

THE YOUNG EINSTEIN: "POETRY AND TRUTH"¹

617-353-9248

John Stachel *edited Both vol 1 + 2*

Center for Einstein Studies

and Department of Physics

Boston University

pub. by preceptor @ univ. press.

My title is meant to recall that of Goethe's autobiography, "Dichtung und Wahrheit." "Wahrheit" means "truth;" "Dichtung" can be translated as "poetry". But it can also be translated as "imagination" or even "fiction," and debate has long raged among Goethe scholars as to the exact ratio of "Dichtung" to "Wahrheit" in the master's memoirs.

Einstein also wrote two autobiographical memoirs ["Autobiographical Notes," and "Autobiographical Sketch"], about which one could raise similar questions. But I want to raise the question of "Dichtung" and "Wahrheit" in a larger sense. As a result of the recent discovery of a number of new documents about the early years of Albert Einstein-- let us define these as the years from his birth in 1879 until 1905, his annus mirabilis-- these years have begun to emerge from the considerable obscurity in which he and most of his biographers had left them. A stream

1. Talk prepared for the AAAS session on "The Young Einstein," New Orleans, February 18, 1990.

of recent publications-- which threatens to become a flood-- attempt to paint a more vivid picture of "The Young Einstein," his family, his friends, and his fiancée. My question is: What is the ratio of "Dichtung" to "Wahrheit" in some of this recent literature?

After 1919, when he became world famous, a number of myths accreted around Einstein, a process that by no means stopped with his death. Perhaps the most prevalent of these myths is that he was born old. When his name is mentioned, how many can resist the almost-reflex impulse to picture the ancient sage, surrounded by his nimbus of gray hair, his eyes reflecting all the pain his times had seen? Insofar as his childhood and youth were considered, they were also mythologized by projecting back this image of the plaster saint. Such myths only hinder study of the truly interesting questions about Einstein's early years, questions raised most acutely by the newly available documentary material.

Perhaps we are now beginning to escape from the pervasive myths of saint and sage. If so, will we do so only to fall victim to a new set of myths? I shall try to address this question, taking as my texts the writings of some of my fellow speakers this evening. If this is not very polite, at least I cannot be accused of attacking them behind their backs.

I

Lewis Pyenson has done a large amount of imaginative and important scholarly work on "The Young Einstein" [the title of

one of his books; citations will be from it], uncovered a large amount of hitherto unknown information, and helped to lay to rest some of the old myths. Yet even he has not been immune from the mythologizing urge. Let me give some examples.

Pyenson is at pains to correct what he calls "the misperceived legacy of the Luitpold Gymnasium" (p. 1), the Munich academic secondary school that Einstein attended from 1888 to 1894. He wants to prove that Einstein was offered an excellent education in mathematics and physics at the Luitpold, a school at the forefront of the struggle for the reform of science education then going on in Germany. First he looks at physics, emphasizing that the physics text used took "issue with the dominant view of the time in Prussia, where physics was taught as a branch of mathematics" and presented physics as "'a science of experience' which had to be taught by appeal to intuition." Pyenson maintains that Einstein was exposed to the beneficent influence of this physics instruction "during his last year and a half there" under the tutelage of "Gottlieb Effert and Joseph Ducrue" (p. 3).

The fact is that Einstein only took physics at the Luitpold (under Ducrue-- he never had Effert as a teacher) during his last term there. Since he left abruptly in the middle of that term, never to return (but I shall return to the subject of his departure in a moment), no matter how good or bad the physics education at the Luitpold may have been, Einstein was exposed to only three months worth of it.

Having disposed of physics, Pyenson turns to mathematics at

to join
his proof
in Italy

the Luitpold. "Einstein was privileged from 1888 to 1891 to have Adolf Sickenberger as a mathematics teacher," which is important to Pyenson's case since Sickenberger was "a vocal partisan of school reform" (p. 4).

The fact is that Einstein never had Sickenberger as a teacher at the Luitpold. Pyenson states that Einstein used Sickenberger's mathematics text "throughout [his] five and a half years at the Luitpold Gymnasium" (p. 4), which is almost true-- except for the fact that Einstein spent almost six and a half years at the Luitpold. [All facts about the Luitpold are taken from The Collected Papers of Albert Einstein. Vol. 1, The Early Years, where the sources are cited.]

Pyenson is at pains to project the image of Einstein the "loner" back into his youth. Indeed, "Einspänner"-- "loner"-- is the title of one of the essays in The Young Einstein. He comments on Einstein's dramatic mid-semester departure from the Luitpold, which he quit in order to join his parents in Italy, where they had moved for business reasons: "[Einstein] knew that without the final certificate called the Abitur he ... placed himself outside the intellectual life of a society that valued culture and formal education highly. He wanted none of it" (p. 6).

This sounds very romantic indeed, but let us turn to what his sister tells us about the move in her biographical memoir of Einstein. His parents "were very upset over his arbitrary behavior, but he ... reassured them about his future by assuring them in the most definite terms that he would study by himself

until fall in order to prepare for the entrance examination for the Zurich Polytechnical School" (vol. 1, pp. lxiii-lxiv). Einstein himself confirms this intent in an "Autobiographical Sketch" [Autobiographische Skizze] written in the year of his death. He took the examination, doing very well in physics and mathematics, which he had indeed studied on his own, but failed to satisfy the Polytechnical authorities that he should be admitted without completing his secondary education.

They advised him to finish up at the technical school in Aarau, graduation from which guaranteed admission to the Zurich Poly. Writing about his Aarau schooling, Pyenson states: "The grades he received for industry and mastery of his course material were uniformly poor. For the final quarter, ending in April 1896, he showed little improvement... In arithmetic and algebra he received the lowest grade, one out of six. After Einstein registered for the final half-year at Aarau, his performance in the exact sciences improved dramatically. During the first quarter of the new year-- May and June of 1896-- he received a six in arithmetic and algebra, and in physics a six for industry and a five for mastery of the material" (p. 12). Elsewhere he states: "As a last-year pupil in the cantonal school at Aarau, his grades improved at the time that a splendid new physical laboratory opened there" (p. 52).

This would provide a sad commentary on Einstein's reaction to the splendid educational opportunities at the Luitpold Pyenson has depicted, and a dramatic proof of the beneficent influence of

the Aarau milieu on Einstein's grades-- another point Pyenson wants to make-- if his information was correct. But closer examination shows that what changed dramatically during Einstein's final half year in Aarau was not Einstein, but the grading system at the Aarau school: the ordering of grades from highest to lowest had been reversed (see Vol. 1, p. 14, note [3]).

We are all indebted to Pyenson for calling attention to the significance of the Einstein family's involvement in the electrotechnological business-- then at the high tech frontier-- during the years he was growing up. In seeking to define the nature of the influence of this electrotechnological milieu on Einstein, however, Pyenson goes overboard at one point. He draws attention to a patent for an electric meter held by Einstein's uncle Jakob-- the technical director of the family firm-- and Sebastian Kornprobst, an employee. After a description of the meter, Pyenson waxes lyrical:

Two clocks keeping different time, each in what might be called its own frame of reference, lay at the center of the Einstein-Kornprobst meter. The idea of synchronising and comparing clocks in moving frames of reference plays such an important role in the special theory of relativity that these patents fairly call out for further comment (p. 40).

After recalling some other early "intimations of relativity," he goes on:

One can also imagine Jakob spreading out his patent plans on

the kitchen table and explaining them to his eleven-year-old nephew Albert, and in this way locate the germ of relativity at an even earlier date (pp. 40-41).

Again, this vignette would be enchanting if Pyenson had accurately described the meter-- but he has not. There is a pendulum in the device, which Pyenson in his description insists on calling a "pendulum clock," but he has misunderstood its function. To quote him:

Meters of this kind employed a pendulum clock with the pendulum designed as a shunt coil.... The rate of the shunt coil pendulum clock would obviously depend on the current, and its changing rate could be compared and counted relative to a standard clock.

These are the "two clocks" so lyrically invoked above. If we now turn to the Einstein-Kornprobst patent (they took out a patent on the meter in the United States, so I quote that patent, which is a translation of the German original cited by Pyenson) [Show and refer to figure]:

The apparatus consists of a revolving body R movable about a shaft A and put into uniform rotation (my emphasis) by a mechanical or electric power motor, such as an electric pendulum. A shaft a is arranged parallel to one of the longitudinal sides s of the revolving body, the said shaft being adjustable in bearings l l and carrying a frictional disk V. This disk V is rotated by frictional contact from the revolving body and the rotation of the disk is more

rapid the more the disk approaches the base B of the body R. The shaft a carries a worm or toothed wheel g by means of which the revolutions are registered by a counting device (US Patent No. 437,754, dated October 7, 1890).

In other words, the pendulum (call it a pendulum clock if you like) is used precisely to maintain a steady, uniform rotation of R. A contemporary description of the device, cited by Pyenson, uses the word "gleichbleibend"-- constant, steady, unwavering-- to describe the rotation produced by the pendulum [C. L. Imhoff, "Elektricitätszähler der Firma J. Einstein & Cie., München. System Kornprobst." Elektrotechnische Zeitschrift 22, 278-279 (1891)]. Any change in the rate of the pendulum would be disastrous for the operation of the meter. So there is no "changing rate" of the "pendulum clock" to be "compared and counted relative to" a non-existent "standard clock" in the meter.

None of what I said is meant in any way to deny that his upbringing in a household involved so deeply in electrotechnology had a profound influence on the young Einstein. It is just meant to suggest that we employ less "Dichtung" and more "Wahrheit" in seeking to define that influence.

II

Lew Pyenson, in my opinion, is a gifted and imaginative scholar, still in search of the real Einstein, who is constantly tripped up by his own imaginativeness combined with carelessness in checking facts. Others, it seems to me, are more concerned

with creating counter myths. Since the detonation of the atomic bomb, the myth of the benevolent, saintly Einstein has had to contend with myths of the malevolent Einstein, arch-symbol of the evil that modern science has let loose upon the world.

Recently, there have been signs of an attempt to project this malevolent image of Einstein back into his youth. Let us turn for example to Evan Harris Walker. His sole previous work on Einstein, as far as I know, is a letter published in Physics Today (February 1989) under the title "Did Einstein Espouse his Spouse's Ideas?", together with my reply. His professional affiliation is listed there as "Walker Cancer Research Institute, Edgewood, Maryland," although I understand he is a physicist working at the U. S. Army Ballistic Research Laboratory at Aberdeen Proving Grounds. According to the Journal of the National Cancer Institute, "The mission of the institute is to test and develop" a form of cancer therapy based on "Walker's TDTA theory" ("chemically triggered time delay toxin activation chemotherapy"). The article cites critical comments on this approach by a researcher at the Cancer Institute.

I know nothing about cancer therapy, but if I had to judge Walker solely on the basis of his letter on Einstein, I would have to conclude that he is a fantasist, who judges reality on the basis of his own desires. However, good-hearted he may be, such desires are no substitute for some knowledge of the facts of Einstein's life and that of Mileva Maric, his fiancée and first wife. In order to make a heroine of Maric, Walker is willing to

make a monster of Einstein.

I do not want for a moment to suggest that it is a priori impossible that Einstein was a monster. I only want to emphasize that, if he was, this could only be established on the basis of some serious evidence. Yet, without providing any such evidence, Walker is willing to insinuate, that Einstein destroyed letters by Maric indicating her contributions to their scientific work, that she wrote the doctoral thesis published by Einstein, that he took credit for her basic ideas that were "the turning points of relativity theory," and that he gave Maric his Nobel prize money to induce her to keep quiet about her role in developing the theory. Pretty good pickings for a one-page letter!

The level of Walker's logic may be assessed by his use of a quotation from one of my articles. After citing a sentence from a letter to Maric by Einstein while they were students at the Poly, I wrote that "this comment raises the intriguing question of the nature of Maric's role in their collaboration." Walker says: "For me this statement is the ^{final} proof of something I had suspected ever since Ronald Clark's Einstein: The Life and Times ... appeared in 1971." If someone interprets raising a question as providing a proof, it is hard to know what would constitute a disproof for him. If Walker has looked at the "Introduction" to Vol. 1 of the Einstein Papers, he must be aware of the summary sentence we ^{Pauls} wrote on this topic:

Although the possibility that she played a more significant part cannot be excluded, the available evidence suggests

that [Maric's] role was that of a sounding board for Einstein's ideas, a role also played on occasion by his friends Michele Besso and Conrad Habicht (pp. xxxix-xl).

Walker's expression of his desires is straightforward:

I cannot help but see Mileva and Albert Einstein working as a team, hoping together to achieve the kind of recognition that had come to Pierre and Marie Curie.

He quotes another sentence from my article:

[Einstein's] letters to [Maric] contain references to joint study of books, requests for her to look up data, and one or two other mentions of joint work; but these letters give no indication of any ideas she contributed to their work.

Undeterred by this lack of evidence, he goes on:

Yet only ten letters from Mileva to Albert Einstein from this period have been found. One may wonder if there were other letters that for some reason were not so carefully kept.

The implication is clear: The evidence must have been destroyed. Why? Because this belief makes it ^{possible} for Walker to continue seeing Mileva and Albert "working as a team." In fact, Walker has intuited the division of labor within this team:

I cannot help but feel [again that phrase-- Dr. Walker really must learn to keep those feelings under control!] that... those most basic capricious [sic] ideas that were the turning points of relativity theory came from Mileva, while the mathematics and proofs came largely from Albert.

Parenthetically, let me note that you can have it either way you like: Go with Dr. Walker, and Mileva gave him the important ideas, and Albert just filled in the mathematical details; go with Dr. Troemel-Ploetz, and Mileva did the crucial mathematics. What do the details matter, so long as Einstein was a plagiarist who published the whole thing under his name? .

We shall soon return to Mileva the mathematician, but let us get back to Walker's visions. Suffice it to say that, apart from one reference to "our work on the problem of relative motion" (Einstein to Maric, March 1901), there is not a shred of evidence known to me indicating that Maric worked on the subject. Of course, I cannot assert categorically that she did not; I merely ask that we weigh the probabilities in the light of all the available evidence.

Let us look, for example, at a similar case, in which we happen to have a little more evidence. This is the case of Einstein's very first paper, on capillarity. Here, too, Albert wrote to Mileva: "I have given him [who is not important] a copy of our paper" (letter of May? 1901, Doc. 107, Vol. 1, p. 300). This seems at least an equally clear case, and even more impressive since it refers to an already-published paper rather than to some still-nebulous ideas in 1901 on relative motion that only bore fruit in radically altered form four years later.

But in the first case, we happen to have two other pieces of evidence. Six months earlier, Einstein had written to Maric:

The results on capillarity that I recently discovered in Zurich, seem in spite of their simplicity to be completely new. When we get to Zurich, let's try to collect empirical data on the question with the help of Kleiner [Professor of Physics at the University of Zurich]. If a law of nature results, then we'll send it to Wiedemann's Annals [of Physics, a journal] (letter of 3 October 1900, Doc. 79, Vol. 1, p. 267).

why is he using we? This obviously a strong man in love. But a great tendency to project his love.

Here, Einstein clearly refers to his ideas, although he contemplates their doing various things with these ideas of his. And two months later, Mileva writes to Helene Savic, her close friend and confidante:

Albert has written a paper on physics, that will soon probably be published in the Annals of Physics. You can picture to yourself how proud I am of my dear treasure. It is in fact no every-day piece of work, but very significant, on the theory of fluids. We have sent it privately to Boltzmann, and really would like to know what he thinks of it, we hope that he will write to us.

By the way, she is really exaggerating the importance of the work, but she's in love too.

She here asserts that he wrote the paper, taking no credit for herself under circumstances where this would have been quite natural, and in no way endangering his career [one reason that has been alleged for her agreement not to sign their supposedly joint papers is that this would have been detrimental to his search for a job].

If we did not have these two letters, but only Albert's

we would be in exactly the same position as we are in the relative motion.

reference to "our paper," it would be natural to conjecture that it was based on joint ideas and jointly written. But we just happen have contrary evidence in this case. I suggest that this shows the need for extreme caution in drawing conclusions for the relativity case from Einstein's one comment. I remind you that our lives are ruled by a system of law, according to the principle that the accused is innocent until proven guilty. I would hate to think that-- with whatever noble motivations-- the history of science is going to be rewritten on the basis of the principle that one is guilty until proven innocent.

Einstein's preserved letters to Maric from 1899-1901 are studded with passages containing ideas that, with hindsight, we can see contain the beginnings of the theory of relativity. [I have translated and discussed these passages in an article in Physics Today: "Einstein and Ether Drift Experiments," May 1987, pp. 45-47]. None of Maric's preserved letters-- some of which are direct replies to his-- contains anything on this subject, or indeed on any of the many topics in physics about which he wrote to her. True, only ten of her letters to him are preserved, compared to fourty-one of his to her; but you could not pick ten of his so devoid of discussions of physics. Indeed, at times one might be tempted to accuse him of callousness in continuing to discuss physics at times of great personal stress in both their lives; but the fact remains that you can't get away from physics in his letters, while there is none in hers. This proves nothing, of course, and there is always the possibility that her

masterpieces have all been lost; but what are the probabilities? If we are to grant all possibilities equal rights, then why not entertain the following possibility? Maric was totally without scientific talent; Einstein was able to carry her through all her course work and wrote her final diploma work for her. But he was unable to take the final diploma examinations for her, and this explains why she failed them not once, but twice. I don't for a moment believe this fantasy of mine; but the point is that there is just as much-- or as little-- evidence for it as for Dr. Walker's effusions.

III

Maric's failure to graduate from the ETH brings us to Dr. Troemel-Ploetz's evocation of "Mileva Maric, the Woman Who Did Einstein's Mathematics." As I write this, I know nothing of Dr. Troemel-Ploetz's views beyond the title of her talk, since she has published nothing on the topic. A newspaper article about her, which she kindly sent me, mentions "her work on language and psychotherapy" [Lancaster, Pa. Intelligencer Journal for Monday 12 September 1988]. So all I can do is to discuss the only objective evidence that we have for Maric's mathematical talents, her grades at the ETH. During their first year there, she and Einstein took several mathematics courses ^{that} ~~which~~ were graded. Her grades are never higher than his, and are lower in several of these. He got a total of 32 1/2 out of a possible 42; she got a total of 30. Maric twice failed the final diploma examination. We can compare her grades the first time (1900) with Einstein's,

since they were the only two physics students to take the exam that year. In theoretical physics he got 5 out of a possible 6, she got 4 1/2; in practical physics they both got 5; in astronomy he got 5, she got 4. His diploma work (an independent research project) got 4 1/2, hers got 4. So far they are rather closely matched, her grades being slightly lower than his. The one big divergence in their grades is in mathematics: he got 5 1/2 in the theory of functions, she got 2 1/2 (see Doc. 67, Vol. 1, p. 247, for these grades). Nor was her low mathematics grade a one-time fluke: when she retook the examinations the following year she got a grade of 3 1/2 in the theory of functions, while the two other physics students who took the ^{same} exam got 5. One might be tempted to speculate that she was the sort of person who has difficulty in taking examinations even if well-versed in a subject; but her creditable grades in other subjects argue against the existence of any such examination phobia.

How ignorant
only had to
explain her
but different
bias.

Incidentally, if Maric had written Einstein's Ph. D. Thesis, as Walker suggests (without a shred of evidence, I emphasize again), we would have to convict her of a serious mathematical error in that Thesis, for which we now hold Einstein responsible. [For details on this error, see Vol. 2, Doc. 15 and the preceding headnote on Einstein's doctoral thesis.]

Maric's failure to graduate from the ETH has sometimes been attributed to her not taking the final examination,² which is

2. The only biography of Maric incorrectly suggests that she did not take the final diploma examination. It states: "Like Albert Einstein, Mileva Maric also obtained a leaving certificate

not such a 02
false, or even to a school policy at the time of not granting diplomas to women, which is equally incorrect.³ Indeed, while Maric was there, two women graduates were hired as Assistants by other Sections of the school. I cite this obviously low number only to prove that it was possible for women graduates to become Assistants at the ETH; it seems clear from some of the letters that Maric had hopes in that direction. While I do not want to minimize sexism at the school-- the subject of women at the ETH has not yet been studied in sufficient detail to permit comment on this question⁴-- it is a fact that many women attended the ETH

[Abgangszeugnis] from the Polytechnic with the date of 2 August 1900. The reason why, in spite of her equivalent achievements in the last two years of study, she did not take the diploma examination like him is unknown. That she wanted to is indubitable" [Desanka Trbuhovic-Gjuric, "Im Schatten Albert Einsteins/ Das tragische Leben der Mileva Einstein-Maric" (Bern/Stuttgart: Verlag Paul Haupt), 1983, p. 38].

3. The first woman entered the ETH in 1871, the first woman was awarded a degree in 1877 (Gottfried Guggenbühl, Geschichte der Eigenössischen Technischen Hochschule in Zürich (Zurich: Buchverhandlung der Neuen Zürcher Zeitung, 1955), pp. 97-98). Both were Russians. The first Swiss woman graduated in 1895 (Klaus Urner, "Vom Polytechnikum zur Eidgenössischen Technischen Hochschule: Die ersten hundert Jahren 1855-1955 im Ueberblick." In Jean-Francois Bergier and Hans Werner Tobler, eds. Eidgenössische Technische Hochschule Zürich 2955-1980/ Festschrift zum 125jährigen Bestehen (Zurich: Verlag Neue Zürcher Zeitung, 1980), pp. 17-59; see pp. 52-53).

4. The only work known to me on the subject is a typed and duplicated text entitled "Die ersten Diplomatinen der ETH Zürich/ Provisorische Verzeichnis" (Zürich: Wissenschaftshistorische Sammlungen der ETH Bibliothek, 1987). I thank Dr. Beat Glaus of the ETH Bibliothek for sending me a copy of this document, and for informing me that it was prepared by Frau Verena Larcher, also of that library.

at that time precisely because a number of other technical schools and universities were still closed to them (e.g., Vienna).

I have compiled the following statistics for Section VI, the section that trained teachers of mathematics and science, ^{the one} and that Maric and Einstein attended [figures from the ETH school programs]. The years listed include those Maric and Einstein attended (1896-1900), as well as the ones just before and after (she also attended the summer semester 1901 as a repeat student as part of her second attempt to graduate):

YEAR	VIA F	VIA M	VIB F	VIB M	TOTAL F	TOTAL M
1895/96	3	7	5	17	8	24
1896/97	4	16	5	17	9	33
1897/98	1	20	5	22	6	42
1898/99	1	20	2	23	3	43
1899/1900	1	23	6	23	7	46

Thus, during this period about one-sixth of the students in Section VI were women; although Maric was the only woman in VIA during several of her years there, there were always several other women in Section VIB, some of whom did graduate. So it would be hard to attribute Maric's difficulties in graduating to her supposedly unique position as a woman in Section VI.

All this evidence is not offered as proof that Maric was no mathematical genius. The point is that there is no evidence that she was particularly gifted mathematically, while there is some evidence that she was not. It is no service to her memory, to an understanding of her difficult situation, or more generally to an understanding of the real problems confronting women trying to start a career in science at the turn of the century to make unsubstantiated claims about Maric's abilities.

IV

Perhaps the most serious drawback to ~~attempts to make~~ claims for Maric's scientific abilities that appear to be highly exaggerated on the basis of all available evidence are the disservice they do to Maric's legitimate claims to our attention. Two questions come to my mind at once in this connection:

1) The question of what became of women of average talent in the sciences at the turn of the century-- indeed what becomes today of such women, who are not Marie Curies or Sonia Kovalevskas. Maric's life story could provide material for an

By making examples
of her side: what happens to women of average?

excellent case study of the fate of such a woman.

2) The question of the evolution of her relationship with Einstein, ^{which} gives Maric a more unique claim to attention. Einstein's letters to her published in Vol. 1 of the Einstein Papers manifest an early emotional dependence ^{on her} that seems later to have grown into an emotional coldness and even hostility on his part, ^{which} ~~that~~ led to, and continued beyond, their separation and divorce. To understand the development of this relationship, there is need for the intuition and tact of a master biographer rather than the facile skills ^{usually associated with} of an advocate trying to win a case.

In the interests of "truth in advertising," I feel obliged to tell you that Lew Pyenson recently wrote an extremely critical review of The Collected Papers of Albert Einstein, Vol. 1, The Early Years [I have available copies of his review and of ~~the~~ editor's reply]. His review is entitled "Just the facts," which is presumably meant as a pejorative comment on pedestrian spirit of the editorial work on that volume. I am well aware of the inevitable ambiguities involved in trying to draw a hard and fast line between "objective" facts and such "subjective" things as comments, opinions, interpretations, etc. Nevertheless, as a goal, I find nothing objectionable in the statement that, in Vol. 1, the editors were trying to establish the basis for a factually accurate account of Einstein's early years. I hope that the examples given in this paper may help to persuade you that the goal of establishing a base line of "just the facts," from which one may then take off ^{with} ~~on~~ more imaginative ^{-- but well-grounded} speculations about the

that such a fool
young Einstein, is not such a bad one.