

From the Prologue to 'E=mc²'....

THE COLLECTED PAPERS OF ALBERT EINSTEIN, VOLUME I:

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*Professor Wilhelm Ostwald
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Esteemed Herr Professor!

Please forgive a father who is so bold as to turn to you, esteemed Herr Professor, in the interest of his son.

I shall start by telling you that my son Albert is 22 years old, that...he feels profoundly unhappy with his present lack of position, and his idea that he has gone off the tracks with his career & is now out of touch gets more and more entrenched each day. In addition, he is oppressed by the thought that he is a burden on us, people of modest means...

I have taken the liberty of turning [to you] with the humble request to...write him, if possible, a few words of encouragement, so that he might recover his joy in living and working.

If, in addition, you could secure him an Assistant's position for now or the next autumn, my gratitude would know no bounds...

I am also taking the liberty of mentioning that my son does not know anything about my unusual step.

*I remain, highly esteemed Herr Professor,
your devoted*

Hermann Einstein

No answer from Professor Ostwald was ever received.

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I loved having that teaser before the main body of the prologue. The very topic of Albert Einstein and his work can seem intimidating, but to find out he felt 'profoundly unhappy with his present lack of position' - and that his father worked behind the scenes to try to help him - humanizes him in the gentlest way. - After that, I then briefly set up what we're going to see...

The world of 1905 seems distant to us now, but there were many similarities to life today. European newspapers complained that there were too many American

tourists, while Americans were complaining that there were too many immigrants. The older generation everywhere complained that the young were disrespectful, while politicians in Europe and America worried about the disturbing turbulence coming from Russia. There were new-fangled 'aerobics' classes; there was a trend-setting vegetarian society, and calls for sexual freedom (which were rebuffed by traditionalists standing for family values), and much else.

The year 1905 was also when Einstein wrote a series of papers that changed our view of the universe forever. On the surface, he seemed to have been leading a pleasant, quiet life until then. He had often been interested in physics puzzles as a child, and was now a recent university graduate, easy-going enough to have many friends. He had married a bright fellow student, Mileva Maric, and was earning enough money from a civil service job in the patent office to spend his evenings and Sundays in pub visits, or long walks - above all, he had a great deal of time to think.

Outwardly Einstein appeared confident, and would joke with his friends about the way authorities seemed to enjoy putting him down. The year before, in 1904, he had applied for a promotion from patent clerk third class to patent clerk second class. His supervisor, Dr. Haller, had rejected him, writing in an assessment that although Einstein had 'displayed some quite good achievements,' he would still have to wait 'until he has become fully familiar with mechanical engineering.'

In reality, though, the lack of success was becoming serious. Einstein and his wife had given away their first child, a daughter born before they were married, and were now trying to raise the second on a patent clerk's salary. Einstein was twenty-six. He couldn't even afford the money for part-time help to let his wife go back to her studies. Was he really as wise as his adoring younger sister, Maja, had told him?

Even the hours he had to keep at the patent office worked against him. By the time he got off for the day, the one science library in Bern was usually closed. How would he have a chance if he couldn't even stay up to date with the latest findings? When he did have a few free moments during the day, he would scribble on sheets he kept in one drawer of his desk - which he jokingly called his 'department of theoretical physics'. But Haller kept a strict eye on him, and the drawer stayed closed most of the time. Einstein was slipping behind, measurably, compared to the friends he'd made at the university. He talked with his wife about quitting Bern and trying to find a job teaching high school. But even that wasn't any guarantee: he had tried it before, only four years earlier, but never managed to get a permanent post.

And then, on what Einstein later remembered as a beautiful day in the spring of 1905, he met his best friend, Michele Besso ('I like him a great deal,' Einstein wrote, 'because of his sharp mind and his simplicity'), for one of their long strolls on the outskirts of the city. Often they just gossiped about life at the patent office, and music, but today Einstein was uneasy. In the past few months a great

deal of what he'd been thinking about had started coming together, but there was still something Einstein felt he was very near to understanding but couldn't quite see. That night Einstein still couldn't quite grasp it, but the next day he suddenly woke up, feeling 'the greatest excitement.'

It took just five or six weeks to write up a first draft of the article, filling thirty-some pages. It was the start of his theory of relativity. He sent the article to *Annalen der Physik* to be published, but a few weeks later, he realized that he had left something out. A three-page supplement was soon delivered to the same physics journal. He admitted to another friend that he was a little unsure how accurate the supplement was. 'The idea is amusing and enticing, but whether the Lord is laughing at it and has played a trick on me - that I cannot know.' But in the text itself he began, confidently: 'The results of an electrodynamic investigation recently published by me in this journal lead to a very interesting conclusion, which will be derived here.' And then, four paragraphs from the end of this supplement, he wrote it out.

$E=mc^2$ had arrived in the world.

With that prologue done, the main body of the book goes into the stories behind each part the equation...