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BOOK PROPOSAL

Title: EINSTEIN DICTIONARY

by

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Total 11 pages

OBJECTIVE

Since his sister Maja Einstein prepared the first biography of his brother, *Albert Einstein, Beitrag für sein Lebensbild* (1924), more than 50 biographies have appeared on the originator of the theory of relativity, Albert Einstein. The objectives and qualities of these biographies vary significantly. Some were written by family members, friends, colleagues and acquaintances of the physicist. Some were written by journalists and social historians. Some authored by physicists were purported to be scholarly. And another category can be identified as popular children and juvenile literature. Due to the varying objectives of the authors, none of these can easily be identified as a standard reference source for an easy and quick reference on Einstein.

The publication of the *Collected Papers of Albert Einstein* was also unduly delayed due to legal wrangling between the executors of the physicist's will and the Princeton University. Of the estimated 35 volumes, only the first two volumes have been published so far, beginning from 1987. The completion of publication of all the 35 volumes could well take another two decades, according to one conservative estimate. Since Einstein wrote

most of his correspondence in the German language, making it easily accessible to non-German scientists and also to students interested in science has also become an obstacle, to those who have planned the publication of the *Collected Papers of Albert Einstein.*

To facilitate overcoming these limitations in the existing Einstein literature, I propose to compile an *Einstein Dictionary*, which will incorporate facts related to the physicist's life and his contributions to science and society in short entry-format, typical to those which appear in the *Encyclopedia Britannica Micropedia.*

Tentative submission date of the complete manuscript will be Jan.1993.

ORGANIZATION OF MATERIAL

Entries will be organized in alphabetical order under the following general themes (chapters).

1. Personal Facts
2. People
3. Places
4. Events
5. Scientific Publications
6. Popular Publications
7. Bibliography of Einsteiniana
8. Einstein in Popular Culture

Tentatively, I am contemplating an average of 100 entries under each of these general themes, to a total of 1000 entries. I also realize that compartmentalization of the entries under these eight categories is an arbitrary one, since almost every entry is thematically inter-related. So, to prevent repetition, I plan to arrange the entries under the most suitable

themes, and cross-reference them to the main entry located in an appropriate category. Reference material, when available and needed, will be provided under each entry for quick and easy access to published material.

Categories 1 to 6 will provide details about Einstein's life, achievements and his intellectual contributions to the world. Categories 7 and 8 will include materials which have been published on Einstein. The rationale for category 7 is that though Einsteiniana literature is accumulating, in my opinion, it remains scattered in scientific and popular journals and have yet to be compiled in an organized fashion. Similarly, in category 8, materials relating to Einstein as an icon in popular culture (such as movies, stamps, TV and print commercials) will be indexed.

ESTIMATED LENGTH OF THE MANUSCRIPT

The estimated length of the manuscript will be 300 pages (double-spaced).

THE DESIGN OF THE BOOK

I also wish to focus my view on the design of this book. Normally, dictionaries are designed in the two-column format (per page). I have no objection to this design. But it is very cumbersome to prepare a manuscript for camera-ready printing style, in the two-column format. If camera-ready printing option is chosen, I would prefer to have the usual format where it is easier to make addition, deletion and other revisions to the text. If type-setting option is chosen for the text, I will be pleased with the two-column format. I would appreciate receiving your input on this matter.

SAMPLE ENTRIES

Herewith I'm enclosing 8 sample pages of the manuscript which provide entries under four of the general themes I have outlined above.

PERSONAL FACTS

brain

Much glamorized organ of E.'s persona in popular belief. Even a science fiction novel *Einstein's brain* by Mark Olshaker did appear in early 1980s. E. directed that after his death, though his body was to be cremated, the brain could be used for research purposes. Only after 30 years of his death, a scientific paper was published on some neuroanatomical parameters of the brain of E. in comparison to those of 11 control individuals, aged 47-80 who had died from non-neurologically related diseases. Two specific regions (areas 9 and 39) of the superior prefrontal and inferior parietal lobes in the right and left hemispheres of brain were examined and neuronal:glial ratios (supposed to be one valid measure of the status of neuronal activity) was calculated. The results of the analysis showed that, "in left area 39, the neuronal:glial ratio for the Einstein's brain is significantly smaller than the mean for the control population". But there were no significant differences between E.'s brain and the control brains in other three areas (left area 9, right area 9 and right area 39) investigated.

Wade N. Brain that rocked physics rests in cider box. Science, 1978; 201: 696.

Wade N. Brain of Einstein continues peregrinations. Science, 1981; 213: 521.

Diamond MC, Scheibel AB, Murphy GM, Harvey T. On the brain of a scientist: Albert Einstein. Exp.Neurol., 1985; 88: 198-204.

first scientific publication

E. published his first scientific paper in the journal Annalen der Physik in December 1901 at the age of 22. It's title was: "Folgerungen aus den Kapillaritätserscheinungen". Later in his life, he did not have a high

opinion of this contribution, and dismissed it as "worthless".

health problems

E. was slow to develop speech habits. At 22 years, based on the diagnosis of flat feet and varicose veins, he was declared unfit for Swiss military service. The first major setback in E.'s health occurred in 1917 during his Berlin years, when he suffered from liver ailment, stomach ulcer and jaundice. Till 1920, he was not fully recovered from these maladies. Then while traveling to Japan in October 1922, in a steamer, E. was plagued by intestinal pains and was treated by Dr.Hayasi Miyake who was a fellow passenger. In 1928 during his visit to Switzerland, at the age of 49, E. suffered a temporary physical collapse following which an enlargement in heart was diagnosed. In 1948, while residing in Princeton, N.J., E.'s surgeon Rudolf Nissen diagnosed an abdominal growth (about "the size of a grape fruit") and the physicist underwent an operation. During the last seven years of his life, E. struggled with the continuously growing aneurysm and an year before his death, he developed hemolytic anemia as well.

marriage, first

E. married Mileva Maric, who was a fellow student with him at Zurich on January 6, 1903 against his parents' opposition. They separated in March 1914, when E. chose to live in Berlin while Mileva opted for Zurich. The divorce decree between E. and Mileva was issued on February 14, 1919 and it included a statement to the effect that Mileva would be the recipient of E.'s Nobel prize money when E. receives the honor in due course. This union produced three children; Lieserl (pre-marital child, b.1902), Hans Albert (b.1904) and Eduard (b.1910). The details about Lieserl remained unknown until the publication of private letters between E. and Mileva in 1987.

marriage, second

E. married his cousin Elsa Einstein Löwenthal, three years his senior, on June 2, 1919. Elsa too was a divorcee and had two daughters Ilse (b.1897) and Margot (b.1899) by her first marriage to a merchant named Löwenthal.

Ph.D. dissertation

In 1905, E. submitted his dissertation for doctorate in philosophy in physics, entitled, "Einė neue bestimmung der Moleküldimensionen" (A new definition of molecular dimensions) to the University of Zurich. It's length was only 21 pages. Due to its primarily mathematical argument the exmination committee hesitated to approve it. So E. expanded the dissertation with another two pages and had it accepted.

wonderful year (*annus mirabilis*)

1905 is considered as the land mark year for physics in which E. published four major papers in the journal *Annalen der Physik*, while being employed as a probationary Technical Expert, Third Class, with a modest salary of 3500 Swiss francs per annum at Bern patent office. These single author publications were as follows:

1. "Uber einen die Erzeugung und Verwandlung des Lichtes betreffenden heuristischen Gesichtspunkt. Annalen der Physik, 1905; 4(17): 932-948.
2. "Uber die von der Molekular kinetischen Theorie der Wärme geforderte Bewegung von in ruhenden Flüssigkeiten suspendierten Teilchen". Annalen der Physik, 1905; 4(17): 549-560.
3. "Zur Elektrodynamik bewegter Körper". Annalen der Physik, 1905; 4(17): 891-921.
4. "Ist die Trägheit eines Körpers von seinem Energieinhalt abhängig?" Annalen der Physik, 1905; 4(18): 639-641.

PEOPLE

Anshen, Ruth Nanda

American author and lecturer, who studied under philosopher A.N.Whitehead. She worked as the editor for E. for the multi-authored eight volume series *Science of Culture*. Apart from E., she also edited the works of other intellectuals such as Niels Bohr, Werner Heisenberg and Thomas Mann, whose native languages are not English.

Teich M, Editing Einstein. *Omni*, July 1988; 10(10): 24 & 110.

Chaplin, Charles 1889-1977

British movie actor and director. He first met E. in 1926 at California. In 1931, E. attended the premier of Chaplin's movie *City Lights*, and the comedian noted that during the final scene, E. wiped his eyes, which according to Chaplin, "further evidence that scientists are incurable sentimentalists". In 1937, when E. met Chaplin again, the latter had an opportunity to watch E. playing violin. Chaplin's critique of E.'s musical talent was quit a favorable one; "Although his(E.'s) bowing was not too assured and his technique a little stiff, nevertheless he played rapturously, closing his eyes and swaying".

Chaplin C. *My Autobiography*, New York, Simon and Schuster, 1964.

Dukas, Helen

German. Secretary of E. who started work from April 13, 1928 after the physicist had suffered a temporary physical collapse in February of that year. Dukas joined E. and his family members when they moved to the USA in 1933. E. designated her as one of the executors of his will and after E.'s death, she presided over the E. archives.

Harvey, Thomas

American doctor. In 1955, Harvey was the pathologist at the Princeton, N.J. hospital, where E. died and took charge of the physicist's brain for preservation and scientific study. The only scientific paper which has been published on E.'s brain appeared in the journal *Experimental Neurology* in 1985 (see also brain, in chapter: Personal Facts).

Mach, Ernst 1838-1916

Austrian physicist and philosopher. One of E.'s mentors. In 1909, Mach was supportive of E.'s relativity theory. However by mid 1913, he rejected relativity. One of his cited reasons for rejection was lack of experimental support for the theory.

Feyeraband PK. Mach's theory of research ad its relation to Einstein. *Studies in History and Philosophy of Science* (Britain), 1984; 15(1): 1-22.

Itagaki R. Why did Mach reject Einstein's theory of relativity? *Hist. Scientiarum* (Japan), 1982; 22: 81-95.

Weyland, Paul

An obscure German propagandist, about whom E. criticised in his article published in the *Berliner Tageblatt*, Aug. 27, 1920. After the World War II, Weyland moved to the USA and has been identified as the informant to the Federal Bureau of Investigation (FBI) on E. Weyland has reported to the FBI that in 1920, E. has "admitted that he was a communist".

Hentschel K. A postscript on Einstein and the FBI. *Isis*, 1990; 81: 279-280.

Schwartz RA. Einstein and the War Department. *Isis*, 1989; 80: 281-284.

PLACES

Japan

E. visited Japan on a lecture tour with his second wife Elsa, from November 17 to December 29, 1922. It is suggested that E. accepted the offer to visit Orient, after the tense political environment in Germany which developed in the summer of 1922, in which Germany's foreign minister Walter Rathenau, whom E. knew personally was murdered. Rumors were also circulating then that E.'s life might also be in danger. While on his way to Japan, E. received the news that he had been awarded the 1921 Nobel Prize for physics. Physicist Niels Bohr conveyed his greetings to E. in a letter dated November 11, 1922; "I should like to convey my most heartfelt congratulations to you on the award of the Nobel Prize. The external recognition cannot mean much to you, but the associated funds will perhaps bring about an easing of your working conditions..."

E. replied to Bohr in a letter dated January 11, 1923, with a prefix, "near Singapore", in which he commented briefly about his visit to Japan. "...The trip is splendid. I am charmed by Japan and the Japanese and am sure that you would be too. Moreover, a sea voyage like this is a delightful existence for a dreamer - it is like a cloister..."

French AP (ed). *Einstein - A Centenary Volume*, Cambridge, Massachusetts, Harvard University Press, 1979, pp. 273-274.

Okamoto I, Koizumi K. Albert Einstein in Japan: 1922. *American Journal of Physics*, 1981; 49(10): 930-940.

Sugimoto K. *Albert Einstein - A Photographic Biography* (translated from the German by B. Harshav), New York, Schoken Books, 1989, pp. 77-82.

Nobel Prize in Physics for 1921

E. was awarded the 1921 reserved Nobel Prize for physics in 1922, "for his services to theoretical physics and especially for his discovery of the law of the photoelectric effect". However he has been continuously nominated for this prize beginning from 1910. Table 1 provides the details about the years in which E. was nominated, the names of scientists who nominated E. for the award and the ultimate winners of those years.

Table 1

Year	Winner	Nominees for Einstein
1910	T.D.van der Walls	W.Ostwald
1912	N.G.Dalen	C.Schaefer, W.Wien
1913	H.Kamerlingh Onnes	B.Naunyn, W.Ostwald, W.Wien
1914	M.von Laue	O.Khvol'son, B.Naunyn
1916	(no award)	F.Ehrenhaft
1917	C.G.Barkla	A.Haas, E.Warburg, P.Weiss
1918	M.Planck	F.Ehrenhaft, M.von Laue, E.Meyer, S.Meyer, E.Warburg, W.Wien
1919	J.Stark	S.Arrhenius, M.von Laue, E.Mayer, M.Planck, E.Warburg
1920	C.Guillaume	N.Bohr, W.H.Julius, H.Kamerlingh Onnes, H.A.Lorentz, L.S.Ornstein, W.von Waldeyer-Hartz, E.Warburg, P.Zeeman
1921	A.Einstein	C.L.Charlier, H.W.Dällenbach, A.S.Eddington, A.Haas, J.Hadamard, G.Jaffe, T.Lyman, E.Marx, G.Nordström, C.W.Oseen, M.Planck, C.D.Walcott, E.Warburg, O.Wiener
1922	N.Bohr	M.Brillouin, T.E.de Donder, F.Ehrenhaft, R.Emden, J.Hadamard, P.Langevin, M.von Laue, E.Meyer, S.Meyer, B.Naunyn, G.Nordström

Of those who nominated E., many had already been Nobel laureates in either physics or chemistry; Arrhenius (chemistry, 1903), Kamerlingh Onnes (physics, 1913), Lorentz (physics, 1902), Ostwald (chemistry, 1909), Planck (physics, 1918), von Laue (physics, 1914), Wien (physics, 1911) and Zeeman (physics, 1902). It is interesting to note that among these elites were two (Ostwald and Kammerling Onnes) to whom E. had applied unsuccessfully for a research assistant position in 1901. Then he did not even receive acknowledgment from these two scientists. Ostwald made amends for his initial rejection by being the first to nominate E. for the Nobel Prize in 1910.

Crawford E, Heilbron JL, Ullrich R. *The Nobel Population 1901-1937; A Census of the Nominators and Nomineees for the Prizes in Physics and Chemistry*, University of California, Berkeley, Office for History of Science and Technology, 1987.

Pais A. How Einstein got the Nobel Prize. *American Scientist*, July-August 1982; 70(4): 358-365.