



The Resuscitation Greats

Åsmund S. Lærdal

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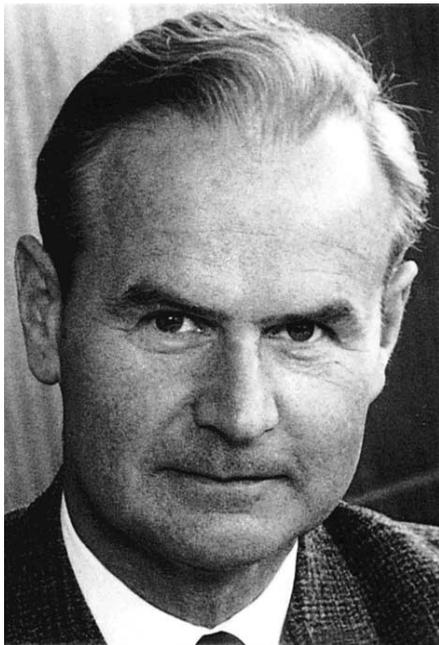


Fig. 1. Åsmund S. Lærdal

1. Introduction

In 1958, one of the most fortuitous meetings in the history of resuscitation occurred: Dr Peter Safar from the United States, and Dr Bjørn Lind from the Stavanger hospital, both attended a conference of Scandinavian anaesthesiologists, in Norway.

Together with Dr James Elam, Peter Safar, in a remarkable series of studies in Baltimore, had confirmed that life-saving resuscitation could be performed with expired air, mouth-to-mouth or mouth-to-mask [1,2]. But how to train people in this skill? The situation only arose as a dire life threatening emergency* not a time

for practical training by the uninitiated. There was a clear need for training manikins. Bjørn Lind had an idea: a Stavanger publisher and toymaker, Åsmund S. Lærdal, might be able to help (Fig. 1).

Actually, Åsmund Lærdal was favourably predisposed towards this challenge. He had saved his own 2-year-old son Tore from drowning, by grabbing him from the water just in time and clearing the boy's airways. He had designed and produced his first medical training aids, a series of very realistic imitation wounds. Discussing this concept with Dr Per Strömback, chief physician of the Swedish Red Cross, Åsmund had been told about the new mouth-to-mouth method that had been developed in the U.S.

Bjørn Lind felt that Åsmund Lærdal should go to the U.S. to discuss the making of a manikin with Peter Safar. Lærdal went in November, and the meeting resulted in an instant, life-long friendship. "We were like brothers, inspired by the same mission", said Safar later.

The task at hand was extremely complicated. A manikin must resemble an unconscious person, have airways that could be obstructed and cleared, a head that could be turned, a chest that could move with inflation, and be easy to transport. Another requirement was that many people should be able to practise in quick succession, without fear of contamination.

But not only did Åsmund Lærdal possess* and guard closely* a thorough knowledge of soft plastics: he had amply demonstrated his ability to develop an enterprise combining a very sound footing with a sense of purpose and meaning beyond profit and growth.

"Time is our most valuable asset, and we must use it well" he declared as a very young man, telling his fiancée about his dream of earning enough to be able to give half of it away. Right from the start of his own enterprise in 1940, he had identified important needs and then become the dominant supplier. Often several steps ahead, he habitually started developing new

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products long before the old ones were outdated. He discussed his visions with his employees, sought out professionals who could advise him, and made friends with quite a few of them.

Although he grew up in the the years of the depression, he invested in education, going to Copenhagen to study marketing and advertising. He always sought impressions and inspirations from other cultures: as a 20-year-old he went on his first bicycle trip abroad, all the way to Italy, and in 1936 he cycled alone to Moscow (Fig. 2).

His first business venture was commissioning and publishing books, most of all for children, and manufacturing wooden toys. There was plenty of wood in Norway.

In 1949, he flew to the States for the first time. Tourist class (Fig. 3). “It does not make sense to just sit away all that money”, he said. He was looking for new opportunities, and found them in soft plastics. Although this new material was jealously guarded, he managed to bring it home and start experimenting.

Struggling to master the new medium, at first he baked samples in his wife’s oven. Undaunted by endless complications, he had ‘the doll sensation of the century’ ready for production a year later. ‘Anne’ was a huge hit, all over toy-starved, post-war Europe (Fig. 4).

“Good toys are vitamins for children” he said. And followed up with the cheap, durable Tomte cars, also made of soft plastic (Fig. 5).

However, as competition grew, he looked around for new areas, applying the company knowledge of soft plastics to making the imitation wounds for the Civil Defence—and so we have reached the time of his trip to see Per Strömbäck in Gothenburg. The Swede inspired him to start experimenting with a resuscitation mask. He



Fig. 2. With the well travelled cycle.



Fig. 3. With a model of the plane for his transatlantic flight.



Fig. 4. Anne.

made a prototype, tried it on his wife and son, and decided he needed to learn more—just around the time when Safar and Lind met for the first time.

For long periods, Bjørn Lind and Åsmund Lærdal were in almost daily contact. Almost 2 years work went into the development of the manikin, which had to meet all requirements and at the same time be reasonably priced. It is much more meaningful to deliver 10,000 dolls at 1000 kroner each, than 1000 at 10,000 kroner each, Lærdal said later. The details of the design of the manikin were to be the reasons for its success in overcoming natural psychological reticence. By the attitudes of the time the manikin had to be female. Men would be loathe to practice mouth to mouth ventilation on men. Åsmund chose the face modelled

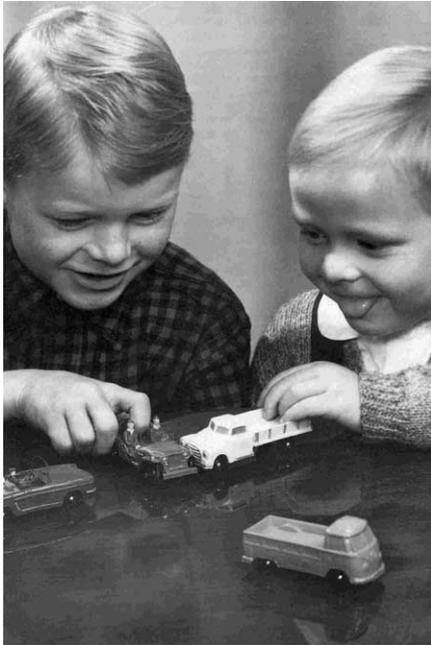


Fig. 5. Tomte cars.

on the death mask of a renowned girl who had been found drowned in the River Seine in Paris. The death mask had become famous because of the girl's wistful, enigmatic and peaceful countenance. She was beautiful but not sexy. The clothes that the manikin was dressed in was also a master stroke—a track suit was attractive and embodied a concept of fitness. Putting the manikin in a dress would have been a disaster (Figs. 6–8).

By May 1960, Resusci Anne went to New York for the first time, and was presented to Peter Safar and the



Fig. 6. The face of Resusci Anne.



Fig. 7. Resusci Anne.

American Red Cross. At the same time, Åsmund Lærdal met another pioneer for the first time, Dr Archer Gordon.

The specialists were impressed by his product—but in this first year, Lærdal sold one doll in the U.S. At half price.

In Norway, however, things took off. Bjørn Lind and his colleague Ivar Lund joined forces to convince the profession of the importance of mass training in resuscitation. The breakthrough came when a group of banks donated 650 manikins to primary schools. Dr Lind followed the training and published his findings, that children learned just as well as their teachers [3].

This enterprise attracted international attention, and Norway emerged as a pioneering country in the history of life-supporting first aid.

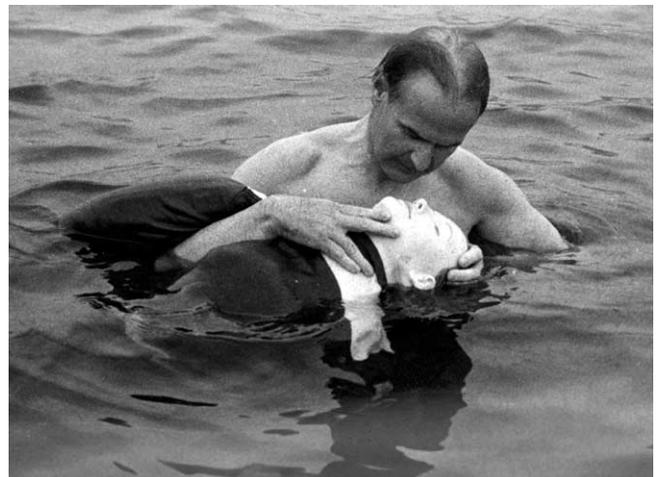


Fig. 8. Resusci Anne.

Within 10 years Resusci Anne had become a film star in America, when the Lærdal company cooperated with Archer Gordon to make several award-winning training films, among them 'Breath of Life'.

Meanwhile, Åsmund Lærdal was following closely new developments in the field. Import duties and competition from American manufacturers led him to establish a company in the U.S.—thus starting the transformation of the Stavanger company into the international Lærdal Medical (Fig. 9).

But there were still practical questions about Resusci Anne to be solved, most of all to do with the risk of cross-contamination. In August 1961 Lærdal, in close cooperation with Safar and German specialists, initiated and hosted the First International Symposium on Emergency Resuscitation. It was held in Stavanger, attended by specialists from all over the world. The results and recommendations were published in English as a special edition of the *Acta Anaesthesiologica Scandinavia*: mouth-to-mouth should be taught in all schools [4]. The ABC of life-saving should be as commonly known as the ABC of reading, as Åsmund Lærdal put it.

Three years after this symposium, the World Federation of Anaesthesiologists established a CPR committee; Peter Safar and Bjørn Lind were among its members.

Meanwhile, in the U.S. two engineers Guy Knickerbocker and William Kouwenhoven and Dr James Jude had made a landmark discovery. External chest compressions could provide a circulation of blood to the brain when the heart stopped beating, and increase greatly the possibility of revival [5,6]. Åsmund Lærdal saw the significance and potential: already in 1969,



Fig. 9. Resusci Anne from Lærdal Medical in the United States.

several years before the authorities approved the general training in CPR, he applied himself and his company to the task of making a complete Resusci Anne for CPR, capable of being used to practise artificial ventilation and external chest compressions.

His natural interest in developing more equipment for first aid was coupled with a unique ability to understand specialists and teach them the technical and commercial possibilities and limitations.

In addition to the new Resusci Anne, a series of other products were developed. A Resusci Baby was produced (Fig. 10). A proposal from James Elam resulted in the Resusci Folding Bag with a new type of valve based on the 'duck bill' principle. The Arrhythmia Anne came as a response to a suggestion by Archer Gordon in 1969, the same year as the introduction of the Pocket Mask to protect the rescuer, and the Vacuum Mattress to protect the patient.

The disaster kit followed. Lærdal had always harboured an inherent and overwhelming desire to help his fellow man and he gave his whole hearted support to the emerging special interest in disaster medicine. He supported the Club of Mainz, subsequently to become the World Association for Emergency and Disaster Medicine, and later was created an Honorary Member of that organisation in recognition of his immense contribution.

In 1971, the Recording Resusci Anne was introduced, equipped with a printer giving instant feed-back to the

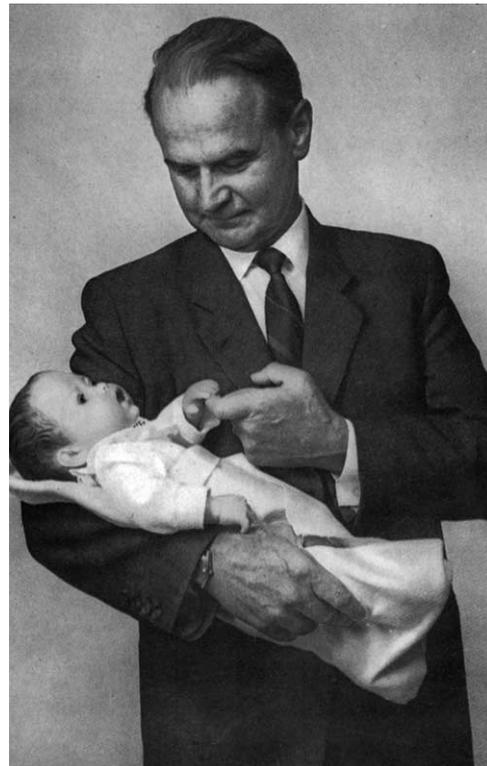


Fig. 10. Åsmund Lærdal with Resusci Baby.

trainee and at the same time providing important information about the efficiency of the training, and possible areas of improvement in the manikin.

Within 2 years, all objections in the U.S. had been overcome. The American Heart Association (AHA) recommended the teaching of CPR to all lay persons, and Lærdal helped to disseminate this recommendation, covering the cost of publishing a supplement to the *Journal of the American Medical Association* in 1974 [7]. In total, around 5 million copies were distributed. Lærdal provided support for the publication of all five subsequent revisions of the guidelines.

At home efforts went into developing a life-saving kit in the shape of a cushion for cars, complete with equipment and a self-training programme—yet another product that had been developed in close cooperation with physicians.

In 1978, Lærdal felt that his company had reached a crossroads. Toys had remained on the agenda. Over 100 million Tomte cars were spread around the world, and these cheap toys were still selling well. But Lærdal decided to concentrate all efforts on saving lives. Characteristically, this suited the spirit of the company—but it was also a wise policy for manufacturing in high-cost Norway.

The company's own presses continued to print information material for the medical sector in 15 languages, among them Chinese, Arabic and Russian.

Åsmund Lærdal always kept a very low profile in his home town. But having been highly respected in specialist circles, this modest, unassuming man came into the highlight himself. In 1978, he became the first non-physician to receive the International Award of the AHA. The same year he became an Honorary member of both the British Association for Immediate Care and the Norwegian Society of Anaesthesiologists. He was also honoured by the University of Pittsburgh.

By 1979, Lærdal was the established market leader, exporting 95% of the output from several production lines. Now he decided to channel some of his profits into a new foundation for acute medicine. The Lærdal family has continued to make grants to the Foundation so that the funds today represent more than 10 times the original capital of 10 million kroner. The Lærdal Foundation for Acute Medicine has funded a prodigious number of research projects and educational initiatives including several Utstein Guidelines meetings. Resuscitation Councils also have reason to be grateful to this philanthropic Foundation for support in their creation and their ongoing activities.

But Åsmund Lærdal's time was running out. He died in Stavanger in November 1981. "We are links in chains, some strong, some weak. What counts is the overall plan". "Without Åsmund Lærdal, CPR would never

have been implemented so rapidly and so widely", wrote Peter Safar at his death.

Time had come for the epitaph of this soft-spoken enigma of a man. Sensitive and generous, understanding, humble, and at the same time demanding and unshakably stubborn. Who made enormous demands on himself and his collaborators, and yet, recognizing his own limitations, harboured a deeply felt concern for the weaknesses of others. He was an unusual listener, and never spoke ill of anyone.

"The strangest man I have met in my life" wrote one of his closest collaborators. "The most modest and most immodest person I have known", declared another.

He had a deep sense of duty. Given his abilities, it was his duty to make the best possible use of them. One needs to dig to the bottom of the problem, and then dig underneath the bottom, he said. But he also had the lateral thinker's capacity for the daring leaps that are necessary for innovation.

With all of this, Åsmund S. Lærdal was a very private man. "Millions have been influenced by Lærdal's products, thousands by his thoughts. But only a privileged few by the twinkle in his piercing, loving blue eyes" wrote Peter Safar [8]—about his brother, who never stopped caring for 'hearts that are too good to die'.

Acknowledgements

Figures 2–7 are taken from the book 'From Stavanger with Care' by Nina Tjomsland published by Lærdal. They are reproduced here with permission.

References

- [1] Safar P, Elam J. Manual versus mouth to mouth methods of artificial respiration. *Anesthesiology* 1958;19:111–2.
- [2] Safar P, Escarraga L, Elam J. A comparison of the mouth to mouth and mouth to airway methods of artificial respiration with chest pressure arm lift methods. *New Eng J Med* 1958;258:671–7.
- [3] Lind B. Teaching mouth to mouth resuscitation in primary schools. *Acta Anaes Scand Suppl* 1961;3:63–6.
- [4] Poulson H, editor. International Symposium on Emergency Resuscitation. Stavanger, Norway, 1960, *Acta Anaes Scand* 1961;9:Suppl.
- [5] Kouwenhoven WB, Jude JR, Knickerbocker CG. Closed chest cardiac massage. *J Am Med Assoc* 1960;173:1064–7.
- [6] Jude JR, Kouwenhoven WB, Knickerbocker CG. Cardiac arrest: report of application of external cardiac massage in 118 patients. *J Am Med Assoc* 1961;178:1063–71.
- [7] American Heart Association and the National Academy of Sciences—National Research Council. Standards for Cardiopulmonary Resuscitation (CPR) and Emergency Cardiac Care (ECC), *J Am Med Assoc* 1974;Suppl. 227:xii–xiv.
- [8] Safar P. In Memoriam Åsmund Lærdal 1913–1981, *J World Assoc Emerg Disaster Med* 1985;1:Suppl. 1.