?</p> <p>MC: Ah, a Spaniard.</p> <p>VL: Where did you see him? In Arles?</p> <p>MC: He had come to Arles. He was moving around. He was a great matador. I myself... I was interested in the crowd, the full arenas, it was wonderful. I took the photos. For me, bullfighting by itself, it never interested me.</p> <p>VL: You were taking photos at that time?</p> <p>MC: What?</p> <p>VL: Did you take photographs?</p> <p>MC: Oh, no, no.</p> <p>VL: And do you remember Espartero well?</p> <p>MC: Physically no. But his work, yes... He escorted the bulls in a masterly way.</p> <p>VL: And do you know how he died?</p> <p>MC: Ah, nature. Seems... fatal by the bull.</p> <p>VL: Did nothing happen to this Espartero?</p> <p>MC: What?</p> <p>VL: Did anything happen to him?</p> <p>MC: I don't understand, I don't understand.</p> <p>VL: Did anything happen to Espartero?</p> <p>MC: He was killed by the bull, &lt;crying&gt; victim of his job. It was fatal! And he was killed by a sword &lt;crying&gt;.</p> <p>VL: Was there a church service?</p> <p>MC: What?</p> <p>VL: Was there a church service?</p> <p>MC: Aa...</p> <p>VL: Don't you remember?</p> <p>MC: That was done in Spain.</p>
The description of Espartero's death in Madrid, La Provence Nouvelle, 03.06.1894	Translation
<p>Espartero a été tué, dimanche, à Madrid, au moment où il frappait le 1er taureau de la course, d'une estocade mortelle.</p> <p>En recevant le coup d'épée, le taureau s'est jeté inopinément sur Espartero et lui a ouvert le ventre d'un terrible coup de corne.</p>	<p>Espartero was killed on Sunday in Madrid when he hit the first bull in the race with a fatal sword.</p> <p>On receiving the sword blow, the bull unexpectedly threw himself on Espartero and opened his belly with a terrible blow of his</p>

Puis il est tombé mort à côté de sa victime agonisante.	horn. Then he dropped dead next to his agonised victim.
Très joli spectacle pour les aficionados! Manuel Garcia, surnommé Espartero, n'était âgé que de 28 ans. Il avait rapidement amassé une grosse fortune et comptait se retirer, après avoir épousé une richissime veuve de Séville.	A very nice show for the aficionados! Manuel Garcia, nicknamed Espartero, was only 28 years old. He had quickly amassed a large fortune and was planning to retire, having married a wealthy widow from Seville.
The validators' version <sup>††</sup> (14) p106	Translation
<i>Et vous avez vu de belles corridas?</i> Oui, très belles et j'ai vu de grands, de grands toréadors ... J'ai vu Espartero.	<i>And you watched some good bullfights?</i> Yes, very good and I saw the great ones, the great toreadors. I saw Espartero.
<i>Qui était Espartero?</i> Un Espagnol. Il était venu en Arles; il se déplaçait. C'était un grand matador. Les arènes pleines, c'était merveilleux. <i>Vous m'avez dit qu'il était mort à Nîmes devant vous, Espartero.</i>	<i>Who was Espartero?</i> A Spaniard. He came to Arles, he moved around. He was a great matador. The arena was sold out; it was wonderful. <i>You told me that Espartero died in front of you in Nîmes.</i>
Oui, le taureau lui avait arraché le manteau. Alors, il s'est vautré sur lui. Souvenir pénible! Oh! Oh! Les arènes étaient comblées!	Yes, the bull tore off his coat. Then he jumped on top of him. A painful memory! Oh! Oh! The arena was packed!
Description of the death of Espartero in Nîmes from <i>D. Ventura, EFEMERIDES TAURINAS. Hoy hace años. Mes de Abril., Madrid, 1930.</i>	Translation
Cuando Comeche le ofreció la tejía, como aquel que no hace nada le enganchó por la entrepierna, le suspendió un momento y le dejó de pie. Tan práctico estaba el muy cornudo en dar convidas que las repartía sin que nadie se enterase más que la víctima.	When Comeche offered him the cloth, like someone out of the blue, he hooked him by the crotch, suspended him for a moment and left him standing upright. So practical was the cuckold in giving gifts that he handed them out without anyone knowing except the victim.
Cuando el Espartero se retiró, el público, que no concedió importancia al suceso, no podía sospechar que el diestro hubiera sufrido una lesión gravísima; tan grave, que los médicos apreciaron destrozos intestinales, a consecuencia de los cuales sobren vino la peritonitis y luego la muerte, ocurrida el día 7 de aquel mismo mes [...]	<b>When Espartero left, the public, who did not attach importance to the event, could not suspect that the bullfighter had suffered a serious injury;</b> so serious that doctors appreciated intestinal destruction, as a result of which came peritonitis and then death, which occurred on the 7th of that same month [...]
Realmente, los lidiados eran los toreros. Fuera de este papel de víctima — que es un papel muy desagradable — yo no sé que el Espartero de Valencia hiciera nada notable en su vida, y si lo hizo, no se enteró nadie.	<b>Apart from this role of victim, which is a very unpleasant role, I do not know that the Espartero of Valencia did anything remarkable in his life, and if he did, no one knew about it.</b>
Description of Espartero's funeral in Nîmes, Le Mémorial d'Aix, 11.10.1896	Translation

<sup>††</sup> Doesn't match the published tapes.

<p>Nîmes. Les obsèques du malheureux matador Comèche, dit Espartero, ont eu lieu hier, à 9 h. 1/2; le cercueil déposé sur un modeste corbillard était précédé de plusieurs couronnes offertes par ses camarades, par un groupe d'aficionados, par la direction des Arènes, par le personnel, etc.; un drapeau d'honneur était porté par des aficionados; les cordons du poêle étaient tenus par plusieurs toréadors qui avaient travaillé avec Espartero;</p> <p>MM. Charles Mathieu, premier adjoint au maire, et Crouzat, vice-consul d'Espagne, marchaient immédiatement après le cercueil; Marcia, directeur des Arènes, venait après eux et la suite était composée de nombreux amis. Sur tout le parcours du convoi un grand nombre de curieux formaient la haie.</p> <p>Ce deuil ne fait pas oublier que demain ont lieu d'autres courses...</p>	<p>Nîmes. The funeral of the unfortunate matador Comèche, known as Espartero, took place yesterday at 9.30 a.m.; the coffin, placed on a modest hearse, was preceded by several wreaths offered by his comrades, by a group of aficionados, by the management of the Bullring, by the staff, etc.; a sheet of honour was carried by aficionados; the cords connected to the funeral sheet were held by several bullfighters who had worked with Espartero;</p> <p>MM. Charles Mathieu, first deputy mayor, and Crouzat, vice-consul of Spain, walked immediately after the coffin; Marcia, director of the Bullring, came after them and the suite was composed of many friends. Many onlookers formed a hedge along the entire route of the convoy.</p> <p>This mourning does not make us forget that tomorrow there will be other bullfights...</p>
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**Table S3. The death of Espartero.**



Recorded interview (12) (26 juin 1992 06:45)	Translation
MC: J'ai commencé à sept ans jusqu'à seize ans. A seize ans, après le brevet, j'ai resté chez mes parents à attendre le mariage. Pendant ce temps, je faisais tous les jours, la musique, les dessins, de la peinture, surtout de la peinture. J'étais très doué pour les arts.	MC: I started at the age of seven until I was sixteen. <b>When I was sixteen, after I graduated from high school, I stayed with my parents to wait for the wedding. During this time, I was doing music, drawing, painting, especially painting,</b> every day. I was very gifted in the arts.
Interviewer: Comment il s'appelait votre professeur de peinture?	Interviewer: What was <b>the name of your painting teacher?</b>
MC: Ah attendez ah... er... bah... j'oublie ah! .... Férigoule!	MC: Oh, wait ah... er... well I forget ah! .... Férigoule!
Interviewer: Ah bon!	Interviewer: Oh well!
MC: Fer-i-goule, c'était Férigoule. Il était professeur à l'école de peinture à l'école d'Arles, l'école de garçons.	MC: Fer-i-goule, <b>it was Férigoule.</b> He was a teacher at the painting school in Arles, the boys' school.
The validators' version <sup>‡‡</sup> (14) p57	Translation
...Quand j'étais mariée... J'en faisais étant jeune fille, mais ce vitrail, je l'ai fait une fois mariée.	...When I was married... I used to do them as a young girl, but I did this stained-glass window when I was married.
<i>Comment s'appelait votre professeur de peinture ?</i>	<i>What was the name of your painting teacher?</i>
Ah ! attendez, ah ! attendez... Oh ! hum !, oh... Férigoule, Férigoule, M. Férigoule. Il était professeur à l'école de peinture, de l'école d'Arles, l'école de garçons. [...]	Ah! wait, ah ! wait... Oh ! hum !, oh... Férigoule, Férigoule, Mr Férigoule. He was a teacher at the painting school, at the Arles school, the boys' school. [...]

**Table S4. Art teacher Férigoule.**

<sup>‡‡</sup> Doesn't match the published tapes.

Recorded interview (12) (26 juin 1992 25:09)	Translation
<p>VL: La pension, la pension Benet vous dites qu'il quitté sur la place de la République.</p> <p>MC: Oui.</p> <p>VL: La pension religieuse, où est ce qu'elle était exactement? Quand vous étiez petite, vous alliez à cette pension religieuse.</p> <p>MC: Il était entré... sur la cour de l'Archevêché, eu grand escalier... les classes.</p> <p>VL: Après, il y a la bibliothèque municipale, c'était à cet endroit-là?</p> <p>MC: Oui, je rappelle.</p> <p>VL: Vous rappelez?</p> <p>MC: Oui.</p> <p>VL: La bibliothèque municipale est à l'ancien palais de l'archevêché.</p> <p>MC: Oui.</p> <p>VL: Et c'était là votre pension?</p> <p>MC: Oui. A la bibliothèque municipale j'ai fait les livres, j'ai loué des livres.</p> <p>VL: Oui, et ça, c'est plus tard, la bibliothèque.</p> <p>MC: Oui.</p> <p>VL: Autrement dit cette pension elle était un peu annexée à Saint Trophime.</p> <p>MC: Oui, oui, oui.</p> <p>VL: Il y avait l'ensemble Saint Trophime et l'Archevêché et la pension était là?</p> <p>MC: Oui. C'est là que j'ai fait ma communion.</p> <p>VL: C'est là ou vous avez fait votre communion. Et vous avez bouclé une semaine-là.</p> <p>MC: Comment?</p> <p>VL: C'est là où on vous avait bouclé une semaine.</p> <p>MC: Oui.</p> <p>VL: Complètement?</p> <p>MC: Complètement. La pensionnaire. A l'époque le clergé était difficile, pas comme aujourd'hui. Ha, Quelle différence! Le clergé était difficile.</p>	<p><b>VL: The pension, the Benet pension you say that it was opening onto place de la République.</b></p> <p><b>MC: Yes.</b></p> <p>VL: The religious boarding school, where was it exactly? When you were little, you used to go to this religious pension.</p> <p><b>MC: It was entered... at the archbishop's court, the grand staircase... the classes.</b></p> <p>VL: Afterwards, there is the municipal library, it was in that place?</p> <p>MC: Yes, I remember.</p> <p>VL: Do you remember?</p> <p>MC: Yes.</p> <p><b>VL: The public library is in the old Archbishop's palace.</b></p> <p><b>MC: Yes.</b></p> <p><b>VL: And your pension was there?</b></p> <p><b>MC: Yes.</b> In the municipal library I worked with the books, I rented books.</p> <p>VL: Yes, and that's later, the library.</p> <p>MC: Yes.</p> <p>VL: In other words, this boarding school was a bit annexed to Saint-Trophime.</p> <p>MC: Yes, yes, yes.</p> <p>VL: There was an ensemble of Saint-Trophime and the Archbishop, and the boarding school was there?</p> <p>MC: Yes. That's where I made my communion.</p> <p>VL: That's where you made your communion. And you spent a week there.</p> <p>MC: How?</p> <p>VL: That's where you spent a week.</p> <p>MC: Yes.</p> <p>VL: Completely?</p> <p>MC: Completely. The boarder. In those days the clergy was difficult, not like today. Ha, what a difference! The clergy was difficult.</p>

**Table S5. Mme Calment's description of Benet's Pensionnat.**

Recorded interview (12) (7 septembre 1994 15:22)	Translation
<p>VL: Vous êtes resté jusqu'à quand à la pension Benet?</p> <p>MC: À ma communion.</p> <p>VL: Et après, vous êtes allé où?</p> <p>MC: Ah au collège.</p> <p>VL: Il s'appelait comment ce collège?</p> <p>MC: Ah. Ne rappelle plus, juste collège, collège.</p> <p>VL: Où est ce qu'il se trouvait ce collège?</p> <p>MC: ...Musée... On a la fait musée...</p> <p>VL: C'est dans la rue de la République? Le collège, il était sur les Lices ou dans la rue République?</p> <p>MC: Oui, non, oui, je ne rappelle plus.</p> <p>VL: On y a fait quel musée? Quel musée a-t-on fait à cette place?</p> <p>MC: Je ne sais pas...</p> <p>VL: Est-ce que c'est là où on a fait le Musée Arlaten?</p> <p>MC: Oui, je crois, je ne suis pas sure mais, je crois.... Oui, oui, c'est ça.</p> <p>VL: Vous étiez pensionnaire à ce collège?</p> <p>MC: Ah. Non... non. Mon père veut me chercher. Oh, j'allée pas seul. Mon père était sévère, il ne me pas laisse.</p>	<p>VL: How long did you stay at the Benet pension?</p> <p>MC: To my communion.</p> <p>VL: And then where did you go?</p> <p>MC: Ah to the college.</p> <p><b>VL: What was the name of the college?</b></p> <p><b>MC: Ah... Don't remember, just college, college.</b></p> <p>VL: Where was this college?</p> <p><b>MC: ...Museum... They made it a museum...</b></p> <p>VL: It's in rue de la République? The school, was it on the Lices or in rue République?</p> <p>MC: Yes, no, yes, I can't remember.</p> <p>VL: Which Museum was established there?</p> <p>MC: I don't know.</p> <p><b>VL: Is that where the <i>Museon Arlaten</i> was built?</b></p> <p><b>MC: Yes, I think so, I'm not sure but, I think so .... Yes, yes, that's it.</b></p> <p>VL: You were a boarder at this school?</p> <p>MC: Ah... no... no. My father would look for me. Oh, I didn't go alone. My father was severe, he wouldn't let me.</p>

**Table S6. Mme Calment's description of Jeanne's college ("Cours secondaires de jeunes filles").**

Recorded interview (12) (27 novembre 1992 06:14)	Translation
<p>VL: Est-ce que vous avez assisté à ce moment-là à de très grands Bals, donc vous nous rappelez bien à un bal très important qui vous a laissé un souvenir ?</p> <p>MC: Le bal de l'Alliance Française.</p> <p>VL: Le bal de quoi ?</p> <p>MC: de l'Alliance Française.</p> <p>VL : Oui. Où est-ce ce qui se passait ce bal ?</p> <p>MC: Se passait à la mairie.</p> <p>VL: Vous étiez dans les salons de la mairie ?</p> <p>MC: Oui.</p> <p>[...]</p> <p>VL: Qui vous aviez comme cavalier à ce moment-là?</p> <p>MC: Oh, plusieurs. Quantité! Quand on est jeune on en a tant qu'on veut.</p> <p>VL: Vous étiez marié ou vous étiez encore jeune fille?</p> <p>MC: Jeune fille.</p> <p>VL: Est-ce que vous vous rappelez le nom de ces cavaliers?</p> <p>MC: Non, non. Vous me demandez trop!</p> <p>VL: Non, je suis sûr que si vous faites un effort...</p> <p>MC: Non.</p> <p>VL: Vous y arriverez.</p> <p>MC: Non.</p> <p>VL: La dernière fois, vous nous avez étonnés par votre mémoire.</p> <p>MC: Possible.</p> <p>VL: Vous avez connu votre mari à ce moment-là?</p> <p>MC: Ah bah c'était mon cousin. Quand je suis née mon cousin avait sept ans. Entendez?</p> <p>[...]</p> <p>MC: Plus tard quand il fait ses études... Il a épousé la cousine...</p> <p>VL: Et il faisait partie des cavaliers?</p> <p>MC: Mon mari?</p> <p>VL: Oui. Là, quand vous alliez au bal.</p> <p>MC: Non...</p> <p>VL: Alors vous ne faisiez pas danser là?</p> <p>MC: Non. A ce moment il faisait ces études.</p>	<p>VL: Did you attend at that time very big balls, so you recall well a very important ball that left you a memory?</p> <p><b>MC: The ball of the Alliance Française.</b></p> <p>VL: The ball of what?</p> <p>MC: Of the Alliance Française.</p> <p>VL: Yes. Where was that ball held?</p> <p>MC: It was at the town hall.</p> <p>VL: You were in the salons of the town hall?</p> <p>MC: Yes.</p> <p>[...]</p> <p>VL: Who did you have as a partner at that time?</p> <p>MC: Oh, plenty. A lot! When you're young, you can have as many as you want.</p> <p><b>VL: Were you married or were you still a young girl?</b></p> <p><b>MC: Young girl.</b></p> <p>VL: Do you remember the names of these suitors?</p> <p>MC: No, no. You're asking me too much!</p> <p>VL: No, I'm sure if you try...</p> <p>MC: No.</p> <p>VL: You'll get there.</p> <p>MC: No.</p> <p>VL: Last time, you surprised us with your memory.</p> <p>MC: Possibly; I don't remember that.</p> <p><b>VL: You knew your husband at that time?</b></p> <p>MC: Oh well, he was my cousin. When I was born, my cousin was seven years old. Do you understand?</p> <p>[...]</p> <p><b>MC: Later when he went to school... He married the cousin...</b></p> <p><b>VL: And he was one of the dance partners?</b></p> <p>MC: My husband?</p> <p>VL: Yes. There, when you went to the ball.</p> <p>MC: No...</p> <p>VL: So, you didn't dance there with him?</p> <p><b>MC: No. At that time, he was doing his studies.</b></p>

**Table S7. Mme Calment's description of the balls.**



Interview with Paris Match, 1988	Translation
Dès le début de mon mariage, nous avons eu une automobile. C'était une Peugeot, je crois.	From the beginning of my marriage, we had a car. It was a Peugeot, I think.
À 40 ans, elle avait même passé son baptême de l'air.	At the age of 40, she had even taken her first flight.
Recorded interview (12) (15 et 22 septembre 1994 04:10)	Translation
<p>VL: Et est-ce que vous êtes monté vous-même en avion?</p> <p>MC: Oui.</p> <p>VL: Comment ça se passait?</p> <p>MC: Très bien.</p> <p>VL: Ça se passait à Arles?</p> <p>MC: Oui. Il y avait une société qui fait monter les clients, "<i>Arles Survole</i>".</p> <p>VL: C'était un sort de baptême de l'air?</p> <p>MC: Oui. Arles vol, vaut y aller. Ça n'a pas duré. En haut Arles était petite!</p> <p>VL: Quand vous regardait en haut vous trouvez qu'Arles était très petite.</p> <p>MC: Oui!</p> <p>VL: Et vous vous rappelez des premières voitures ?</p> <p>MC: Ah, vaguement. Mon mari d'avantage.</p> <p>VL: Votre mari en avait acheté une?</p> <p>MC: Oui.</p> <p>VL: C'était au début du siècle, vous étiez marié? C'était au début de votre mariage?</p> <p>MC: Oui.</p> <p>VL : Ou après?</p> <p>MC: Oui, oui.</p>	<p>VL: And did you fly in an airplane yourself?</p> <p>MC: Yes.</p> <p>VL: How did it go?</p> <p>MC: Very well.</p> <p>VL: It happened in Arles?</p> <p>MC: Yes. There was a company that took the clients up, "<i>Arles Survole</i>".</p> <p>VL: It was a kind of baptism of air?</p> <p>MC: Flight to Arles, worth the trip. It did not last. Arles was small up there!</p> <p>VL: When you look from above you find that Arles was very small.</p> <p>MC: Yes!</p> <p>VL: And do you remember the first cars?</p> <p>MC: Vaguely. My husband better.</p> <p>VL: Your husband bought one?</p> <p>MC: Yes.</p> <p>VL: It was at the beginning of the century, you were married? Was this at the beginning of your marriage?</p> <p>MC: Yes.</p> <p>VL: Or after?</p> <p>MC: Yes, yes.</p>

**Table S8. Mme Calment's description of her first flight and first car.**

Recorded interview (12) (26 juin 1992, 28:47)	Translation
<p>VL: Vous aviez fait des fiançailles officielles?</p> <p>MC: Ah ben chez nous. Eu un dîner, un grand dîner.</p> <p>VL: Est ce qu'il y avait beaucoup d'invités? Vous rappelez?</p> <p>MC: Oui.</p> <p>VL: Et pour le mariage, ça a été différent?</p> <p>MC: Ah mariage, c'était à l'hôtel.</p> <p>VL: Oui, c'était, il s'appelait comment cet hôtel?</p> <p>MC &lt;timidly&gt;: Hôtel du Nord, je crois... Hôtel du Nord...</p>	<p>VL: You had an official engagement?</p> <p>MC: Oh well, at home. Had a dinner, a big dinner.</p> <p>VL: Were there many guests? Do you remember?</p> <p>MC: Yes.</p> <p>VL: And for the wedding, it was different?</p> <p><b>MC: Ah wedding, it was in a hotel.</b></p> <p>VL: Yes, it was, what was the name of the hotel?</p> <p>MC &lt;timidly&gt;: <b>Hotel du Nord, I think. Hotel du Nord...</b></p>
(10 juin 1994, 17:55)	Translation
<p>VL: Vous avez fait le repas à quel endroit? Après, pour le mariage?</p> <p>MC: Hmmm. Endroit que...à l'époque...</p> <p>VL: Vous l'aviez dit. Je crois que c'est l'Hôtel Nord Pinus.</p> <p>MC: Oui, oui.</p> <p>VL: Un hôtel qui est sur la Place du Forum.</p> <p>MC: Oui.</p> <p>VL: Vous rappelez ce qu'il y avait au repas?</p> <p>MC: Oh, là vous demandez trop.</p>	<p>VL: Where did you have the meal? Afterwards, for the wedding?</p> <p>MC: Hmmm. Place that...at the time...</p> <p>VL: You said it. I think it was the Hotel Nord Pinus.</p> <p>MC: Yes, yes.</p> <p>VL: A hotel which is on the Place du Forum.</p> <p>MC: Yes.</p> <p>VL: Do you remember what was at the meal?</p> <p>MC: Oh, now you are asking too much.</p>
(25 et 26 février 1993, 17:36)	Translation
<p>VL: Qu'est ce qui s'est passé encore à ce mariage?</p> <p>MC: Grand repas. La musique, classiques.</p> <p>VL: Où est ce qu'il a eu lieu le repas?</p> <p>MC: A l'hôtel du Nord.</p> <p>VL: Vous êtes sur? Que c'était à l'hôtel du Nord?</p> <p>MC: Je crois. En tout cas, la mien, il était là. Elle – en rappelle pas, elle je ne me rappelle pas.</p> <p>VL: Voilà, parce que c'est ce que vous m'aviez dit. Et comment vous m'aviez dit que pour vous, le repas était à l'hôtel Du Nord pour vous.</p> <p>MC: Oui.</p>	<p><b>VL: What else happened at the wedding?</b></p> <p>MC: Big meal. Music, classical stuff.</p> <p>VL: Where did the meal take place?</p> <p><b>MC: At the Hotel du Nord.</b></p> <p>VL: Are you sure? That it was at the Hotel du Nord?</p> <p><b>MC: I think so. In any case, mine, it was there. She – I don't remember, she I don't remember.</b></p> <p><b>VL: That's it because that's what you told me. And you told me that for you, the meal was at the Hotel Du Nord for you.</b></p> <p>MC: Yes.</p>
(13 février 1993, 16:33)	Translation
<p>VL: Décrivez-moi un peu sa robe.</p> <p>MC: La robe en mousseline blanche, classique. Une couronne de fleurs.</p> <p>VL: C'était quoi comme fleur?</p> <p>MC: Oh! Là, vous m'en demandez un peu trop. Quand je suis mariée, j'avais une couronne, une couronne de lilas blanc. Mais ça, c'est quand je suis marié.</p>	<p>VL: Describe her dress a little bit.</p> <p>MC: The classic white muslin dress. A crown of flowers.</p> <p>VL: What kind of flower was it?</p> <p>MC: Oh, now you're asking too much. <b>When I was married, I had a crown, a white lilac crown. But that's when I was married.</b></p>

(10 juin 1994, 17:05)	Translation
VL: Sur la tête, le voile est tenu avec quoi? Vous aviez une couronne, un diadème? MC: Oui, j'ai une couronne de lilas blanc. C'est ma marraine qui m'a faites une couronne de lilas blanc.	VL: On the head, the veil is held with what? Did you have a crown, a tiara? <b>MC: Yes, I had a white lilac crown. My godmother made me a white lilac crown.</b>
(25 and 26 February 1993, 13:35)	Translation
VL: Vous vous rappelez le mariage d'Yvonne? MC: Bah, comment je pas se rappeler? VL: Est-ce que vous pouvez m'en parler un peu? Où est ce qu'il s'est passé? MC: A St. Trophime. ... VL: Est-ce que vous rappelez la robe de mariée d'Yvonne? MC: Oui bien sûr, tiens, c'est moi qui l'ai commandé. La robe blanc commune, naturellement. VL: Avec une grand-voile? MC: Naturellement, et la couronne. La couronne de fleur. <i>Ma marraine</i> lui avait payé une couronne de lilas. VL: Est-ce que c'était comme à votre mariage? Quand vous êtes marié, vous aviez quelle couronne, vous? MC: La couronne que ma marraine aurait payée! VL: Oui, et Yvonne? MC: Yvonne... je ne me rappelle pas... C'est sa marraine aussi? Je ne me rappelle pas. C'est sort de détaille que ne reste pas.	VL: Do you remember Yvonne's wedding? MC: Well, how can I not remember? VL: Can you tell me a little bit about it? Where did it happen? MC: At St. Trophime. ... <b>VL: Do you remember Yvonne's wedding dress?</b> <b>MC: Yes of course, well, it was me who ordered it. The common white dress, naturally.</b>  VL: With a large veil? <b>MC: Of course, and the crown. The crown of flowers. My godmother bought her a lilac wreath.</b> <b>VL: Was it like your wedding? When you got married, which crown did you have?</b>  <b>MC: The crown my godmother would have paid for!</b> <b>VL: Yes, and Yvonne?</b> <b>MC: Yvonne... I don't remember... Is that her godmother too? I don't remember. It's a kind of detail that doesn't stay.</b>
<b>Transcription in (14) p35</b>	<b>Translation</b>
<i>Mme Arel</i> lui avait payé des branches de lilas; une couronne de lilas. [...] Moi, j'avais la couronne que ma marraine m'avait payée.	<i>Mme Arel</i> <sup>§§</sup> had bought her lilac branches, a crown of lilacs. [...] I had the crown that my godmother had bought me.

**Table S9. Mme Calment descriptions of Yvonne's and her own weddings.**

<sup>§§</sup> In the book (14) *Ma marraine* was transcribed as *Mme Arel*.

Recorded interview (12) (26 juin 1992 00:19)	Translation
<p>Interviewer (I): Et est-ce que vous vous souveniez des copines qui marchait avec vous?</p> <p>MC: Vaguement. Bah! C'est vieux ça. Après plusieurs années c'est difficile.</p> <p>I: Est-ce que vous souvenez du nom de vos professeurs?</p> <p>MC: Non, non, non, non, non, non, malheureusement. J'oublies facilement.</p> <p>I: Vous oubliez facilement. Et les noms de vos précepteurs, ceux qui vous gardaient à la maison? Vous vous souvenez des noms de vos précepteurs?</p> <p>MC: Qui?</p> <p>I: De ce qui vous a enseigné la musique chez vous chez vos parents?</p> <p>MC: Oui. Oui, oui. C'est plus récent, ça. Oui, Mademoiselle Gachon...</p>	<p>Interviewer (I): And do you remember the friends who walked with you?</p> <p>MC: Vaguely. Well, that's old. After many years it's hard.</p> <p>I: Do you remember the names of your teachers?</p> <p>MC: No, no, no, no, no, no, unfortunately. I forget easily.</p> <p>I: You forget easily. What about the names of your tutors, the ones who kept you at home? Do you remember the names of your tutors?</p> <p>MC: Who?</p> <p>I: Who taught you music at home with your parents?</p> <p>MC: Yes. Yes, yes. That's more recent. Yes, Miss Gachon.</p>
(26 juin 1992 03:15)	Translation
<p>I: Est-ce que vous souvenez de vos camarades? Vos copines de Solfège?</p> <p>MC: Non, prénom, no.</p> <p>I: Et le nom de famille?</p> <p>MC: Non plus.</p>	<p>I: Do you remember your friends from music class?</p> <p>MC: No, first name, no.</p> <p>I: And the last name?</p> <p>MC: Neither.</p>
(27 novembre 1992 07:13)	Translation
<p>VL: Qui vous aviez comme cavalier ce moment-là?</p> <p>MC: Oh, plusieurs. Quantité! Quand on est jeune on en a tant qu'on veut.</p> <p>VL: Vous étiez marié ou vous étiez encore jeune fille?</p> <p>MC: Jeune fille.</p> <p>VL: Est-ce que vous vous rappelez les noms de ces cavaliers?</p> <p>MC: Non, non. Vous me demandez trop!</p> <p>VL: Non, je suis sûr que si vous faites un effort...</p> <p>MC: Non.</p> <p>VL: Vous y arriverez.</p> <p>MC: Non.</p> <p>VL: La dernière fois, vous nous avez étonné par votre mémoire.</p> <p>MC: Possible.</p>	<p>VL: Who did you have as a date then?</p> <p>MC: Oh, plenty. A lot! When you're young, you can have as many as you want.</p> <p>VL: Were you married or were you still a young girl?</p> <p>MC: Young girl.</p> <p>VL: Do you remember the names of these gentlemen?</p> <p>MC: No, no. You're asking me too much!</p> <p>VL: No, I'm sure if you try...</p> <p>MC: No.</p> <p>VL: You will.</p> <p>MC: No.</p> <p>VL: Last time you amazed us with your memory.</p> <p>MC: Possibly.</p>



(10 juin 1994 09:00)	Translation
<p>VL: Est-ce que vous aviez beaucoup d'amis quand vous étiez jeune?</p> <p>MC: Tout le monde.</p> <p>VL: Mais vous vous rappelez leur non?</p> <p>MC: Ah, non, non, non, non.</p>	<p>VL: Did you have many friends when you were young?</p> <p>MC: Everybody.</p> <p>VL: But you remember them, don't you?</p> <p>MC: Ah, no, no, no, no.</p>
(15 et 22 septembre 1994 37:47)	Translation
<p>VL: Quand vous étiez marié, vous aviez des amis, des femmes qui venaient vous voir?</p> <p>MC: Eh... Oui, j'ai rendu visite, j'ai toujours reçu visite.</p> <p>VL: Est-ce que vous aviez une amie de préférence?</p> <p>MC: Euh, non, no. Je les aimais toutes, j'étais bien avec toutes, je riais avec toutes .... Je les aimais toutes</p> <p><b>VL: Vous n'aviez pas une amie qui était comme une confidente?</b></p> <p><b>MC: Non. Je n'aime pas ça.</b></p> <p><b>VL: Vous n'aviez pas besoin de vous confier? Vous résolviez vos problèmes toute seule?</b></p> <p><b>MC: J'arrivais toute seule. J'ai passé une belle vie, ha.</b></p> <p>VL: Je crois que votre meilleur ami, c'était votre père.</p> <p>MC: Qui?</p> <p>VL: Je crois que votre meilleur ami, c'était votre père.</p> <p>MC: Oh, oui!</p>	<p>VL: When you were married, did you have friends, women who used to come to see you?</p> <p>MC: Eh... Yes, I visited, I always had visitors.</p> <p>VL: Did you have a favourite friend?</p> <p>MC: Erm, no, no. I liked them all, I was good with them all, I laughed with them all .... I liked them all.</p> <p><b>VL: You didn't have a female friend who was like a confidante?</b></p> <p><b>MC: No. I don't like that.</b></p> <p><b>VL: You didn't need to confide in anyone? You solved your problems by yourself?</b></p> <p><b>MC: I was on my own. I had a good life there, ha.</b></p> <p>VL: I think your best friend was your father.</p> <p>MC: Who?</p> <p>VL: I think your best friend was your father.</p> <p>MC: Oh, yes!</p>

**Table S10. Mme Calment's recollections about people from her childhood and youth.**

1988 INA interview, available at <a href="https://actu.orange.fr/societe/videos/replay-jeanne-calment-a-t-elle-vraiment-vecu-jusqu-a-122-ans-regardez-l-enquete-d-envoye-special-sur-la-doyenne-de-l-humanite-CNT000001dX8wO.html">https://actu.orange.fr/societe/videos/replay-jeanne-calment-a-t-elle-vraiment-vecu-jusqu-a-122-ans-regardez-l-enquete-d-envoye-special-sur-la-doyenne-de-l-humanite-CNT000001dX8wO.html</a>	Translation
MC: Je tends la main; je lui souris. Mon mari dit: “Je vous présente ma femme”. Il me regarde et il continue à choisir ses toiles.	<b>MC: I offer my hand; I smile at him. My husband says: “This is my wife”.</b> He looks at me and keeps picking out the canvas.
1989 INA interview (age 114), <a href="https://www.ina.fr/ina-eclair-actu/video/cab89003100/jeanne-calment-114-ans-a-rencontre-van-gogh">https://www.ina.fr/ina-eclair-actu/video/cab89003100/jeanne-calment-114-ans-a-rencontre-van-gogh</a>	Translation
MC: Il était alcoolique fieffé! ... Alors mon mari lui dit: “M. Van Gogh je vous présente ma femme”. “Oui c’est ça va”. Van Gogh touchait les toiles, il me regardait. Il n’a pas quitté ses toiles. Il était assis. Il tripotait ces toiles; il se retourne et me regard. Il me toise, il dit – “ça va, ça va”. J’ai dit, “c’est ça Van Gogh?” Quelle déception. Laid de la figure. Un bonnet jusque-là. Mon dieu qu’il était laid.	<b>MC: He was a crazy alcoholic! ... Then my husband said: “Mr. Van Gogh, this is my wife”. “Yes ok, fine”.</b> Van Gogh touched the canvases, he looked at me. He did not leave his canvases. He was sitting. He was touching those canvases; he turns around and looks at me. He looks at me, he says, “It’s okay, it’s okay”. I said, “Is that Van Gogh?” What a disappointment. Ugly face. A cap down to here. My God, he was ugly.

**Table S11. Mme Calment’s recollections about Van Gogh.**

Recorded interview (12) (23 juin 1994 16:10)	Translation
<p>VL: Et de M. Fassin, vous en rappelez?</p> <p>MC: Oui c'était mon cousin.</p> <p>VL: Comment il s'appelait son prénom?</p> <p>MC: Pierre. Pierre Fassin.</p> <p>VL: Il ne s'appelait pas Emile?</p> <p>MC: Peut-être. Le prénom je ne me rappelle pas... Je rappelle de lui. Il venait à la maison. Il était ami de mon mari. Je pense, ce n'est pas grave? Oui, Emile, c'est ça.</p>	<p>VL: And Mr. <b>Fassin</b>, do you remember him?***</p> <p>MC: Yes, <b>he was my cousin</b>.</p> <p>VL: What was his first name?</p> <p>MC: Pierre. <b>Pierre Fassin</b>.†††</p> <p>VL: <b>Wasn't he called Emile?</b></p> <p>MC: <b>Perhaps. The first name I don't remember...</b> I remember him. <b>He came to the house. He was a friend of my husband.</b> I think, it's not a big deal... Yes, Emile, that's it.</p>
(23 juin 1994 9:20)	Translation
<p>VL: Chez les Crouansons vous avez été témoin au mariage?</p> <p>MC: Oui, bien sûr.</p> <p>VL: C'était pour les filles ou pour les garçons que vous avez été témoin?</p> <p>MC: Pour mon cousin, mon cousin germain qui vient de mon père.</p> <p>VL: C'est ça, on l'a vérifié, c'est bien ça.</p>	<p>VL: At the <b>Crouansons</b> you were witness to the wedding?</p> <p>MC: <b>Yes, of course.</b></p> <p>VL: Was it for the girls or for the boys that you were the witness?</p> <p>MC: For my cousin, <b>my first cousin who comes from my father</b>. ‡‡‡</p> <p>VL: That's right, we checked it, that's correct.§§§</p>
(23 juin 1994 6:45)	Translation
<p>VL: On nous a dit qu'un de ses fils s'était marié avec une Anglaise.</p> <p>MC: Ah, non, Marsellaïse, une Marsellaïse, jolie femme.</p> <p>VL: Elle s'appelait comment?</p> <p>MC: Louise.</p> <p>VL: Mais l'autre fils?</p> <p>MC: Ah, le prénom ici je ne me rappelle pas. Je me rappelle que les prénoms des filles, Marthe et Fernande.</p> <p>VL: Et l'autre fils, vous ne rappelez pas s'il était marié avec une Anglaise?</p> <p>MC: Ah, je n'ai pas suivi, je ne le voyais pas, les garçons je les voyais pas.</p>	<p>VL: We were told that one of his sons had married an English woman.</p> <p>MC: Ah, no, Marsellaïse, a Marsellaïse, pretty woman.</p> <p>VL: What was her name?</p> <p>MC: Louise.</p> <p>VL: But the other son?</p> <p>MC: Ah, the name here I don't remember. I only remember the names of the girls, Marthe and Fernande.</p> <p>VL: And the other son, do you remember if he was married with an English woman?</p> <p><b>MC: Ah, I didn't follow, I didn't see him, the boys I didn't see them.</b></p>

**Table S12. Mme Calment's recollection of Fassins and Crouansons.**

\*\*\* Emile Fassin was a witness at Jeanne's marriage.

††† Pierre Fassin (1912–2011) was Emile's grandson, making him a second cousin of Yvonne and a first cousin once removed of Fernand, but he was not blood related to Jeanne.

‡‡‡ Nicolas Crouanson was Fernand's first cousin on his father's side and Jeanne's second cousin on her father's side.

§§§ In 1898, Jeanne was a witness at the wedding of Nicolas' sister Marguerite, but she was not a witness at his own wedding.

Recorded interview (12) (27 septembre 1992 34:35)	Translation
MC: Quand mon père a changé le salon... mon mari a changé le salon	MC: When my <b>father</b> changed the salon... my <b>husband</b> changed the salon
(10 juin 1994 24:10)	Translation
VL: Quand on voit une jolie femme on lui fait toujours un peu la cour. MC: Oh mon père veillait ... oh mon mari veillait.	VL: When you see a pretty woman you always court her a little. MC: Oh, my <b>father</b> kept an eye on me... oh my <b>husband</b> kept an eye on me.
(23 juin 1994 26:15)	Translation
VL: Vous suiviez les courses à la jumelle? MC: Oui. Surtout mon père. VL: Votre père vous accompagnait à ce moment-là? MC: Ah non je suis mariée... bon je ne rappelle pas, j'ai un peu oublié.	VL: Did you follow the races? MC: Yes. Especially my <b>father</b> . VL: Did your father accompany you at that time?  <b>MC: Oh no, I was married... well, I don't remember, I've forgotten a bit.</b>
(7 septembre 1994 00:30)	Translation
VL: Est-ce-que vous avez rencontré Mistral dans votre vie? MC: Oui c'était un ami de mon père...un ami de mon mari.	VL: Did you meet Mistral in your life? MC: Yes, he was a friend of my <b>father's</b> ...a friend of my <b>husband's</b> .
(7 septembre 1994 suite 07:45)	Translation
VL: Vous jouiez de l'argent au champ de course? MC: Mon père pas moi ... Mon mari pas moi.	VL: Did you play money at the horse racing track? MC: My <b>father</b> not me ... My <b>husband</b> not me.
(07 septembre 1994 suite 05:20)	Translation
MC: J'ai y allais avec la voiture de mon père. VL: C'était la voiture de votre père ou de votre mari? MC: Mon mari, voiture quatre places, à vis-à-vis.	MC: I went in my <b>father's</b> car. VL: Was it your father's car or your husband's car? MC: My husband, four-seater, vis-à-vis.
(25 mai 1994 36:42)	Translation
VL: Est-ce que vous rappelez les bombardements d'Arles? MC: Ah, oui! Ça on ne peut pas l'oublier. VL: Où est-ce que vous étiez? MC: Chez moi, dans ma maison. VL: Et vous n'avez pas bougé quand le pont de Trinquetaille a été bombardé? MC: Non! VL: Vous étiez près de là où tombaient les bombes... MC: Ben, il faut dit que j'ai un caractère, je n'ai pas peur facilement, on me le reproche assez. Un jour mon mari m'a dit:	VL: Do you remember the bombing of Arles? MC: Oh, yes, one cannot forget that. VL: Where were you? MC: At home, in my house. VL: And you didn't move when the bridge at Trinquetaille was bombed? MC: No! VL: You were near where the bombs fell...  MC: Well, it must be said that I have a character, I'm not easily frightened, I've been reproached enough. One day my <b>husband</b> told me:



<p>“Tu n’as pas assez peur, entre celles qui ont peur de tout et tu qui n’ont peur de rien, tu...”</p> <p>Alors je lui ai dit: “Ça te gêne? Ça sera malheureusement sans nouvelles. Alors écoute, je ne veux pas nuire à ton bonheur et je te rends ta liberté.”</p> <p>Mais il a poussé un cri: “Qu’est-ce que tu dis? Tout mais pas ça! Je t’aime!” ... J’ai un... caractère...</p> <p>VL: Pendant la guerre, Monsieur Calment était avec vous alors? MC: Oui. VL: Il est mort après en 1952, à peu près? MC: Ah, ne rappelle pas. VL: Vous ne vous rappelez pas à quelle date est mort votre mari? MC: Ah, j’oublie. VL: Il avait quel âge? MC: Rappelle plus. Je ne sais pas. En rappelle plus. J’étais encore assez jeune.</p>	<p>“You’re not afraid enough, among those who are afraid of everything, and you who are afraid of nothing, you...”</p> <p>So, I told him: “Does that bother you? Unfortunately, I won’t be hearing from you again. So, listen, I don’t want to interfere with your happiness, and I’ll give you back your freedom”.</p> <p>But he shouted: “What are you saying? Anything but that! I love you!” ... I have a... character...</p> <p><b>VL: During the war, M. Calment was with you then?</b> <b>MC: Yes.</b> VL: He died afterwards in 1952, approximately? MC: Ah, don’t remember. <b>VL: You don’t remember when did your husband die?</b> <b>MC: Ah, I forget.</b> <b>VL: How old was he?</b> <b>MC: Don’t remember. I don’t know. Don’t remember. I was still quite young.</b></p>
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**Table S13. Mme Calment’s father/husband confusions.**

Recorded interview (12) (13 février 1993 15:00)	Translation
<p>VL: Est-ce que vous vous rappelez sa communion? Sa première communion?</p> <p>MC: Ah, encore plus. Du moment que je me suis rappelé le baptême, encore plus la première communion, ha! ... Elle était dans une pension religieuse.</p> <p>VL: Où ça?</p> <p>MC: La pension de Mme Benêt, qui était équivalent de...je ne me rappelle plus, j'ai un peu d'amnésie en ce moment.</p> <p>VL: Pas du tout. Vous avez une mémoire qui fonctionne très bien... Vous avez fait la fête en famille?</p> <p>MC: Après oui, après la cérémonie...</p> <p>VL: Le repas s'est passé où?</p> <p>MC: Dans la maison, chez soi.</p> <p>VL: Ça s'est passé au magasin ou à la rue du Roure?</p> <p>MC: Chez soi dans la maison, dans les appartements personnels.</p> <p>VL: Vous vous rappelez comment Yvonne était habillée?</p> <p>MC: Bah, en communiant!</p> <p>VL: Décrivez-moi un peu sa robe.</p> <p>MC: La robe en mousseline, blanche, classique. Une couronne de fleurs.</p> <p>VL: C'était quoi comme fleur?</p> <p>MC: Oh! Là, vous m'en demandez un peu trop. Quand je suis mariée, j'avais une couronne, une couronne de lilas blanc. Mais ça, c'est quand je suis marié.</p> <p>VL: Première messe était à quelle heure?</p> <p>MC: A 7 heures.</p> <p>VL: Et ensuite, qu'est-ce que vous faisiez?</p> <p>MC: Ah, bah, je m'occupais de choses. A maison de mes parents. A maison avec mes parents.</p> <p>VL: Et après, vous alliez à la grand-messe?</p> <p>MC: Naturellement.</p> <p>VL: Est-ce qu'il y avait les vêpres aussi?</p> <p>MC: C'est obligatoirement. C'est passé à St. Trophime.</p> <p>VL: Vous vous rappelez bien? Vous étiez habillé comment ce jour-là?</p> <p>MC: Une robe mousseline, blanche.</p> <p>VL: Mais VOUS, qu'est-ce que vous aviez-vous comme tenue?</p> <p>MC: Ben, j'avais une robe rose dans la mode de l'époque, une jolie robe. Une robe à la mode, naturellement!</p>	<p>VL: Do you remember her communion? Her first communion?</p> <p>MC: Ah, more so. As long as I remembered the baptism, even more the first communion, ha! ... It was in the religious pensionnat.</p> <p>VL: Where?</p> <p>MC: Mme Benet's pensionnat, which was equivalent to... I don't remember, I have a bit of amnesia now.</p> <p>VL: Not at all. Your memory works very well... Was there a family party?</p> <p>MC: Afterwards yes, after the ceremony...</p> <p>VL: Where did you have the meal?</p> <p>MC: At our home.</p> <p>VL: It was in the store or at rue du Roure?</p> <p>MC: At home, at personal apartments.</p> <p>VL: Do you remember how Yvonne was dressed?</p> <p>MC: Well, as a communion girl!</p> <p>VL: Tell me a little about her dress.</p> <p>MC: The chiffon dress, white, classic. A crown of flowers.</p> <p>VL: What kind of flower was it?</p> <p>MC: Oh, now you're asking too much. When I was married, I had a crown, a white lilac crown. But that's when I was married.</p> <p>VL: What time was the first mass?</p> <p>MC: At 7 o'clock.</p> <p>VL: And then what did you do?</p> <p><b>MC: Ah, well, I took care of things. At my parents' house. At home with my parents.</b></p> <p>VL: And then you went to the high mass?</p> <p>MC: Naturally.</p> <p>VL: Did you go to vespers too?</p> <p>MC: That's a must. It was at St. Trophime.</p> <p><b>VL: Do you remember well? What were you wearing that day?</b></p> <p><b>MC: A muslin dress, white.</b></p> <p><b>VL: But what were YOU wearing?</b></p> <p>MC: Well, I had a pink dress in the fashion of the time, a pretty dress. A fashionable dress, of course!</p>

VL: Vous portiez des chapeaux? MC: Ah, oui! Ah... On portait des chapeaux... Des chapeaux on porte encore longtemps. Après, on l'a aboli.	VL: Did you wear hats? MC: Ah, yes! Ah... We wore hats. Hats were still worn for a long time. Afterwards, we abolished them.
(10 février 1993 04:21)	Translation
VL : Vous aviez combien d'employés au magasin? MC : Y en avait la dizaine.  VL: Et est-ce que vous vous y travaillez à ce magasin? MC: Non j'étais à la maison moi, j'aidais mes parents.	<b>VL: How many employees did you have in the store?</b> MC: There were about ten.  VL: And did you work in this shop?  <b>MC: No, I was at home helping my parents.</b>
(25 mai 1994 10:40)	Translation
MC: Bah, bien sûr, une jolie maison, mes parents étaient aisés ils avaient une belle maison. VL: Mais là c'était chez votre mari? A la rue Gambetta? MC: Ah c'est plus vieux ça! [...] VL: La vie avec votre mari vous aviez beaucoup de confort? MC: Oui, bien sûr, mes parents étaient aisés.	MC: Well, of course, <b>a nice house, my parents were well off, they had a nice house.</b> VL: But that was your husband's house? In the rue Gambetta? MC: Ah, that's too old! [...] <b>VL: Did you have a lot of comfort living with your husband?</b> <b>MC: Yes, of course, my parents were well off.</b>
(6 et 13 juillet 1994, 06:56)	Translation
VL: Puisque vous parlez de Yvonne et de Frédéric... MC: Oui. VL: C'est que vous étiez marié? MC: Bien sûr. VL: Vous deviez avoir 40 ans à peu près? MC: Oui, environ. VL: C'était après la guerre de 14?  MC: Oui... Je m'étais qu'une personne âgée, nous rencontre l'époque d'Hitler... J'aimerais savoir ça.	<b>VL: Since you are talking about Yvonne and Frédéric...</b> MC: Yes. VL: So, you were married? MC: Of course. <b>VL: You must have been about 40 years old?</b> <b>MC: Yes, about.</b> VL: This was after the war of 14?  MC: I was just an old person; we are looking back at the time of Hitler... I'd like to know that.
(6 et 13 juillet 1994, 15:27)	Translation
VL: Vous avez des souvenirs de la guerre de 14?  MC: Vaguement ...assez jeune oui, j'en entendais parler des parents. VL: A la guerre de 14, vous aviez 39 ans. MC: Haha, vous saviez bien que moi.	<b>VL: Do you have any memories of the war of 14?</b> <b>MC: Vaguely ...quite young yes, I heard about it from my parents.</b> VL: In the war of 14, you were 39 years old. MC: Ha-ha, you know better than me.

**Table S14. Mme Calment's slips into talking as if she were Yvonne while describing events attended by Yvonne.**

Recorded interview (12) (25 et 26 février 1993 05:15)	Translation
<p>VL: Je vous ai dit que j'avais vu une photo. J'ai vu une photo de vous lorsque que vous aviez à peu près 25 ans.</p> <p>MC: Ah oui?</p> <p>VL: Vous aviez une grande robe pantalon de plage et une ombrelle chinoise ou japonaise.</p> <p>MC: Hm. Oooh!!! Ne me rappelle pas ça.</p> <p>VL: Vous ne rappelez pas?</p> <p>MC: Non, no.</p> <p>VL: Vous posez avec une ombrelle Japonaise.</p> <p>MC: A c'est l'époque de jeunesse, à cette époque-là.</p> <p>VL: Vous vous rappelez cette époque-là?</p> <p>MC: Naturellement, vaguement, c'est confus.</p> <p>VL: Vous ne rappelez pas cette ombrelle?</p> <p>MC: Si!</p> <p>VL: Décrivez là moi un peu.</p> <p>MC: Ah, oh, ne me rappelle pas, ça je ne peux pas vous dire.</p> <p>VL: Sur la photo vous étiez éblouissante.</p> <p>MC: Étais jeune; quand on est jeune, on fait toujours de l'effet.</p> <p>VL: Vous étiez très séduisante.</p> <p>MC: Hm.</p>	<p>VL: I told you I saw a picture. I saw a picture of you when you were about 25 years old.</p> <p>MC: Oh yeah?</p> <p>VL: You had a big beach pants dress and a Chinese or Japanese umbrella (parasol).</p> <p>MC: Hm. Oooh!!! Don't remember that.</p> <p>VL: Don't recall?</p> <p>MC: No, no.</p> <p><b>VL: You're posing with a Japanese parasol.</b></p> <p><b>MC: That's when I was young, that's when I was young.</b></p> <p>VL: Do you remember that time?</p> <p>MC: Naturally, vaguely, it's confusing.</p> <p><b>VL: Don't you remember that parasol?</b></p> <p><b>MC: Yes, I do!</b></p> <p>VL: Describe it to me.</p> <p>MC: Oh, oh, don't remember, I can't tell you that.</p> <p>VL: In the photo you were dazzling.</p> <p>MC: I was young; when you are young, you always make an impression.</p> <p>VL: You were very attractive.</p> <p>MC: Hm.</p>
(25 février 1993 01:40)	Translation
<p>VL: Est-ce que vous vous rappelez ce moment-là?</p> <p>MC: No, Il y a trop de... Trop de tour malheureusement, il y a trop d'évènements depuis.</p>	<p><b>VL: Do you remember that time?</b></p> <p><b>MC: No, there's too many... Too many turns unfortunately, there's too many events since.</b></p>
(25 et 26 février 1993, 18:40)	Translation
<p>VL: Et vous vous rappelez quand elle a été malade, Yvonne ?</p> <p>MC: Oui.</p> <p>VL: Vous l'avez soigné chez vous?</p> <p>MC: &lt;confused&gt; Au début, et après... Après on a venu... au sana &lt;sanatorium&gt;.</p> <p>VL: C'était à quel endroit?</p> <p>MC: &lt;confused&gt; ah. mm. Ah. Haute Savoie. Ah m. Haute Savoie, je crois. Ah !</p> <p>VL: Vous vous rappelez à quel endroit?</p> <p>MC: &lt;confused&gt; Ah, m... Je crois que Haute Savoie.</p> <p>VL: Elle y restait longtemps?</p>	<p>VL: And do you remember when she was sick, Yvonne?</p> <p>MC: Yes.</p> <p><b>VL: You treated her at home?</b></p> <p><b>MC: &lt;confused&gt; At first, and then... Afterwards we came... to the sana &lt;sanatorium&gt;.</b></p> <p><b>VL: Which place was that?</b></p> <p><b>MC: &lt;confused&gt; ah. mm. ah. Haute Savoy.</b></p> <p>Ah. m. Haute Savoie, I believe. Ah!</p> <p>VL: Which place, do you remember?</p> <p>MC: &lt;confused&gt; Ah, m... I think Haute Savoy.</p> <p>VL: How long was she there?</p>



<p>MC: Pas tellement... C'est à la suite d'une pleurésie. C'est ma belle-mère qui en est la cause. Quand elle était petite, ma belle-mère, comme elle a eu qu'un garçon, une fille elle était heureuse. Elle l'avait tellement couverte, tellement couverte!</p> <p>Nous avions une campagne à Bord du Rhône. A l'époque on baignait dans les eaux du Rhône. Elle aimait beaucoup pour y aller. Il fallait aller à pied.</p> <p>Elle l'avait tellement couverte quand elle arriva, elle a transpiré. Elle l'a trempé dans l'eau toute transpirante, quand elle est sortie elle a grelotté; c'est partie de là, c'est ma belle-mère qui en est la cause. [...]</p> <p>VL: Et Yvonne a été malade avant d'avoir Frédéric ou après ?</p> <p>MC: Après, non... avant... Ça s'est déclaré après, plus tard. Oh, je ne sais plus.</p> <p>VL: Donc elle a eu Frédéric en premier puis elle été malade ?</p> <p>MC: Oui.</p>	<p>MC: Not so much... It was after a bout of pleurisy. My mother-in-law is the cause. When she was little, my mother-in-law, as she only had a boy, she was happy with a girl. She kept her covered so much, so much in her cover!</p> <p>We had a country house on the Rhône. We bathed in the waters of the Rhône. She loved to go there. You had to go on foot.</p> <p>She kept her covered so much that when she arrived, she sweated. She dipped her in the water all sweaty, when she came out, she shivered; it went from there, my mother-in-law is the cause. [...]</p> <p>VL: And did Yvonne get sick before she had Frédéric or after?</p> <p>MC: After, no... before... it broke out after, later. Oh, I don't know anymore.</p> <p><b>VL: So, she had Frédéric first and then she was sick?</b></p> <p><b>MC: Yes.</b></p>
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**Table S15. Discussion about the photo of Yvonne with parasol and Yvonne's disease.**

Recorded interview	Translation
(12)(7 septembre 1994 suite 08:45)	
VL: Quand vous étiez jeune, vous aviez des yeux de quelle couleur ?	<b>VL: When you were young, what colour eyes did you have?</b>
MC: Gris clair comme maintenant, ils n'ont pas changé.	<b>MC: Light grey like now, they haven't changed.</b> ****

**Table S16. Mme Calment's eye colour evolution.**

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\*\*\*\* In the identity card (fig. S11, B) the eye colour (copied from Jeanne's earlier passport) was noted as "black".