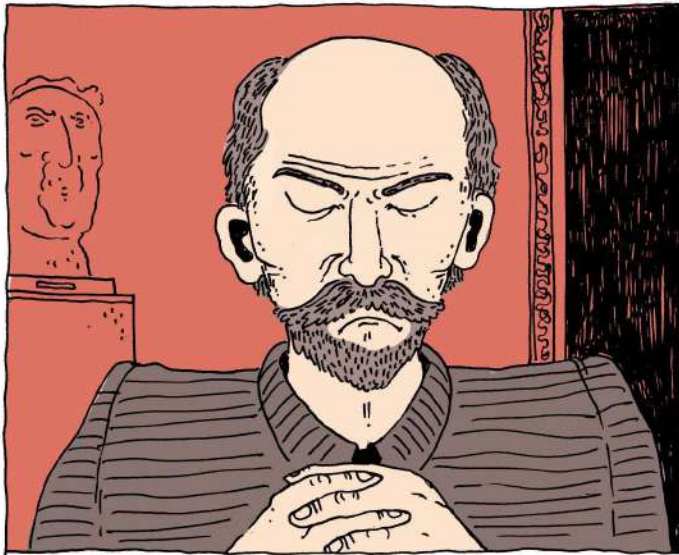


At that time, Erlangen University had 986 students: 2 were women, 1 was Emmy.





To be able to attend the lectures, Emmy needs to ask the professors for permission.

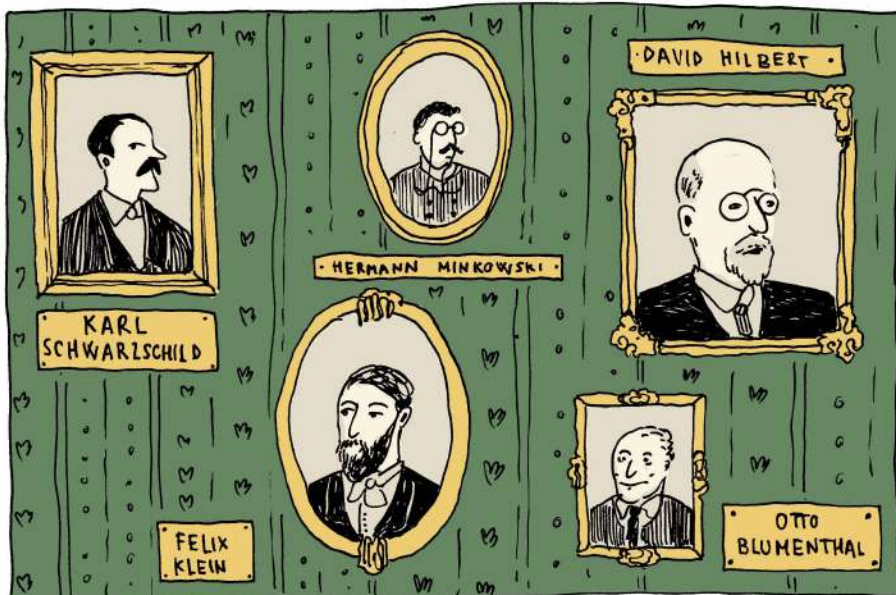


Even when the permission is granted...

Emmy can only be allowed to audit classes.



After passing the exam at the Realgymnasium in Nuremberg, Emmy spends a semester visiting the University of Göttingen.



Here, she studies under the guidance of some of the most important mathematicians and astronomers of the time.

In October 1904, Emmy goes back to the University of Erlangen to specialise in mathematics...



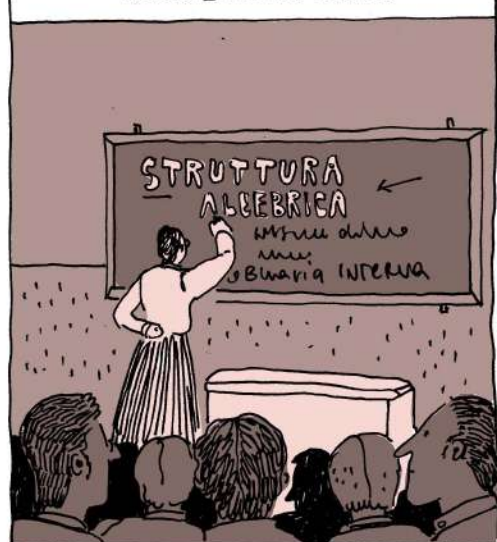
...under the supervision of Paul Gordan.



Her thesis is presented in 1907, when she is only 25. She later dismisses it.

* "Über die Bildung des Formensystems der ternären biquadratischen Form."

Between 1908-1915, Emmy works at the University of Erlangen, sometimes teaching for her father.

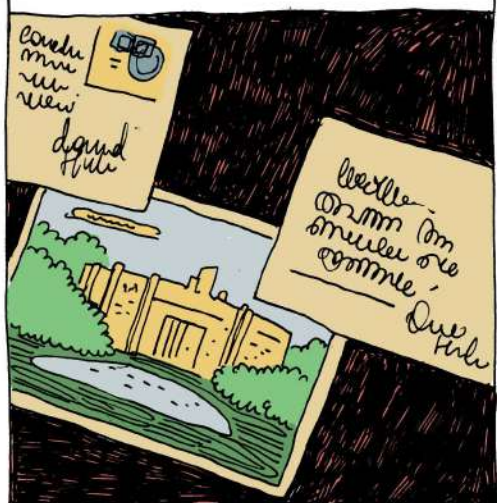


From 1911, she collaborates with Ernst Fischer, the successor of Erhard Schmidt and Paul Gordan.



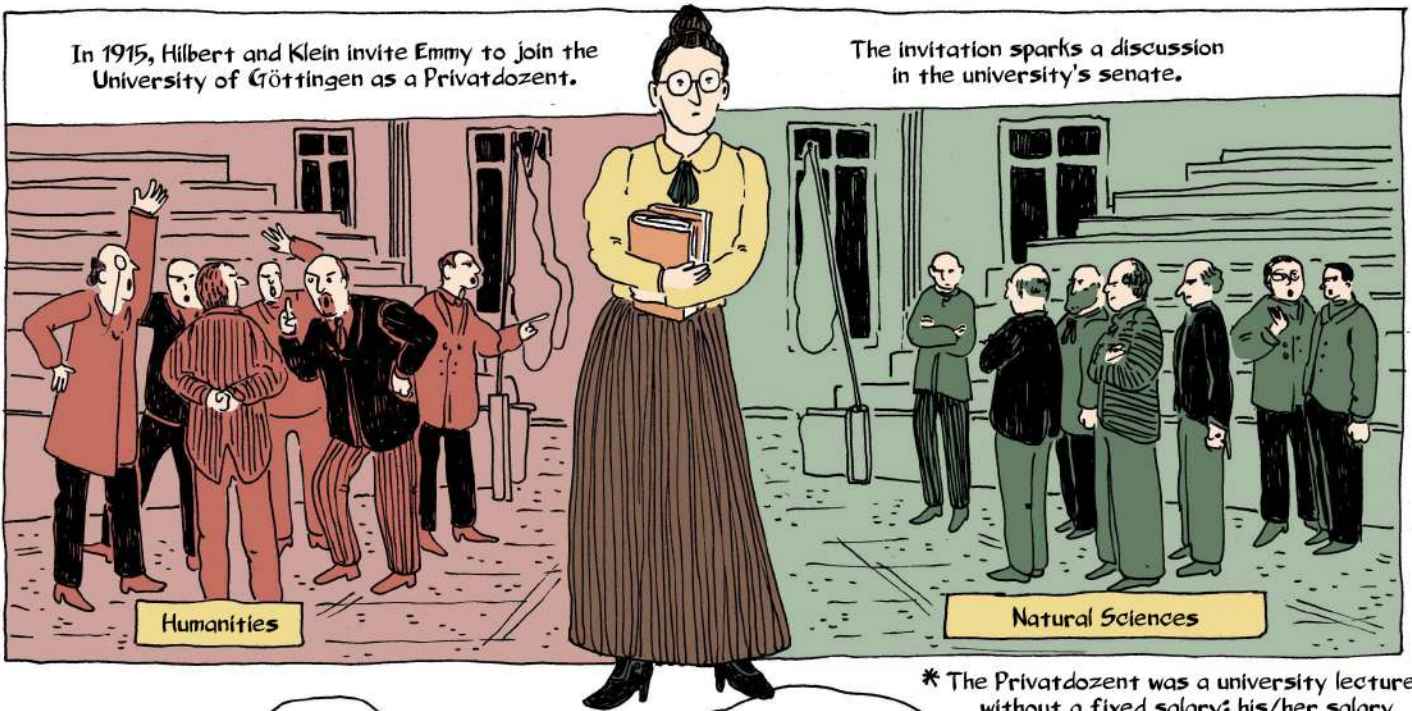
Ernst introduces her to the work of David Hilbert, in particular to his work on abstract algebra.

Even in the following years, Emmy stays in contact with Ernst, sending him postcards with her ideas about mathematics.

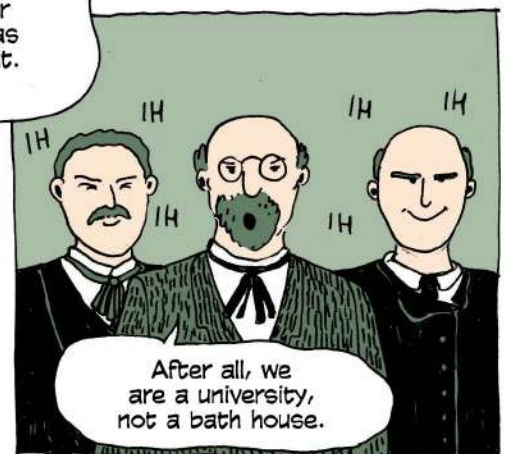
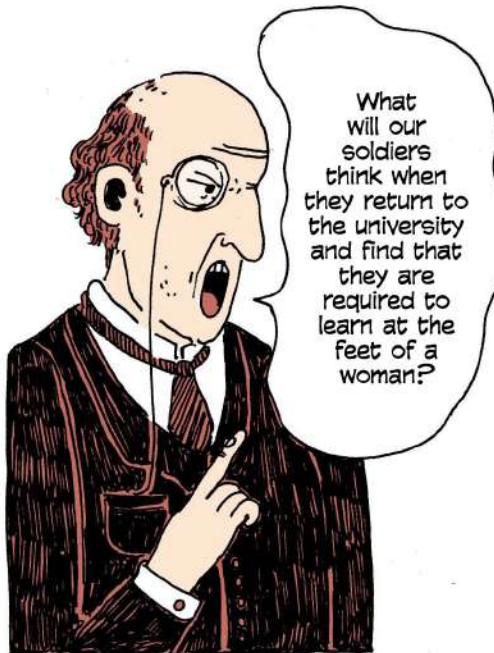


In 1915, Hilbert and Klein invite Emmy to join the University of Göttingen as a Privatdozent.

The invitation sparks a discussion in the university's senate.



* The Privatdozent was a university lecturer without a fixed salary: his/her salary came from the students, who could pay at the end of the lecture. The title and the teaching duty persists today, with no need for a salary, and students cannot pay the lecturer directly anymore.



After a short time in Göttingen, Emmy needs to go back to Erlangen...



...Due to her mother's death, her father needs her help.

After several weeks, Emmy finally moves to Göttingen.



Emmy teaches at the University, but without an official position:



Her lectures are advertised under Hilbert's name. In some cases, her name appears as teaching assistant.

In Göttingen in 1916, Emmy proves her famous theorem. American physicists Lederman and Hill state that this theorem is "certainly one of the most important mathematical theorems ever proved in guiding the development of modern physics, possibly on a par with the Pythagorean theorem".

$$j_v^r = \left(\frac{\partial L}{\partial (\partial_\nu \eta_\rho)} \partial_\sigma \eta_\rho - L \delta_{\nu\sigma} \right) x_{r\sigma} - \frac{\partial L}{\partial (\partial_\nu \eta_\rho)} \Psi_{r\rho} \Rightarrow \partial^\nu j_v^r = 0$$

If you ask a physicist or a mathematician what the theorem states, they will tell you something along the lines of...

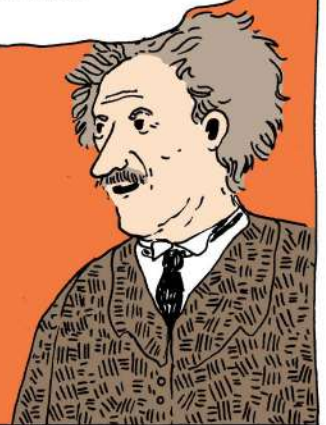
For every symmetry of the system, there is a conserved quantity.



But what does that mean? A daily example occurs when playing with marbles. When I shoot a marble from the top right corner to the bottom left one and then I repeat this action from the new position, I do not have to use a different force to do that, as the physical laws are the same in both corners. This is due to the momentum conservation. Momentum is a quantity that gives me an idea of how much the object depends on the space. So, if the system does not depend on the spatial position, momentum is conserved.

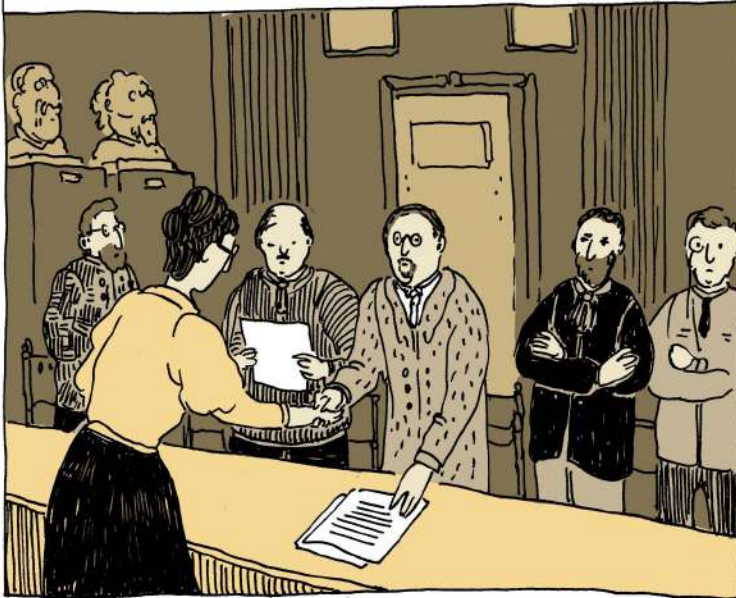


Going a little further, we find the theory of relativity, or: physical laws are the same for every observer. But is it true? Couldn't they change with time? And here is where the theorem comes into play: if the energy is conserved, physical laws do not change with time.



The German revolution in 1918-19 changes political and social beliefs, including the position of women in the German society.

One of the consequences is that Emmy can proceed with the Habilitation exam and officially become a Privatdozent.



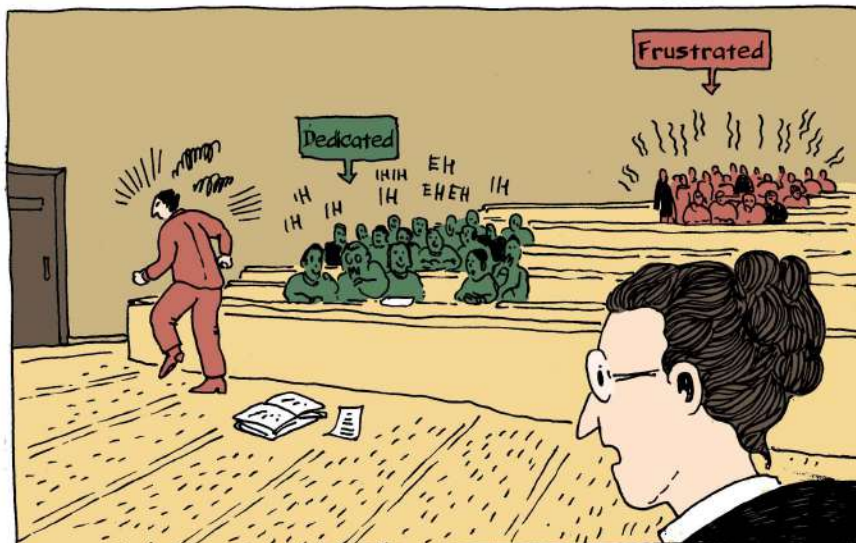
In 1922, 7 years after her move to Göttingen, she is awarded the title of Lehrbeauftragte für Algebra and, finally, receives a salary.

In her years in Göttingen...



Emmy supervises the work of several students, also known as "Noether's boys".

Her teaching style is based on spontaneous discussions on the latest discoveries in the field of mathematics.



Students are divided in two categories: "the dedicated", who enthusiastically follow the discussions, and "the frustrated", who feel alienated by the focus required to follow



Due to economic hardships, Emmy adopts a frugal lifestyle and she is not concerned with appearances.



In the Winter of 1928-29, Emmy goes to Moscow to visit P.S. Alexandrov, a soviet mathematician with whom she has collaborated in Göttingen.



They say that her beliefs got her evicted from the pension in Göttingen she was living in.



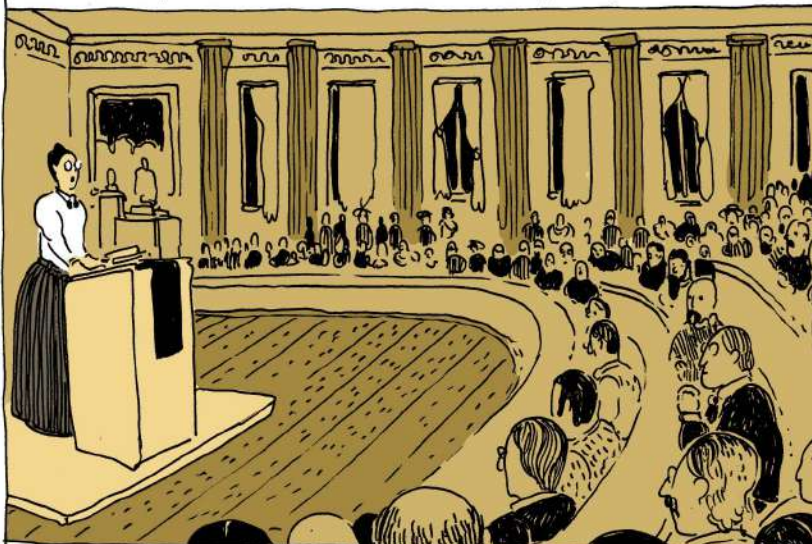
After the other tenants complained about living with a "Marxist-leaning Jewess".

In 1932 Emmy receives the Ackermann-Teubner Memorial Award together with Emil Artin...



But she was never admitted to the Göttingen Academy of Science, nor the title of full professor.

In November of the same year, she takes part in the International Congress of Mathematicians in Zurich, where she presents some of her results in a plenary session.



It's the high point of her career.

In 1933, with Hitler in power, things get harder.



Emmy keeps welcoming her students in her apartment, to keep on discussing mathematics.



One day a student comes in wearing his uniform of the paramilitary organisation Sturmabteilung (SA).



But Emmy keeps calm...



Hans...
Please, follow your thoughts...

And that day when Viktor came in wearing his SA uniform! I could not believe that!

AHAH
AHAH



And she laughs about it afterwards.



Like many other professors and researchers, Emmy looks for a job abroad. She receives two offers: One from the Sommerville College of Oxford and the other from the Bryn Mawr College.

After negotiations with the Rockefeller Foundation, Emmy receives fundings and starts working in Bryn Mawr at the end of 1933.



In Princeton, the men's university, where nothing female is admitted, was not welcomed.

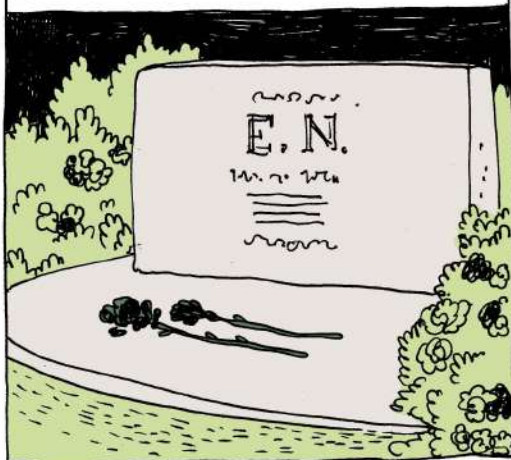


In 1934 Emmy had a job as a lecturer at Princeton.

*

Due to economic hardships, Emmy adopts a frugal lifestyle and she is not concerned with appearances.

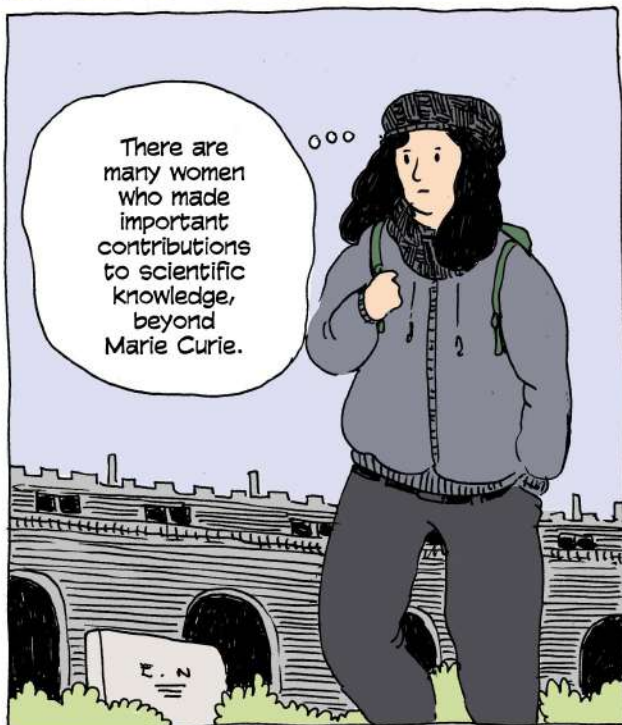
In 1935, doctors find a tumor in her pelvis. After some days of rest, she undergoes surgery. Despite signs of recovery in the days following the operations, on 14th April her temperature reaches 42.8°C (109°F) and she dies.



Many remembered you: Pavel Alexandrov, Hermann Weyl... Albert Einstein wrote your obituary for the New York Times.

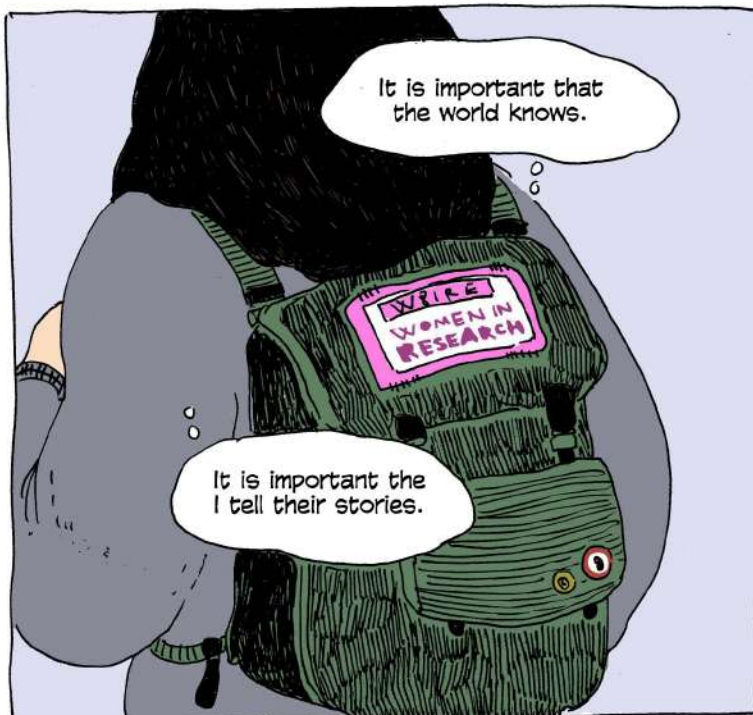


There are many women who made important contributions to scientific knowledge, beyond Marie Curie.



It is important that the world knows.

It is important that I tell their stories.



The efforts of most human-beings are consumed in the struggle for their daily bread, but most of those who are, either through fortune or some special gift, relieved of this struggle are largely absorbed in further improving their worldly lot. Beneath the effort directed toward the accumulation of worldly goods lies all too frequently the illusion that this is the most substantial and desirable end to be achieved; but there is, fortunately, a minority composed of those who recognize early in their lives that the most beautiful and satisfying experiences open to humankind are not derived from the outside, but are bound up with the development of the individual's own feeling, thinking and acting. The genuine artists, investigators and thinkers have always been persons of this kind. However inconspicuously the life of these individuals runs its course, none the less the fruits of their endeavors are the most valuable contributions which one generation can make to its successors. Within the past few days a distinguished mathematician, Professor Emmy Noether, formerly connected with the University of Göttingen and for the past two years at Bryn Mawr College, died in her fifty-third year. In the judgment of the most competent living mathematicians, Fräulein Noether was the most significant creative mathematical genius thus far produced since the higher education of women began...

* Due to economic hardships, Emmy adopts a frugal lifestyle and she is not concerned with appearances.

ENGLISH TRANSLATION BY:
CLIO AGRAPIDIS