

## **Rasmus Malling-Hansen - the Danish Inventor-Priest.**

**Scrutinizing old descriptions of Rasmus Malling-Hansen, written by his contemporaries, it strikes you what a deep impression he must have made on those who met him in the flesh. He is described as having a military officer's figure with the charisma of an artist – and as an optimist who can be described by only using the most fiery colours – quoting some of the characteristics provided by his contemporaries.**

At the time of his sudden death in 1890 – only 55 years old, this man hailing from a humble background in the Danish countryside had become an internationally known figure, having put Denmark's name on the international map, a friend of the king, had given lectures at international medical congresses and at Nordic teacher's meetings and had sold patents in countries all over Europe. Besides, he was a much beloved father figure for many of society's "outcast". He dedicated his professional career to fighting for the cause of the weakest, the deaf-mute children who could neither hear nor speak, and in everything he undertook he was an innovator and a visionary reformer, for whom nothing was too small or insignificant not to be worth further investigation. His work with the deaf-mute was also the foundation for his inventions and scientific research. The idea for his most well-known invention – the writing ball, came from his observation of the speed of the sign language in comparison with handwriting, and his ground-breaking discoveries of children's growth in cycles had their origin in the framework of his care for the welfare of deaf-mute children and investigations into whether their growth and development were satisfactory.



*Rasmus Malling-Hansen portrayed in 1860, 1877, 1885 and 1887, respectively. All photos are from a private collection.*

### **Childhood and Youth.**

Rasmus Malling-Hansen was born at Hunseby, Maribo, on the island of Lolland in 1835. His mother, Juliane Matzen, was a daughter of the lessee of Knuthenborg Manor, however she grew up in the home of teacher and cantor Rasmus Malling and his family. Rasmus Malling also became foster father of Juliane's children after her husband and the father of her three sons, the teacher Johan Frederik Hansen, had died of typhus already after 5 years of marriage. After his death Juliane Hansen moved back into the house of her foster father, who assumed responsibility for Hans Rasmus (4 years), Thomas Jørgen (2 years) and Johan Frederik (1 year).

Juliane is referred to as being a very wise and sensible woman, and Rasmus Malling, hailing from Porsgrunn in Norway, was a courteous man, conversant with the company of counts and dukes, and growing up with these two people contributed to developing the self-confidence of Rasmus, as well as his ability to assert his opinions in a natural manner. Besides, he was a very able boy, noticed for his many talents, particularly in math and drawing, and his warm-hearted personality made him loved by everyone he met.

### **Education at the Jonstrup College and at the Faculty of Theology.**

Already at the time when he was studying for his confirmation as a young man, allegedly Rasmus had decided one day to become a priest; however, the prospects for a higher education were not bright, and so he began as an apprentice to a house-painter, and it was said that he never forgot his old skills. Many years later, when a house-painter had done a poor job on a door of the Institute for the Deaf-Mute, Malling-Hansen commented upon this, and the house-painter then asked whether perhaps he himself could do it better. And Malling-Hansen took him up on it and by himself painted the door to his full satisfaction.

But somehow the rumours of the talented boy also reached the count of Knuthenborg, and thanks to his financial support Rasmus was able to enroll at the teacher training college of Jonstrup, where he passed his final exam in 1854, after merely two years of studies, with excellent marks. He worked for some time in the count's employment as a private tutor, for his confirmation priest, and also as an assistant teacher at Maglemer School, before starting his theological studies in 1858 – still sponsored by the count. However, this did not last very long – in 1859 Malling-Hansen began his lifelong career at the Royal Institute for the Deaf-Mute in Copenhagen, and this provided him an opportunity to fully develop his rich personality and make good use of his many talents. Interrupted by a couple of years as principal of the Institute for the Deaf-Mute in Schleswig, as well as some additional time dedicated to the theological studies, Malling-Hansen returned to the Institute for the Deaf-Mute in Copenhagen as a fully trained Bachelor of Theology in 1865, taking over the position as principal after the man that became his father-in-law that same year, Søren Johan Heiberg.



*The teaching staff of the Royal Institute for the Deaf-Mute in Copenhagen, photographed in 1861. Malling-Hansen is standing in the middle of the back row. On his right, seated, is the then principal, Søren Johan Heiberg, later to become Malling-Hansen's father-in-law. Photo: The Historical Society of the Deaf.*

## **Husband and Caring Family Man.**

As a young man it is said that Malling-Hansen met a woman who made a lasting impression on him, Anna Steenstrup, the daughter of the local mayor cum chief of police in the district of Frederiksberg, Copenhagen. However, with the great social divides predominant in those days it was unthinkable that there could be a match between the young lad from the lower social layers of society and Anna, who belonged to the top social stratum of Copenhagen. Instead, Malling-Hansen was engaged and later married to Cathrine Georgia Heiberg, and already a year after their wedding their first of a total of seven daughters was born – Juliane (1866), followed in rapid succession by Engelke (1868), Emma (1869), Zarah (1870), Johanne (1873), Karen (1874) and Marie (1875). Malling-Hansen was a very loving and caring father, closely monitoring his daughters' health and welfare, and the many letters that have been preserved from this period bring out the picture of a family with close and heartfelt ties – Malling-Hansen never forgot his mother and his two brothers and maintained a close relationship with them throughout his life.

However, Malling-Hansen was not spared tragedies in life – in 1876 he lost his beloved Cäthe in childbirth complications when she was delivering one more girl, and this must have been a very hard blow for Malling-Hansen's sensitive mind. We don't know who helped him with the 7 daughters through these tough years, but after a few years he meets the love of his youth once again, and she had never forgotten her dear Rasmus and was still single – and in 1880 they married, Anna becoming a loving stepmother for the girls – especially for the younger ones.



*From left: Malling-Hansen's mother, Juliane Hansen (1809 – 1885), his first wife Cathrine Georgia Heiberg (1841 – 1876), the seven daughters, Juliane, Engelke, Emma, Zarah, Johanne, Karen and Marie, and lastly his second wife, Anna Steenstrup (1842 – 1897). Photos 1, 2 and 4 from a private collection, photo 3, copyright of the Heiberg Museum in Sogndal.*

## **Visionary Pedagogical Reformer.**

As principal of the Institute for the Deaf-Mute, Malling-Hansen promptly embarked upon a number of initiatives in order to improve the conditions of deaf-mute children. The rate of sickness at the institute was high, as well as the mortality rate. In the initial period of the institute, 1839 – 1857, as many as 31% of the children died in the course of their stay, primarily succumbing to lung diseases. This was at a very early stage of the Danish education system, and there was still very poor understanding of children's need for play and rest. They had to get up already at 5 o'clock in the morning, and in addition to the education they also had to work in the institute workshops every day until late evening. Malling-Hansen managed

to increase and improve the outdoor recreation area, he made sure that they would work regularly outdoors in the garden and organized for them to have more free time. He also understood that the very limited space of the school had an important bearing on the spread of contagious diseases and made sure to make good use of all available teaching space. He prepared plans for an additional building and also for the installation of electricity, but unfortunately these plans were not approved by the authorities.

In 1868 Malling-Hansen undertook a study tour in Europe, the purpose being to study the teaching of deaf-mute in various countries. He became influenced by new ideas from Germany and wanted to try out new teaching methods also in Denmark. The deaf-mute pupils constituted a very heterogeneous group, ranging from what we today would call intellectually challenged, who could neither hear nor speak, to completely sane and otherwise normal pupils with some degree of hearing and speaking capacity. They were all provided the same kind of teaching according to the sign method. From an early stage on Malling-Hansen understood that it would be much more appropriate if the pupils were divided in accordance with their degree of hearing capacity and were taught by using methods better adapted to their abilities. Consequently he pushed for the deaf-mute to be divided into three groups, namely the 'proper deaf-mute' who had no degree of hearing or ability to talk; the 'not entirely deaf-mute' with some degree of hearing and/or speaking; and finally the mentally challenged deaf-mute who not only lacked the ability to hear and speak but were also mentally handicapped. In cooperation with the Keller Institutions it was proposed in 1867 to divide these groups between the two institutions, and it was decided that the 'proper deaf-mutes' were to be taught at the Institute for the Deaf-Mute in accordance with the sign method, while the Keller Institutions would teach the 'not entirely deaf-mute' in accordance with the speech method (lip reading), as well as the mentally challenged deaf-mutes, who would continue to be taught by means of the sign method.

This initiative was the first in the Nordic countries aiming at providing the deaf-mutes an education adapted to their specific capabilities, and it made Denmark a pioneer country in this field, initiated by Rasmus Malling-Hansen. He assumed a central role in the Nordic field of education for the deaf-mute and, among other things, chaired the chapter of deaf-mute issues at the big Nordic meeting for "abnormal schools" (= special education) in Stockholm 1876; the Danish authorities made use of him in the context of public planning commissions, and in 1890 he gave a major lecture about the development of the education for deaf-mutes in Denmark, addressing educationalists from all Nordic countries.



*Rasmus Malling-Hansen also had a very close relation to his two younger brothers through his lifetime. They were also educated at the Jonstrup Teachers seminar, thanks to economic support from the Count of Knuthenborg and worked as teachers all their professional life. Photo to the left: Johan Frederik Hansen, 1839-1912 To the right: Thomas Jørgen Hansen, 1837-1919.*





*Teachers and children at the Royal Institute for the Deaf-Mute in Copenhagen, photographed in 1881. Malling-Hansen is number 4 from the right in the back row. Photo: Historical Society for the Deaf.*

One of the really big battles in the deaf-mute environment during the 19.th century was which teaching method was the best – the oral/speech method or the sign method. The followers of the oral method grew ever stronger and increased in numbers, but Malling-Hansen believed that both methods were justified, but for different groups of deaf people. His two most important opponents in this conflict, Johan Keller and Georg Jørgensen, were of the opinion that all the students should be taught by the speech method and Malling-Hansen accepted that some of the pupils would be benefited by this method, and this aspect – in conjunction with the constantly increasing need for space, since the pupil target group was growing constantly- made him in 1879 present a proposal for the establishment of a new public Institute for the Deaf-Mute, based on the oral method, suggesting that such an institute be situated in a provincial town in Jutland. The authorities accepted his proposal, and in 1880 the Institute for the Deaf-Mute in Fredericia was established.

The last time the authorities made use of Malling-Hansen's great competence was when he led the public commission established in 1888 with the authority to analyze and plan future organizing of education for the deaf-mute in Denmark, and Malling-Hansen served as secretary, formulating the proposal. It was discussed by the political establishment in 1890 and practically all the proposals of the commission were put into practice, albeit this was only after Malling-Hansen's death. It was decided to set up yet another school for the deaf-mute at Nyborg, the state took over the private institutes for the deaf-mute after Johan Keller, and all deaf-mute pupils were from now on enrolled for a year at pre-school level in Fredericia. This served to examine and evaluate their abilities to learn and to hear, such that they could continue their education in the following year at the institute where method and teaching modes corresponded in the best way possible with their abilities. By this, Malling-Hansen's visions had been implemented – thanks to his initiatives a solution had been found that satisfied the needs for adapted education in accordance with the most modern pedagogical methods; deaf-mute pupils were provided very satisfying living conditions, and the need for additional space had also been well accommodated. During Malling-Hansen's later periods as principal the mortality at the institute had gone down markedly and was by now lower than

for corresponding groups of children with hearing ability. At Malling-Hansen's death in 1890 the deaf-mute community showed their gratitude by appearing in their hundreds at his funeral. They had lost a true friend and a caring father figure and protector!

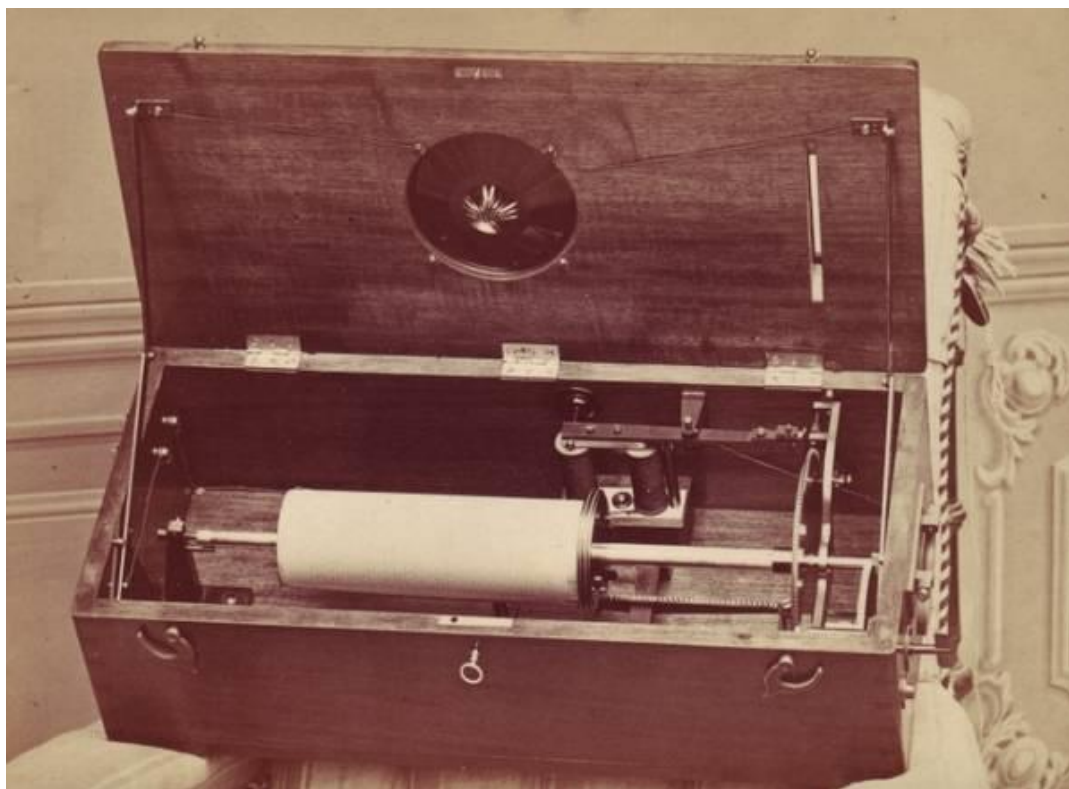


*The Royal Institute for the Deaf-Mute in Copenhagen photographed in 1886. Probably the photo was taken at the 20 years anniversary of the Deaf Society of 1866. Personally I believe it is Malling-Hansen standing as number three from right. At the far right inspector Lassen, later Ketting, is standing, and one can also see the founder of the society on the left side of Malling-Hansen, and also Malling-Hansen's later son in law some places to the left of Malling-Hansen. Photo: The Royal Library.*

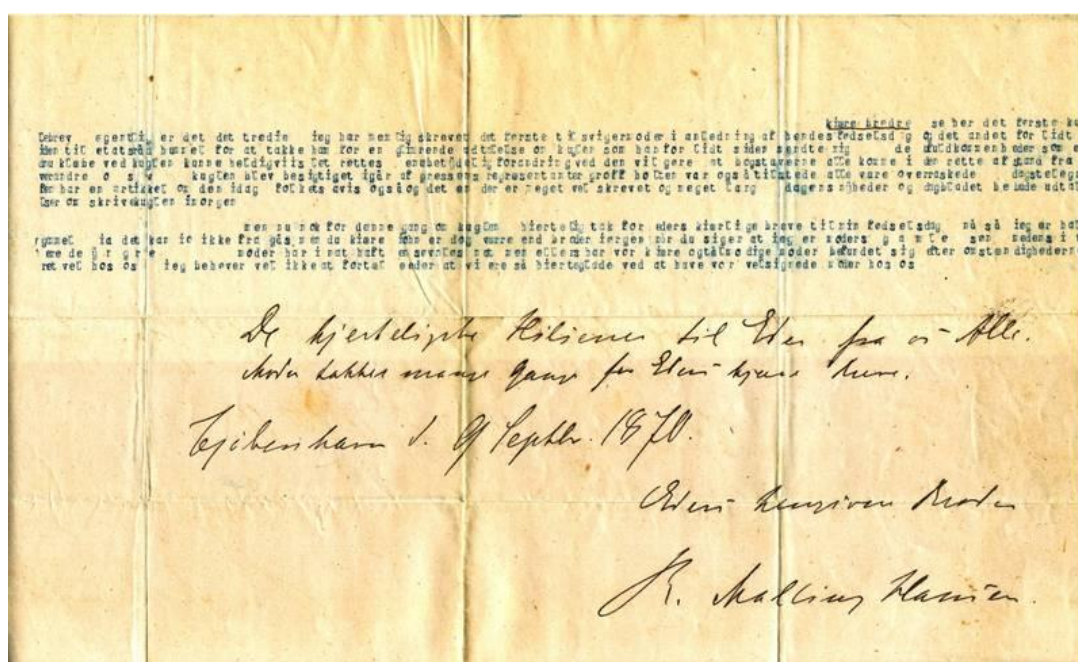
### **Inventor of the Writing Ball.**

Parallel with his tasks as a principal, Malling-Hansen also worked on the idea of constructing a machine for speed writing. It is feasible that he wanted to help the deaf-mute to be able to express themselves in writing, but at any rate we know that it was the very speed by which one can communicate, using sign language, that gave him the idea of his typewriter. By means of hand signs one could "speak" up to 12 signs per second, while it was only possible to write a mere 4 signs per second, using pen and paper. It was this dexterity of the hand that Malling-Hansen wanted to take advantage of in designing a typewriter, and from Johanne Agerskov's book "Who was the Inventor of the Typewriter?" we know that Malling-Hansen in 1865 was conducting experiments with a hemisphere of porcelain on which he had drawn the letters, and using his brother-in-law as timekeeper he experimented with alternative placements of the letters on the hemisphere with a view to achieving the speediest typing. He ended by placing the letters most frequently used in such a way that they were pressed down by the deftest fingers. In addition, he put the vowels on the left hand side and the consonants to the right, such that the typist would use, as often as possible, a finger from the left and right hand, alternating each time. The end result of these measures was that one could type

extremely fast on the writing ball, and 800 signs per minute were realistic to achieve for a trained writing ball typist. On the first model, patented by Malling-Hansen in 1870, the paper was put on a cylinder inside a wooden box, and the cylinder moved by means of an electrical battery.

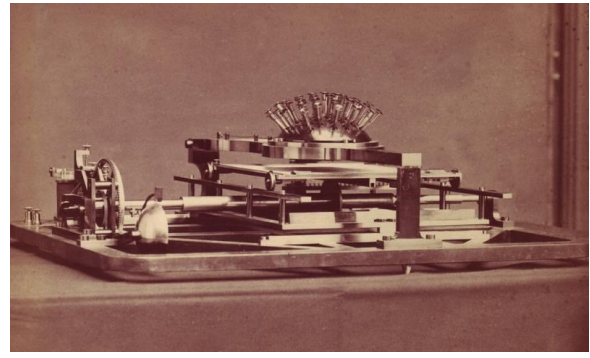
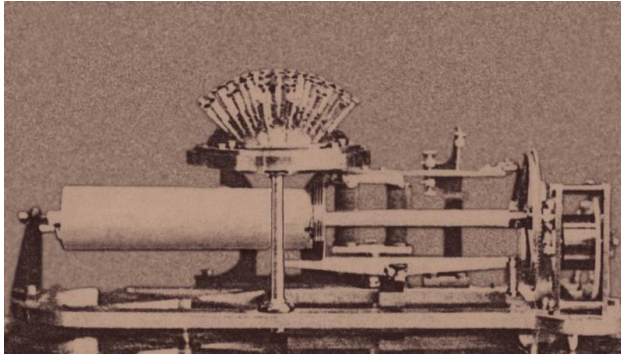


The first official model of the writing ball, presented to the Danish public in September, 1870. Old photo belonging to the descendants of Malling-Hansen.



The first known letter typed on Malling-Hansen's writing ball. It was written to his brothers and is dated the 9<sup>th</sup> of September 1870. Copyright: Private.





*Left photo: One of the early models of the writing ball probably photographed in 1871, the so called cylinder model, but without the wooden box. Right photo: From the same time, the flat model, that was bought in several copies by some of the telegraphic companies of the time.*

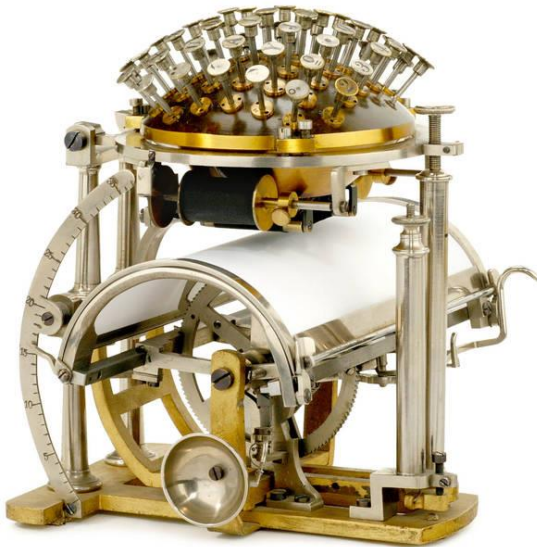
Malling-Hansen traveled around Europe with his writing ball, participating in various exhibitions. He was awarded the first prize medal at the industrial exhibition in Copenhagen in 1872, at the world exhibitions in Vienna in 1873, Philadelphia in 1876, Paris in 1878 and at the great art and industry exhibition in Copenhagen in 1888. The writing ball was also exhibited in London in 1871 and Leeds in 1875. He also had some commercial success, selling patents in Norway, Sweden, England, Germany, Austria and the United States. He worked continuously to improve the writing ball, and in 1871 the cylinder was replaced by a platen that moved beneath the ball. Then in 1875 the first model of the well-known tall type appeared, featuring a mechanical solution to the movement of the paper instead of a battery. Thanks to his cooperation with skilled mechanics, and Malling-Hansen's unique talent for finding technical and mechanical solutions, the writing ball had become a reality, based upon millimeter precision and industrial design of the very highest class. The first models of the writing ball were very expensive – the first version from 1870 cost as much as 1200 kroner, a very substantial sum at the time. However, the price steadily decreased in the course of the 1870s and 1880s, and the last model from 1888, issued with color ribbon and paper cylinder, cost only 150 kroner, and in fact the writing ball was cheaper than the typewriters that put it out of the market. The Remington machine did not have the typing speed of the writing ball, because it was equipped with linked typebars from the key to the letter, and the keyboard was the now so well-known qwerty-keyboard, which had been designed in order to prevent the typebars from jamming. Never the less, this was the machine that became market leader, and when Malling-Hansen died in 1890 his order for the production of 100 writing balls was cancelled, and no more writing balls were produced.

In our time the writing ball has once again risen to its proper place of honor and dignity. It is a highly coveted collectors' item, and in particular in Germany there is considerable interest for the writing ball. A price around 200 000 kroner is commonplace, however we have been told that Paul Allen, one of the founders of the Microsoft company bought a writing ball for no less than 1 million kroner. But in Denmark the interest is, strangely enough, not particularly great, and of the 9 writing balls owned by the National Museum of Science and Technology, at present only one is being exhibited.

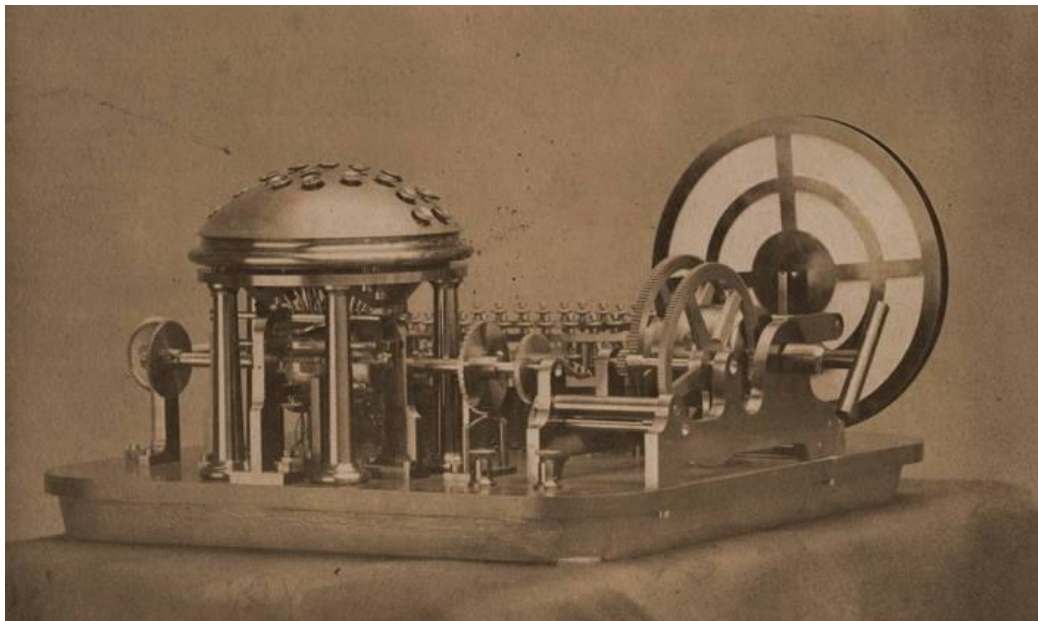
Malling-Hansen also developed a duplication method that he called 'xerography', and by means of blue carbon paper and paper platens he was able to make as many as 100 copies in a few minutes. As far as we know it was Malling-Hansen who discovered the unique quality of the blue colour in copying. In addition, he also developed a machine for extreme speed-typing



designed for use in large meetings as a substitute for a stenographer. According to Malling-Hansen it was possible to type up to 1200 signs per minute on this machine, called the tachygraph, and it had the same semispheric keyboard as the writing ball. Unfortunately no species of the tachygraph has been preserved, but we know it has been produced because there are photographs of a patent model.



*Left: The well known tall model of the writing ball, now with a color ribbon. It was ready in time for the World Exhibition in Paris in 1878, and was awarded with a gold medal. Copyright: Uwe Breker. Right: The last writing ball model also had paper platen and was equipped to type on large scale paper formats. It was developed by August Lyngbye who received a first prize medal at the Great Nordic exhibition in Copenhagen in 1888. Photo: Sverre Avnskog.*



*The Tachygraph – the result of a very fruitful cooperation between Rasmus Malling-Hansen and Professor C. P. Jürgensen. An extreme fast typing machine designed for write-down of minutes in assemblies. No copies are known today. Photo from RM-H's lifetime. Copyright: Private.*

## Scientific Researcher.

Malling-Hansen did not lessen his efforts even after having invented the first commercially produced typewriter in the world. In connection with his monitoring of the health situation of the deaf-mute pupils, he wanted to investigate their growth and weight increase and started a grand scientific research project. With his usual meticulousness he wanted to weigh the pupils several times per day and had large scales made on which he could weigh the pupils in groups, such that the procedure was quick. Thanks to these weighing and measuring procedures he made a number of ground-breaking discoveries in relation to the growth of children. Until then it had been assumed that children grew steadily at an equal pace throughout the year, but Malling-Hansen discovered that children grew in cycles, independently of nourishment or time of the year but rather governed by some unknown factor. Malling-Hansen's view was that this unknown factor was to be found in the variations of the sunlight, and he initiated grand and extensive measurements in various places on earth, from where the results were reported to him, and everywhere the same variations appeared, incidentally in humans as well as in nature generally. He gave a lecture at a big international medical congress in Copenhagen in 1884, and in 1886 published a book about his research and findings. The work was translated into German. Also in this area Malling-Hansen was a pioneer, and his research was ground-breaking. Thanks to his well developed talent for research and his ability to discern meaning and links even in the smallest items, Malling-Hansen made unique discoveries of connections that no-one else had seen before him.



*The last photograph of Malling-Hansen, taken just a couple of months before his death. The body is aged, but the youthful look is intact. Several editions of this photograph can be found by the descendants of the Malling-Hansen family. Copyright: Private.*

## Toward the Light!

The Story of Rasmus Malling-Hansen would not be complete without a chapter describing what happened in his closest family in the decades after his death and about the book one of his daughters, Johanne, married Agerskov, published in 1920 and called Toward the Light! The last page of Toward the Light is, strangely enough, signed by the Danish inventor and

pedagogical reformer, long since dead – and the year is 1916! This calls for further investigation, and the explanation why RMH could sign a document 26 years after his death is bound to surprise and amaze some people, but will probably also give rise to skepticism with others. At any rate, it is an exceedingly fascinating and well documented story, and all the persons involved were perfectly honest and talented people.

Johanne was married to lecturer and writer Michael Agerskov, 1870 – 1933, and in the beginning of the 20th century the couple made contact with the spiritistic milieu in Denmark and participated in table séances, leading to some extraordinary experiences for them. Through the contact with spiritual beings it became obvious that the extrasensory world was calling them, and gradually they realized that their help was wanted for carrying out particular deeds on earth; and the spirit who turned out to be the guide for their work was Johanne Agerskov's late father – Rasmus Malling-Hansen, who in his discarnate state bears the name of Leo. Initially the Agerskov couple received poems and narratives from the spirits of dead people, but gradually the extrasensory spirits brought them deeply suffering spiritual beings who because of their sinful life were bound to wander about on earth or in the sphere of hell surrounded by Darkness – unaware that they were dead. And through the Agerskov's loving prayer for them they were released from Darkness and could be taken home to their dwellings in the heavenly world, and subsequently God was able to erase the sphere of hell! This task culminated in March 1912, when the leader of mankind, Christ, brought them the spiritual being who has fallen deepest of them all: Lucifer – the Devil – Satan; he is known under many names, and according to *Toward the Light!* this was the spirit who together with his brothers and sisters succumbed to Darkness in the so called "fall of man" and caused life on earth to become a life in sin, sufferings and death for mankind instead of a life in a beautiful world of Light, such as God had originally planned it. And the Agerskovs forgave Ardor – as his name shall be from now on – the sin he had committed against them, and their prayer for him released him from Darkness, and the spirits of the light could take him home to God, who also immediately forgave him the sin and suffering he had caused. However, Ardor's remorse and deep sufferings will not be over until each and every human being during their life on earth has forgiven him, and therefore God committed him to convey, after a year of resting, through the medium Johanne Agerskov the story of his fall and about his sins, whereby he ends by delivering an ardent prayer to the humans for forgiveness. And we are also told that if we forgive Ardor, we will be released from his curses and at the same time contribute to the power of Darkness in the earthly sphere slowly but surely fading away.

Ardor's story is the basis of *Toward the Light!*, and in addition Leo has created an extensive comment to the story, in which he further develops and explains the themes taken up by Ardor. The text also contains a number of parables as well as a speech by Christ, and we are told that the work in which Michael and Johanne Agerskov participated was initiated by God, when He saw that the rising interest among humans in the 19th century in contact with the spirits could be utilized by the extrasensory side in order to seek contact with earthly assistants with which direct contact could be established, such that the many earthbound spirits could be won back into the Light, and many of the big issues concerning the origin of life, the struggle between good and evil, the true relationship to God etc, could be revealed to the humans. Christ was the one to lead this work from the extrasensory world, and Leo was one of his closest assistants.

Hence this is the explanation how there can be a book, published 30 years after Malling-Hansen's death, bearing his name; in order to vouch for the veracity of the information provided through *Toward the Light!* he gave – in his capacity as the spiritual guide of the

medium Johanne Agerskov – his name and his position from his last incarnation and let this be his testimony about his role in the elaboration of the book. How to assess this part of Rasmus Malling-Hansen's life each and every person of course has to judge for himself and herself, but considering that Malling-Hansen in everything he did in his life was characterized by innovation, reformation and improvements, perhaps it is no wonder that he also after his death appears to be a person who wishes to take new knowledge and new truths to mankind, both in the area of religion and within science, history and ethics! He was a true scientist and innovator while he was alive – and appears to be exactly the same in his spiritual existence – through *Toward the Light!*, hereby recommended to everyone who seeks new answers to the age-old big enigmas and questions that humans have been pondering over for thousands of years!

But in 1890 it was the end of Malling-Hansen's earthly life. He had for a long time suffered from angina and arteriosclerosis, and a massive heart failure caused his death as he was returning home from the freemason lodge on a dark autumn evening. He fell down on the street and died immediately. However, he managed to leave his personal mark in very many areas. He was truly an optimist – a man who did not settle for things as they were but rather had an unbreakable willpower to discover, think innovatively, develop further and invent. His care for the very weakest and smallest in society was unique and deeply rooted, and he reformed the Danish education for the deaf-mute. He invented the writing ball, still an object of fascination for those who appreciate unique industrial design, and he made ground-breaking and internationally recognized discoveries concerning children's growth in cycles.

Even though Malling-Hansen through the years didn't have a prominent position in Danish history, he has regularly been reminded in museum writings and newspaper articles through the years. And it is not too much to claim that he is about to get his renaissance in the Danish public. Part of this renewed interest should be attributed "The International Rasmus Malling-Hansen Society", where you truly is a key participant. Our website has grown extremely comprehensive during the years, and we have been in contact with all the central institutions that could be in the possession of records of Malling-Hansen's life and work. The space in front of the old institute, where Malling-Hansen had his professional career, has been given the name "Rasmus Malling-Hansen's Plads" by The International Rasmus Malling-Hansen Society and a few years ago a stamp honoring Malling-Hansen's invention of the writing ball, was issued in Denmark. It is a very good thing that this outstanding person now gets his rightful place in Danish history!



*Married couple Agerskov on a photo probable taken short before they married in 1899. Johanne was an intermedium and she received messages via intuitive thought inspiration. The work of the couple resulted in the great book, *Toward the Light!*, published by Michael Agerskov in Copenhagen in 1920. Copyright: The Royal Library.*





*Left: A bust of Malling-Hansen, sculptured by Ludvig Brandstrup, who also made the portrait on Malling-Hansen's gravestone. The bust is located at The Deaf historic museum in Kastelsvej. In the middle: The gravestone as it looked when it stood on Malling-Hansen's grave site, at Garrison's cemetery. In 1947 it was moved to the institute in Kastelsvej, where it stands today. Right: A stamp issued by "Posten Danmark" in memory of Malling-Hansen's unique invention, the writing ball. Photo left: Jan William Rasmussen. In the middle: Private.*



*At DASA in Dortmund they have made a replica of a writing ball, which is connected to an interactive visualization of the writing ball on a screen such as the visitors can actually write on the screen. The visualization is made by Malling-Hansen Society member Felix Herbst, who also took this photo.*

**Sverre Avnskog**  
**Oslo, 11.10.06** *with small additions in 2020.*

*English translation by Jørgen Malling Christensen.*