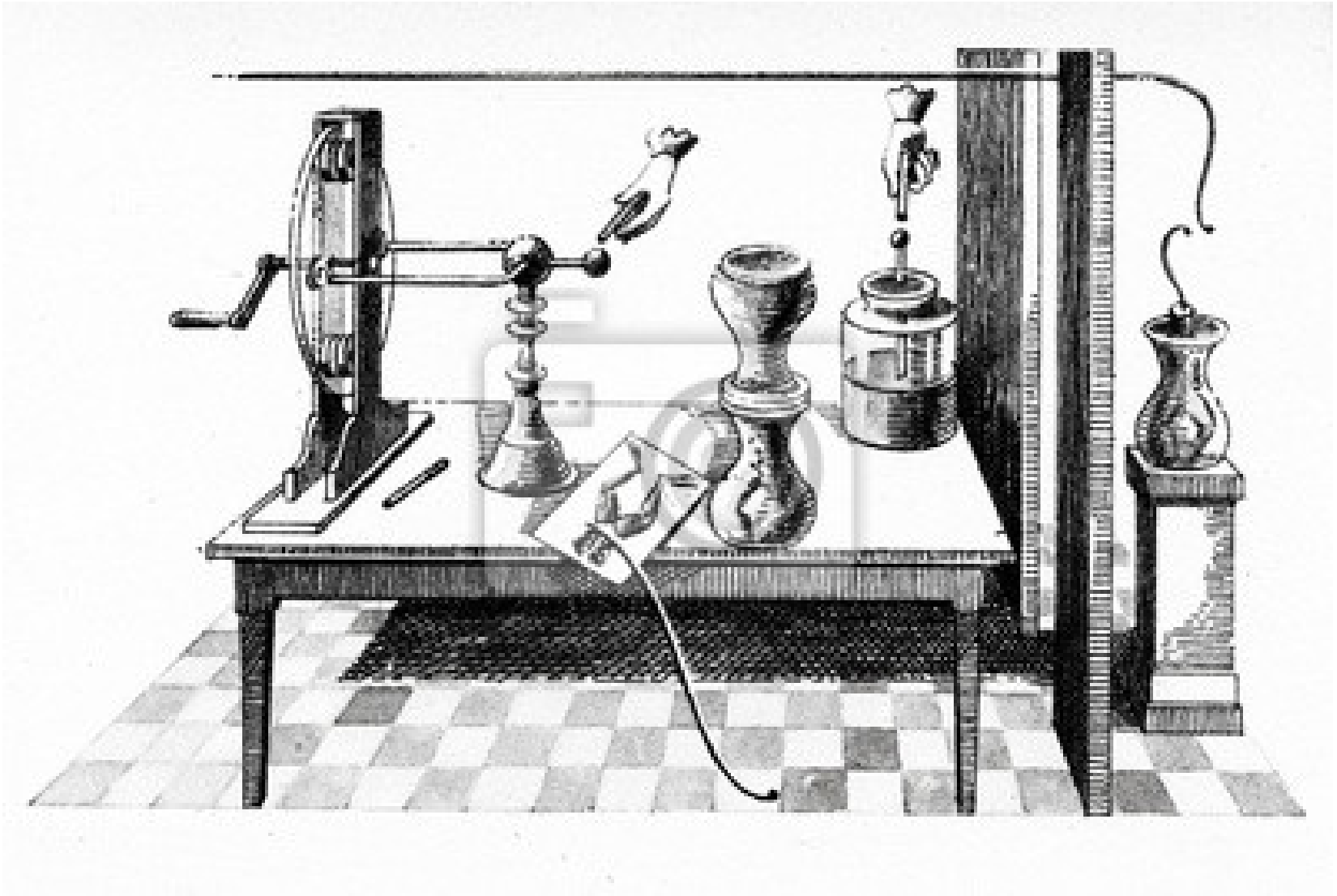
Histoire de la Stimulation Cardiaque

Pierre LE FRANC

Clinique St Hilaire
Rouen

Electra 2024

Luigi Galvani (1737-98)



Allessandro Volta (1745-1827)


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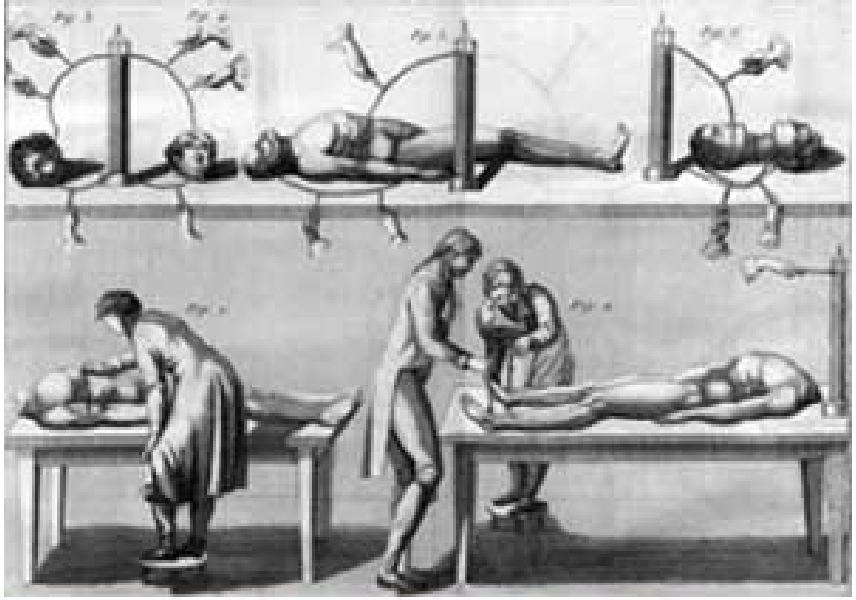
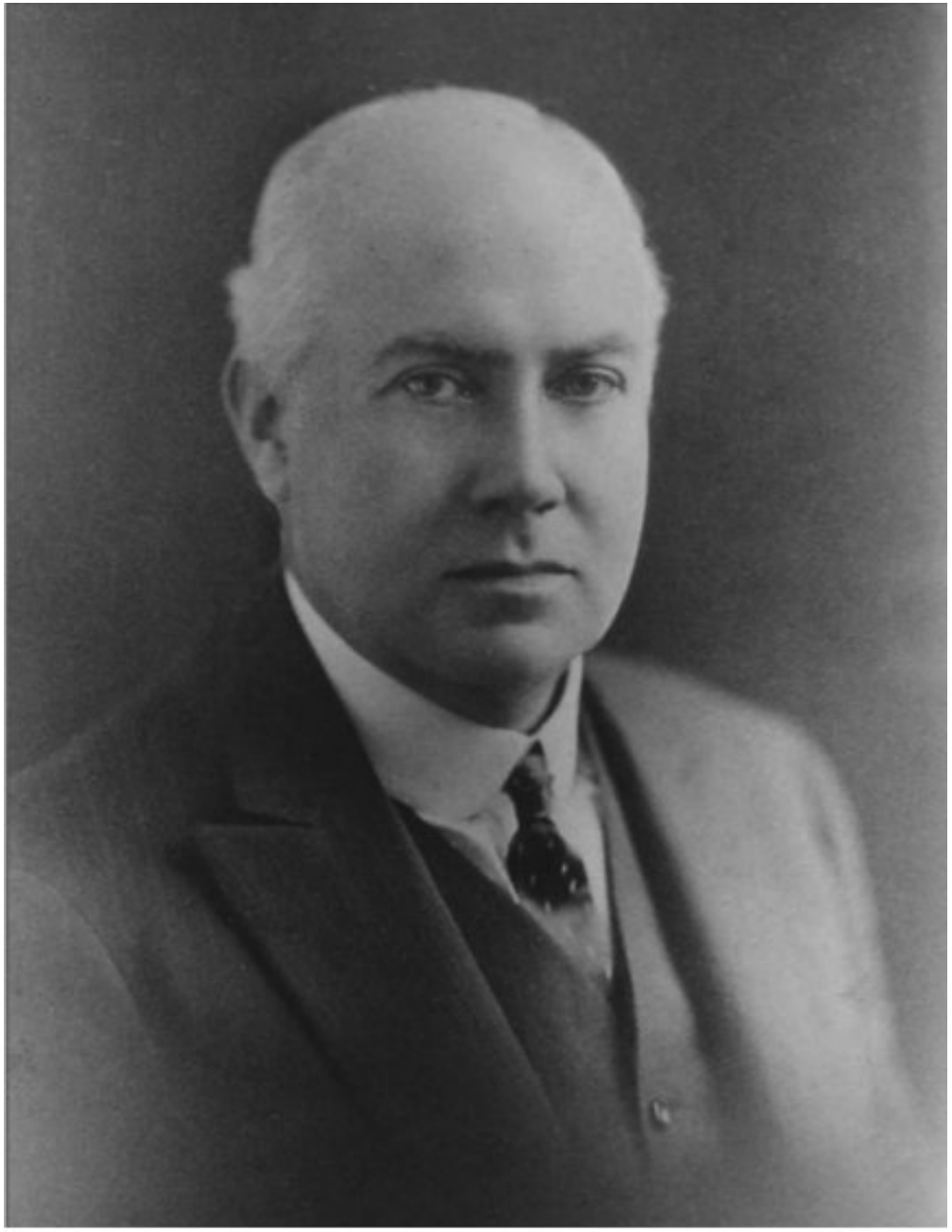
Fig. 3.
Fig. 4.
Fig. 5.
Fig. 6.
Fig. 1.
Fig. 2.

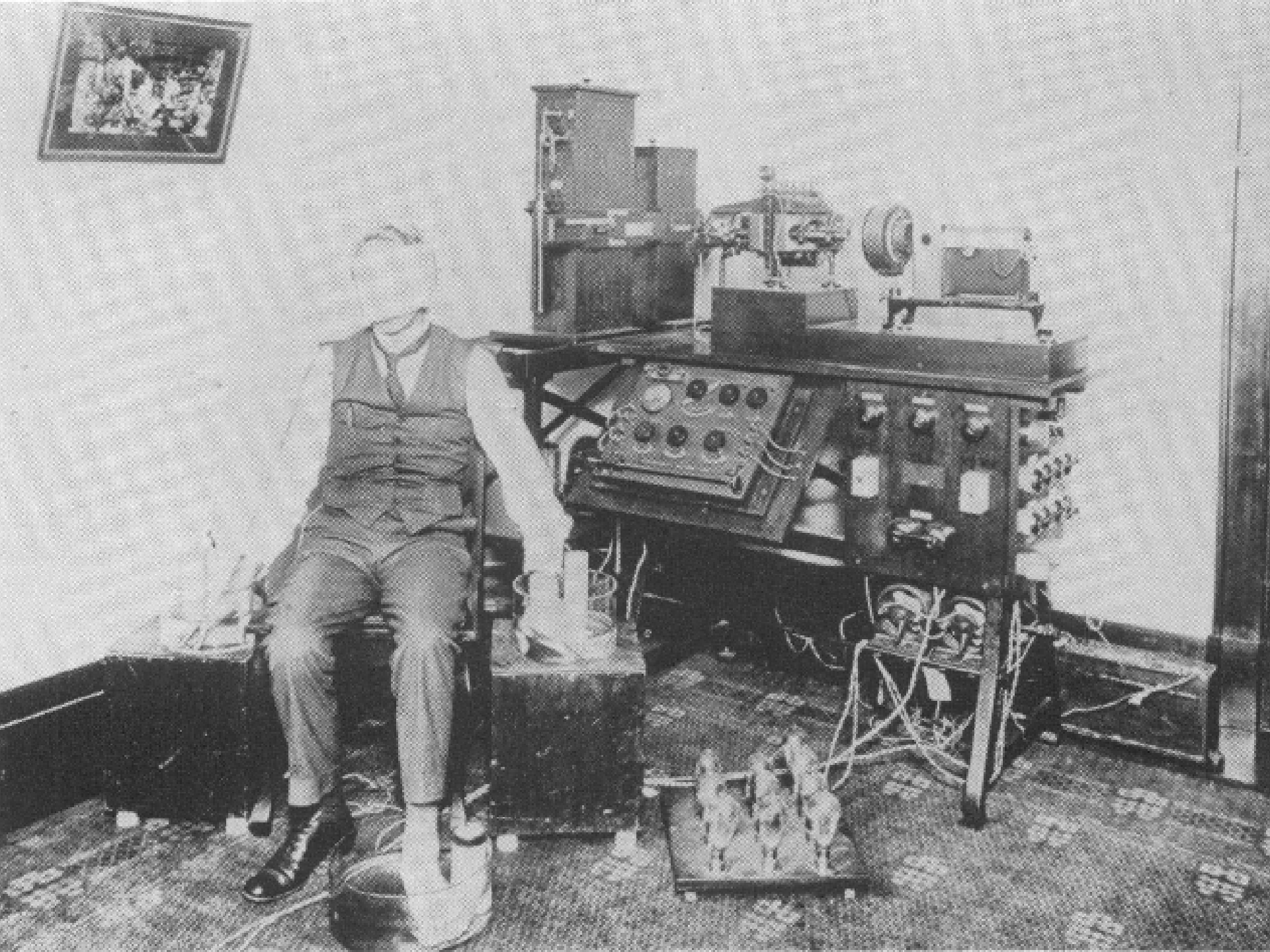


Université de Leipzig.14 e siècle.

John Mac William (1857-1937)



Mark Lidwill (1878-1968)



patients do not breathe at all well, sometimes not at all for a quarter of an hour. In these circumstances occasional pressure on the thorax will help them empty the air out of their bodies.

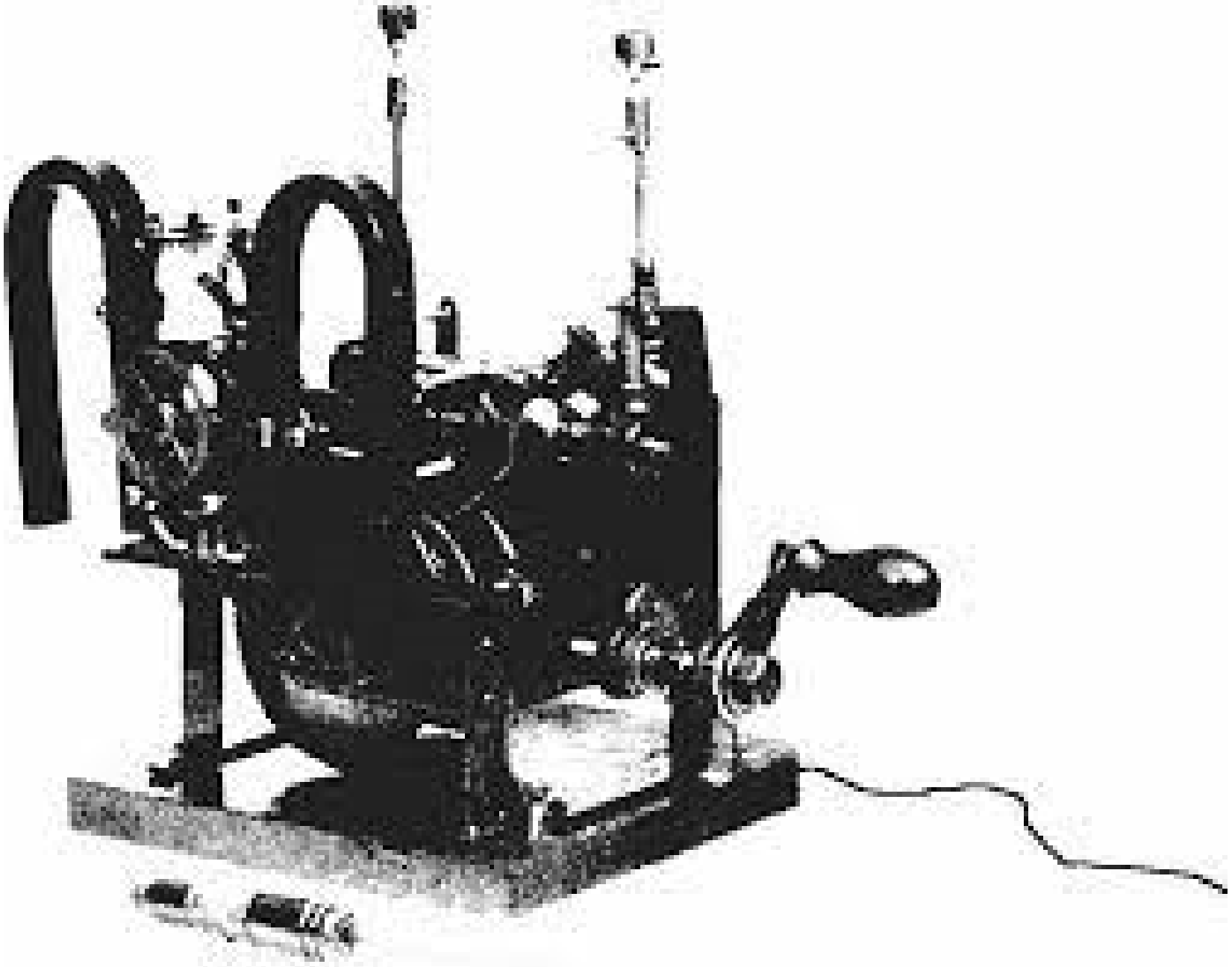
There is one type of patient in whom physical examination reveals nothing except that they are withered away with age. These people are often between eighty and ninety years old and they sometimes get an ophthalmitis. There apparently is no cause for this, except senile degeneration. Physical examination reveals nothing except old age and general atrophy. These patients are particularly dangerous to anesthetize, as they tend to die gradually on the table and there is very little power of recovery in their tissues. In all these dangerous cardiac conditions the anesthetist should impress upon the surgeon the necessity for not wasting time. The surgeon should get in and get out as quickly as he can.

Appendix

I FIND THAT THERE will not be time at the Section of Medicine of the Congress to read my paper on certain forms of cardiac failure and its treatment, so I will give you an outline of my ideas and also of the means by which a body may be brought back to life in certain forms of cardiac failure.

As I said in my paper, there are three forms of cardiac failure: Failure of the neuro-muscular mechanism, failure of the musculature and *ante mortem* clotting of the heart's blood. In the last two nothing can be done whatsoever. My attention was drawn to the failure of the neuro-muscular mechanism when watching a patient die and at the same time taking electrocardiographic tracings. The sino-auricular node first ceased to act. Then Tawarra's node ceased and the heart kept on beating by means of extra systoles. I also noticed that in certain toxemias one of the signs of cardiac failure was impairment of the conductivity or functioning of portions of the neuro-muscular mechanism, namely, the bundle of His. When sudden death takes place, during diphtheria, it is reasonable to assume that what ceases to act is the neuro-muscular mechanism, because, on careful miscroscopical examination, the muscle itself seems quite able to carry on the circulation. Then one considers the causation of the cessation of ordinary muscle to reaction from nerve impulses and, as you know, it is found that the nerve endings become fatigued and cease to act long before the muscle itself ceases to act. The muscle can still be stimulated by electrical means and will contract long after the nerve endings have ceased to act. I then thought that if I designed some means of stimulating the heart after the sino-auricular node and other portions of the system had ceased to act, life might be carried on and it might be possible to revive patients from time to time. Of course, as you know, adrenalin injected into a heart will occasionally cause it to beat again, as pointed out by me in 1909 and 1910. The adrenalin apparently acts on the sino-auricular node or possibly on some other portion on the neuro-muscular mechanism; but, if this fails to respond, one can supply an artificial impulse. With this in view, I designed some time ago a machine by means of which direct stimulation to the heart's muscle may be applied. It was unknown, at first, what voltage was required. Dr. Briggs who was at the Crown street Women's Hospital, carried out experiments for me in stillborn infants. Voltage was used from 1.5 up to 120 and it was found that somewhere about 16 volts was the pressure required. The method was tried in two or three cases and was completely successful in the case of a stillborn infant, when everything else had been done to revive the child, artificial respiration, injections of pituitrin and adrenalin injected into the heart itself. After this had failed, the needle machine was plunged into the auricle and various voltages were tried with no result. The needle was then plunged into the ventricle, and the heart responded to each impulse. At the end of ten minutes the current was stopped and it was found that the heart would beat of its own accord. The child recovered completely and is now living and quite healthy. After Dr. Briggs left the Women's Hospital the work was not carried on, as the machine was so complicated that it was very difficult to understand. I now demonstrate to you a portable and simplified form of this machine. The rate of impulses can be varied from about eighty to one hundren and twenty. This method of cardiac revival is applicable to the follow-

1ere vie sauvée par la stimulation cardiaque



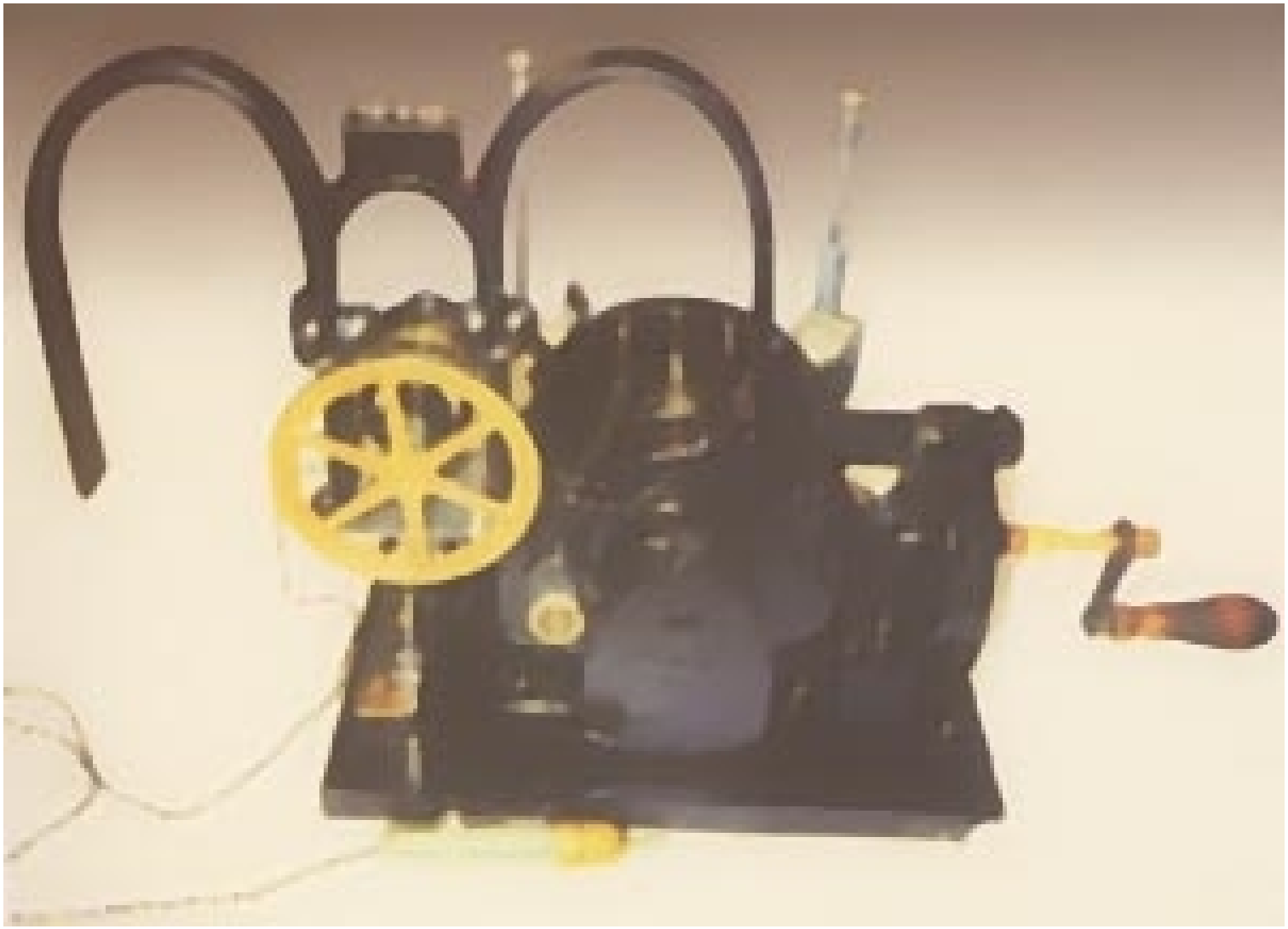
Dr. Hyman's Machine

PHYSICIAN INVENTS

SELF-STARTER for

Dead Man's Heart

Hyman's "pacemaker" 1930



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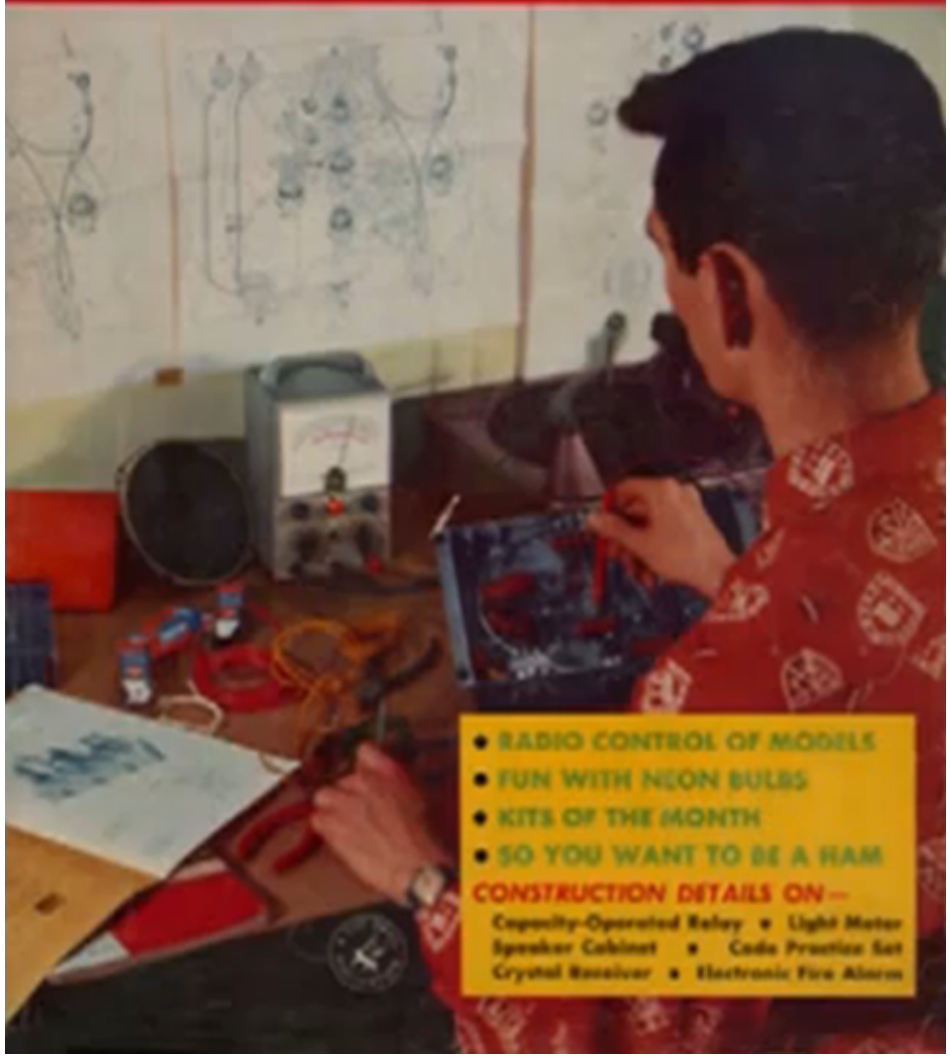

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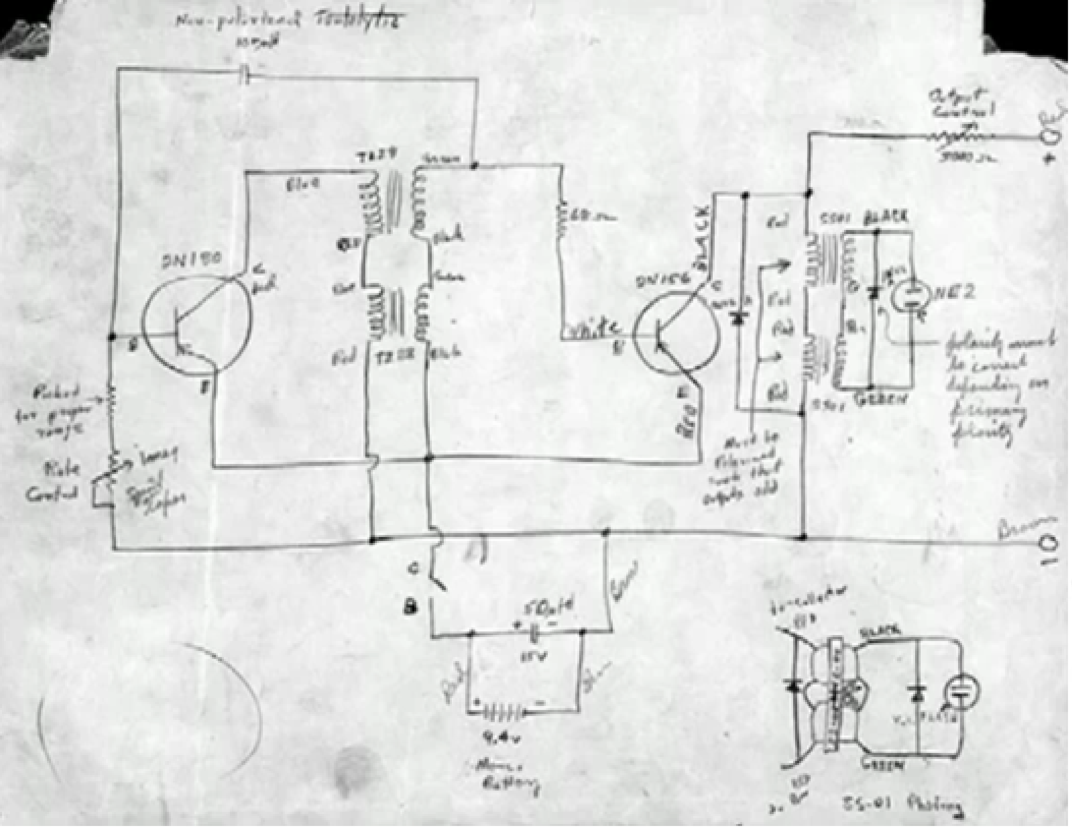
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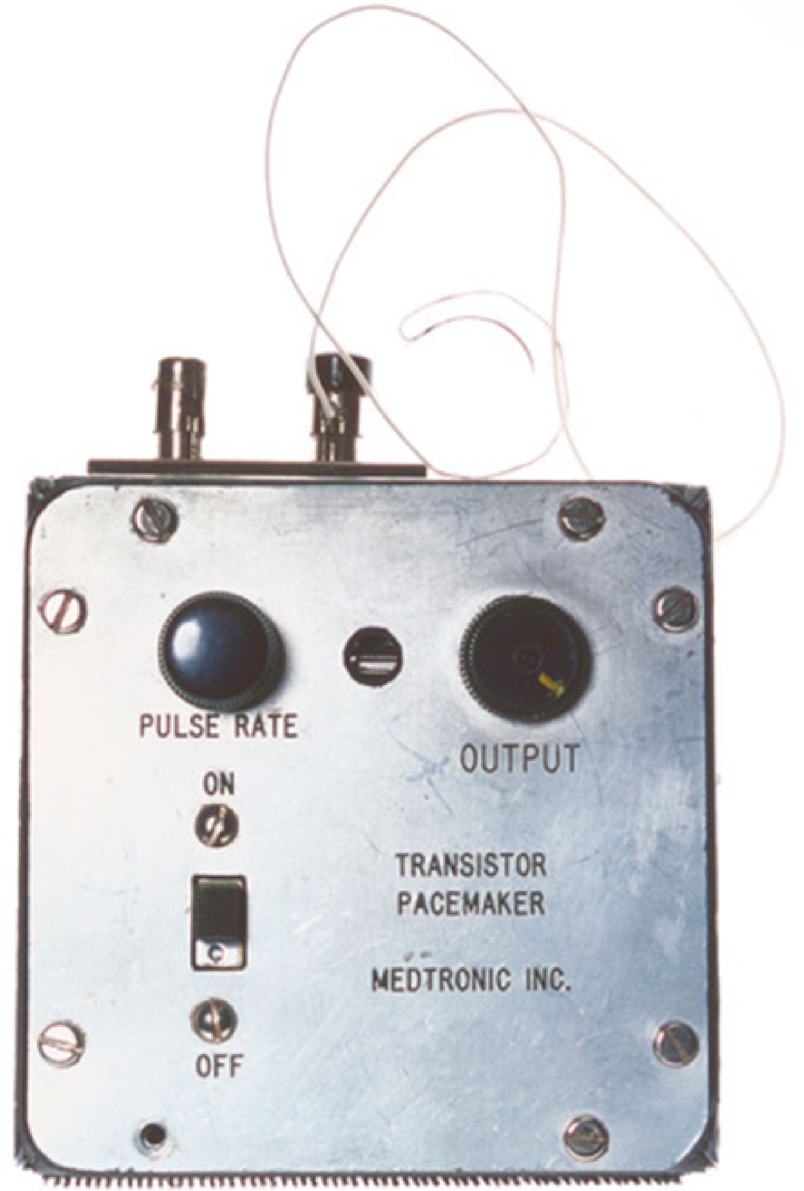
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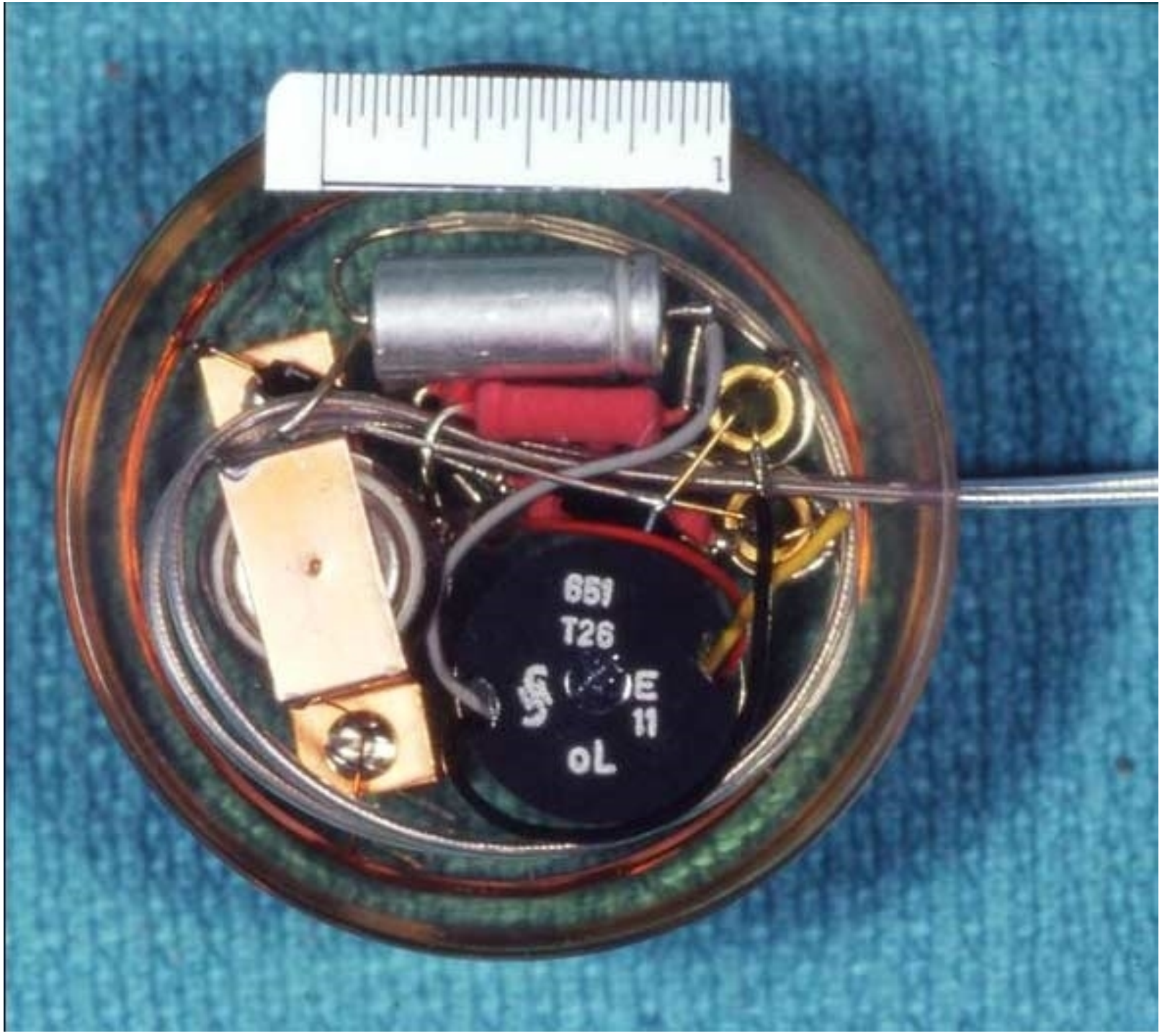
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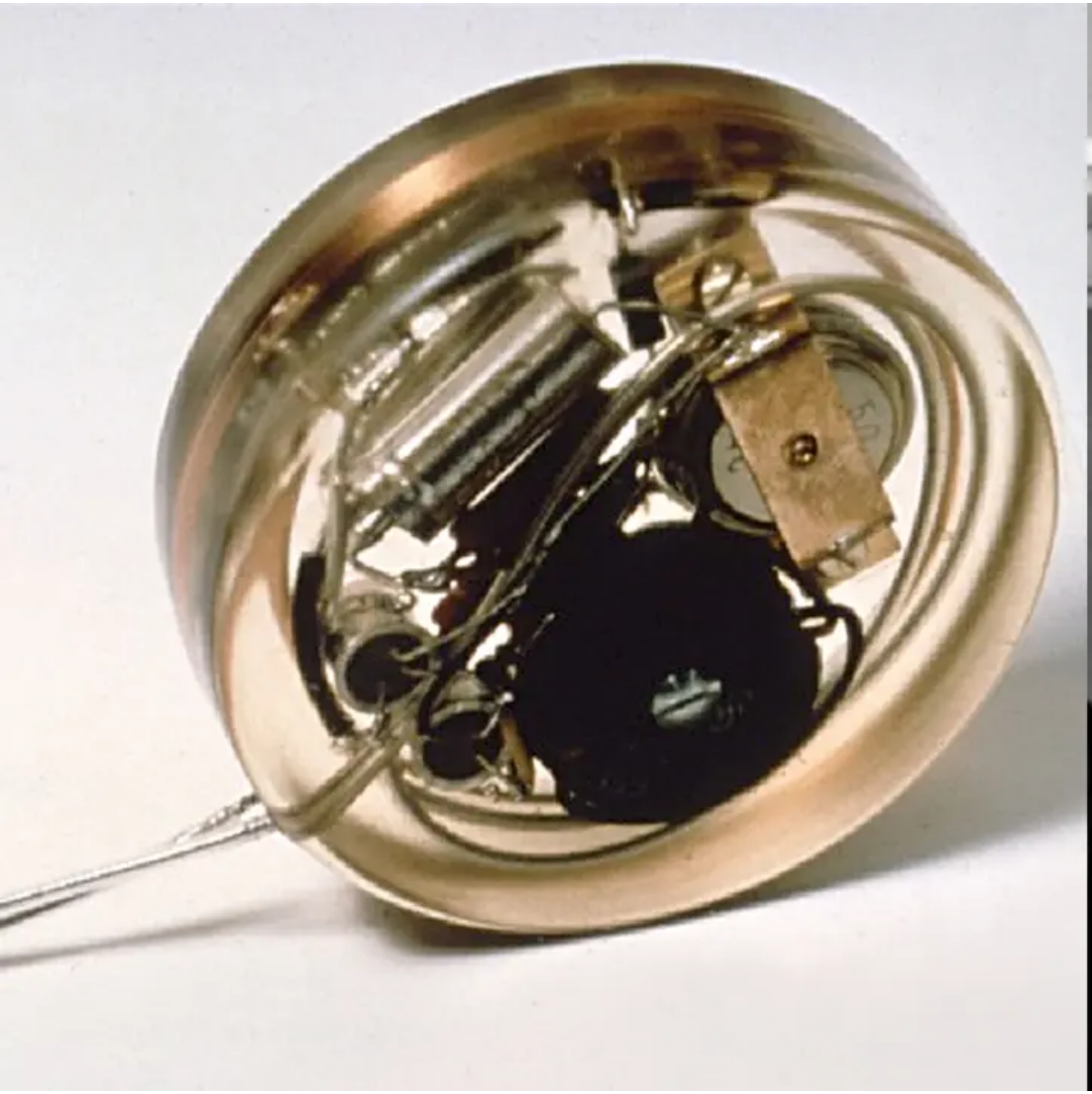
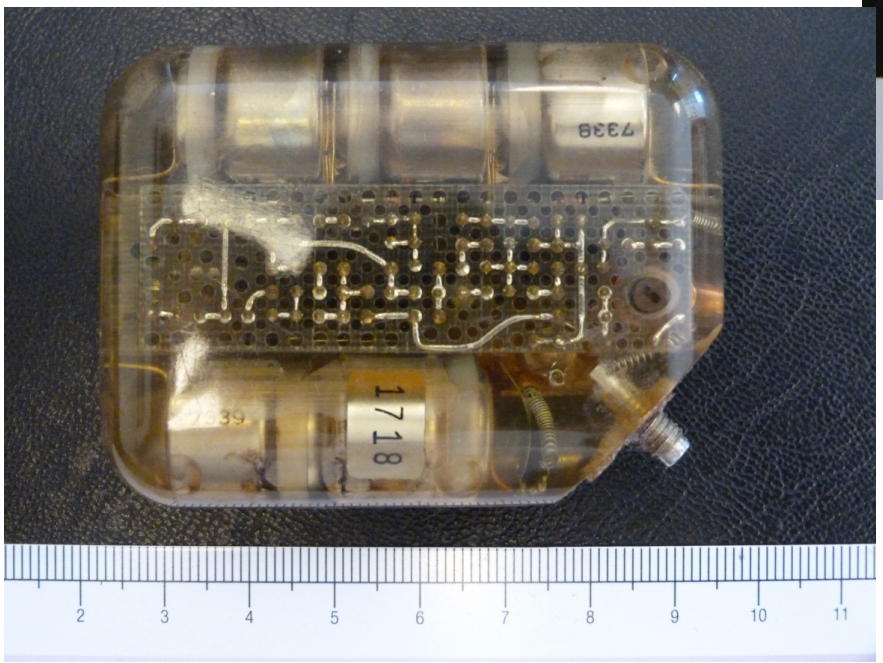


Arne Larsson (1915-2001)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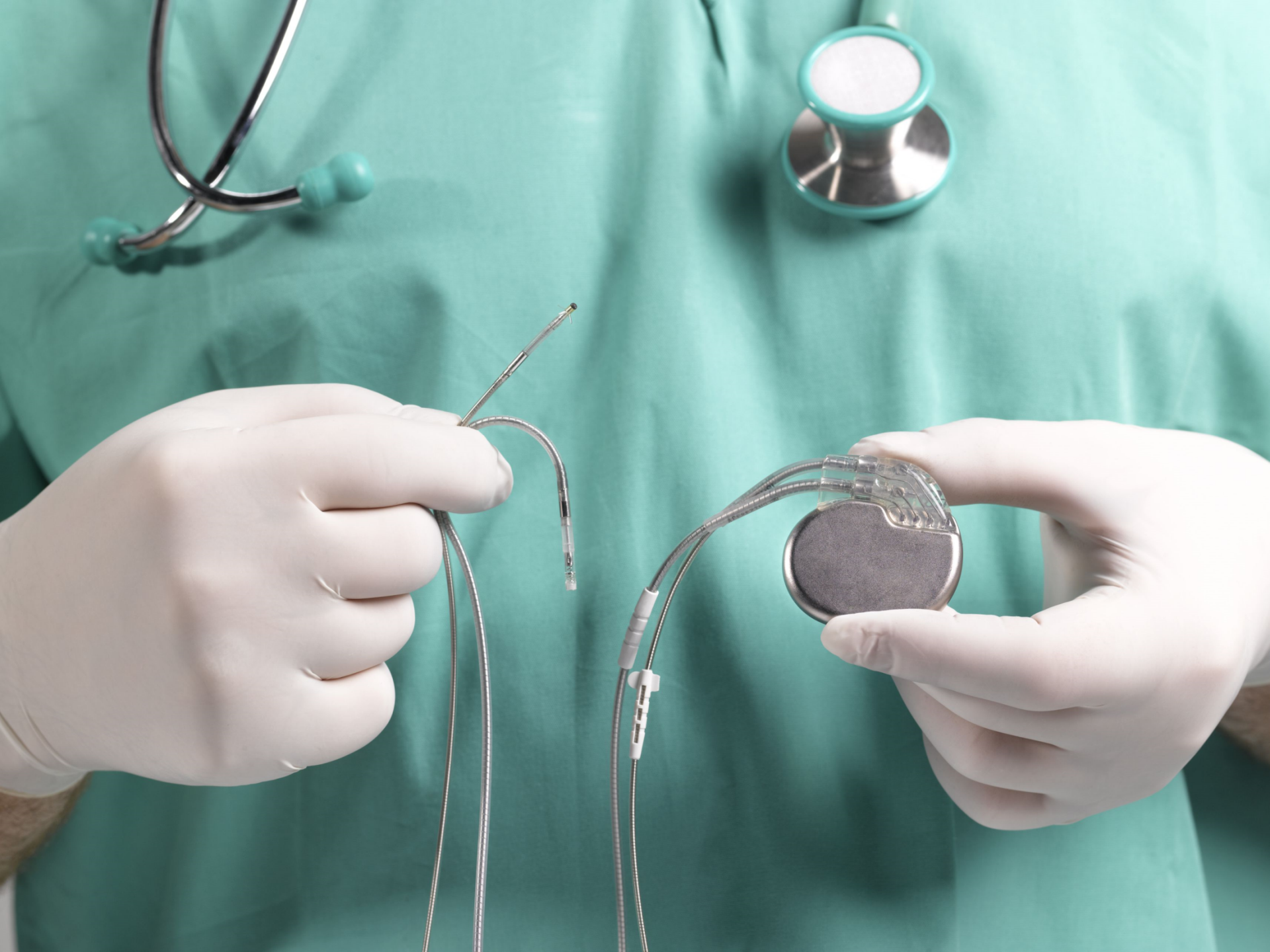


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