

Electricity Makes Us Healthy: Popularization of Electrotherapy in Japan



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1. Japan's Love Affair with Electrotherapy Appliances

Consumers in Japan spend 121.8 billion yen (\$1059 million) a year on home medical appliances. In 1998, for example, consumers bought 1.8 million electro massagers valued at more than 47.7 billion yen (\$414.7 million).^❶ In the marketplace, one finds an abundance of these healing appliances, such as an electro acupuncture appliance, an electromagnetic stimulator, and a low frequency therapy appliance. Many people in Japan routinely turn to these types of devices, to ameliorate feelings of fatigue, or when suffering ailments, diseases, or injury. It is not an exaggeration to say that there is at least one electrotherapy appliance in almost every Japanese home.

Irrespective of Japan's love affair with electrotherapy, the history of these devices has been little revealed. When and how did electrotherapy become an accepted part of Japanese society? As I will show below, electrotherapy took root in the public imagination during the 1920s and the 1930s. Sustaining the popularization of electrotherapy, I submit, were three social and cultural conditions, and not the progress of medical science. By analyzing these socio-cultural conditions, I will elucidate the process by which the public gained familiarity with and interest in this unconventional therapy.

2. A Prehistory of Electrotherapy --

A Curious Magic Box Coming from the West

Let me first briefly summarize the prehistory of electrotherapy, up to the early the twentieth century. Electrotherapy was introduced to Japan from Europe in the middle of the eighteenth century. At first, an electrotherapy appliance was often called *erekiteru*, which was a static electricity generator. *Oranda banash* (Dialogue with the Dutch People, 1765) by Goto Rishun, is the first publication which discusses this new treatment. Goto explained that *erekiteru* could remove 'fire' from the diseased part, thus mitigating all pain. ('Fire' apparently refers to electric sparks.)

^❶ The Ministry of Health, Labor and Welfare, *Annual Reports on the Medical Industry* (Tokyo, 1998), p.246.

Hiraga Gen'nai read Oranda banashi and became interested in *erekiteru*. In 1770, he happened to obtain a broken *erekiteru* in Nagasaki, which had been brought into the country by the Dutch. He tried to repair it, and six years later, he succeeded. Hiraga Gen'nai then went on to make several new *erekiteru*. *Komo zatsuwa* (Tales about Overseas, 1787), by

Morishima Tyuryo, also introduced *erekiteru* as a therapeutic apparatus, explaining in detail how to construct the device and how to operate it. (fig.1,2) By the end of the eighteenth century, many people copied the *erekiteru*, or imported them from Holland. Yet at this time because people lacked even a basic grasp of electricity, *erekiteru* was often understood a kind of curious magic box that originated in the West, rather than a medical appliance.^② Many pioneers fascinated with *erekiteru* subsequently took a first step in learning about Western science and technology.

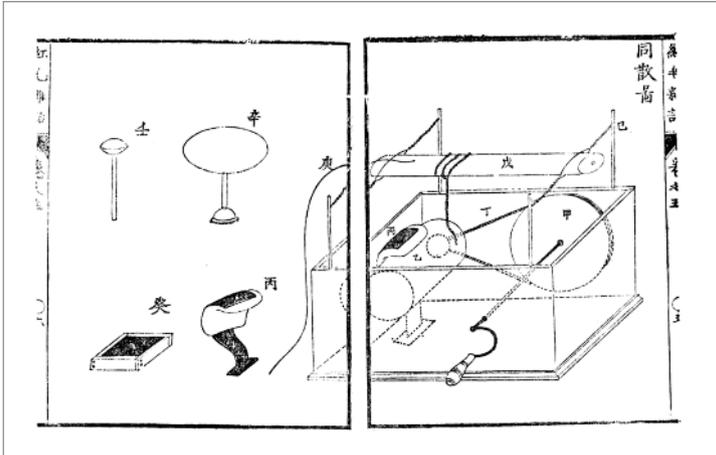


Fig. 1: The internal working of the *erekiteru*. (*Komo zatsuwa*)

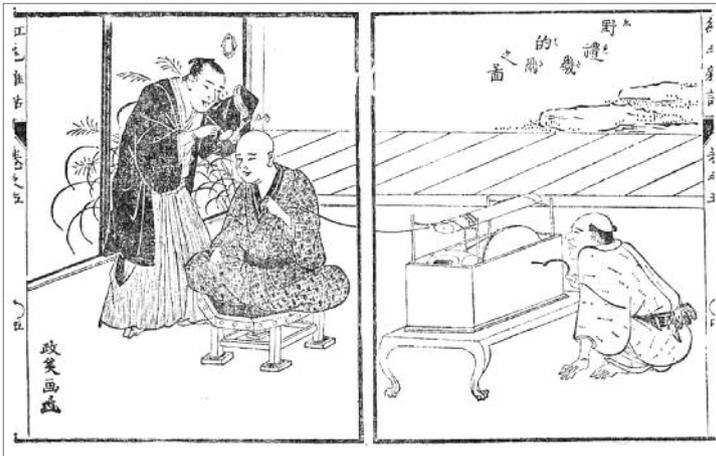


Fig.2: The figure on the left of this picture applies electricity to the seated figure, who holds an electric wire leading to *erekiteru* in his left hand. The figure squatting on the right generates electricity by winding the handle of the *erekiteru*. (*Komo zatsuwa*)

② Kikuchi Toshihiko mentioned in his following article that some showmen held *erekiteru kogyo* (a show and experiment in electricity) in which they made electric sparks with *erekiteru* to surprise and entertain people. See Kikuchi, "Kaisetsu," in *Edo koten kagaku sosho*: vol.11 (Tokyo: Kowa shuppan, 1988), p.57.

The text *Naifukudoko* (As Effective as Any Drug), written by Japanese doctors around 1858, discussed many different kinds of therapies. The authors explained not only that conventional *erekiteru*, which used static electricity, but also discussed another new type of *erekiteru* which used galvanic electricity and an induction coil. The text also stated both of them could cure many kinds of diseases, such as rheumatism, paralysis, convulsion, insanity, and being deaf-mute.

Records show a few cases, moreover, that Dutch doctors permitted to practice medicine in Nagasaki actually employed electrotherapy appliances which they had introduced from Holland. However, although there are many books discussing *erekiteru* and electrotherapy that were written in the middle of the nineteenth century, most of these texts focused attention mainly on electrical phenomena, treating *erekiteru* as an instrument of electric experiments. Most Japanese doctors of the time were more eager to learn clinical internal medicine and surgery.

With the coming of the Meiji era (1868-1912), the Japanese government promoted Western medicine in earnest and to this end invited foreign doctors to assist in developing this new approach to medicine. In Europe, which was taken as a model of medicine, electrotherapy had advanced significantly from the late eighteenth century to the early twentieth century, along with the technological development of electricity. However, in Japan, electrotherapy took its legitimate position neither in medical education nor in medical disciplines. Maybe it was because in order to learn electrotherapy, future students first needed to study electricity in detail, or because of criticism against electrotherapy as quack remedies lingered on in Europe. In any case, students of medicine were not enthusiastic, and electrotherapy remained outside the mainstream of medical education.

When physiotherapy was introduced to Japan, electrotherapy was considered one of its techniques. A clinic of physiotherapy was established in the department of medicine of Tokyo Imperial University in 1916, where electro massage therapy and electro bath therapy were practiced.^③ The new concept of physiotherapy helped Japanese doctors to think of

^③ For the survey of the Japanese early history of physiotherapy, see Manabe Kihachiro and Tawara Shizuo, *Butsuriteki ryoho zusetsu* (Tokyo: Zikken ihosha, 1918). The authors belonged to the Clinic of Physiotherapy of Tokyo Imperial University and described in this book all kinds of electrotherapy which they practiced on the patients at their clinic.

3.The Development of Electrical Technology -- Electrotherapy Appliance as a Household Appliance

In order to practice electrotherapy at home, individual homes needed electric power, and it was not until the 1920s that Japanese power companies could supply enough electricity both for industry and for the home. During WW I, the Japanese government and power companies constructed huge hydraulic power plants all over Japan to meet the demands of the war effort. After the war ended, power companies had plenty of electricity but not enough customers, because the special procurement boom had disappeared. Confronted with bankruptcy unless they could find new customers, many power companies began supplying electricity to homes. The result was the proliferation of homes with electrical supply; the coverage went up dramatically, from 32 percent of all homes in 1914 to 70 percent in 1922.^④

To encourage consumption of electricity in homes, power companies also tried to familiarize people with household appliances, in collaboration with engineering companies. Until then, most Japanese homes had only lights, and because most household appliances on the market were imported by Western companies, they were expensive and rare. After WW I, however, Japanese engineering companies turned their wartime production experience to the production of cheaper domestic household appliances, such as electric irons, electric fans, electric stoves, electric heaters, and radios. Many new engineering companies sprang up, and some of them inventing strange appliances which are today forgotten. Included among those products were electrotherapy appliances, which were often developed by engineers who were medical lay persons. They simply adapted their engineering technology for electrotherapy appliances with commercial applications (fig.5).

④ Kansai denryoku, *Kanasai denryoku gozhu nenshi* (Osaka: Kansai denryoku, 2002), p.95.

At the same time, moreover, the Japanese government recommended a national movement to improve everyday life. The government aspired to catch up the advanced countries and keenly felt the need to change Japanese lifestyles to become more modern and civilized like America. Electrical appliances were the most fascinating symbol of modern life; anything with the phrase ‘electro’ was regarded as modern, civilized, and scientific. The government often used the slogan, “Electricity is a fruit of civilization” and promoted electrification of homes in the same way as the power companies and the engineering companies. The public irresistibly realized with excited feelings that electricity in its invisible existence, which forms light, heat and power, was gradually but steadily changing its everyday life and landscapes of cities.

The 1920s was a time when electricity and electrical appliances stimulated desire and imagination of the public more than ever. In addition, this desire was supported by economic and national interests. Exactly because electrotherapy used electricity, it appealed to the public’s love of modern devices. Mainly among the upper-middle classes, who could afford to change their life styles, such electrotherapy appliances were accepted and espoused as one of normal household appliances which symbolized modern life.



Fig.5: An ad for codahealer (an electro massager). The company sells two types of codahealer; one with a built-in motor (the upper picture), and the other with only an attachment, which is connected to a motor of an electric fan (the lower picture). In addition to therapeutic appliances, the company also produced stone cutters, as illustrated in the upper left corner of the ad. In this ad, codahealer for therapeutic purposes and a stone cutter for industrial purposes share the same technologies and are arranged in parallel. (*Katei no denki*, April 1928)

4. Fusion of Traditional Medicine and Electrotherapy

Explaining the popularity of electrotherapy only from the viewpoint of modernization and electrification of Japanese lifestyles in fact neglects another important element: its similarity with traditional medicine. In many cases, advertisements for electrotherapy appliances compared electrotherapy to traditional medicine, such as massage, acupuncture, and moxibustion. These advertisements helped to overcome fear of using electricity in therapy that people sometimes felt. Furthermore, the rhetoric that fused electrotherapy and traditional medicine virtually provided people with the explanation of how electricity cures so many diseases and made it easier for them to accept this strange therapy.

Now, I will describe the kinds of electrotherapy appliances that were produced. We can

roughly classify the typical appliances into two groups; the first group consists of devices that apply electricity to traditional medicine: an electro moxibustion appliance (fig.6), an electric bath, or an electro massager. For example, an electro massager was novel in that it used an electric motor, but massage itself was a well-known and traditional therapy. The selling point of an

electro massager was that it was ‘more effective,’ ‘deeper’ and ‘faster’ than massage by hands. The ads insisted that it could effectively cure many diseases and symptoms, because an electro massager can easily and quickly reach the deep point of your body where cannot be usually massaged by hands.



Fig.6: An ad for an electro moxibustion appliance, Elethera. The nude woman lying on a couch wears the appliance on her abdomen. By illustrating an erotic, westernized, modern woman, the ad represents not only the traditional idea of moxibustion but also new images of modern lifestyle. (Yomiuri Newspaper, 14 May 1929)

The second group consists instruments to electrify the inner body of a patient and usually to administer a prick, which convinced patients that something good was happening. These appliances were actually completely new and different from traditional medicine; nevertheless when the ads for these appliances explained the method of its therapy, they often referred to acupuncture and moxibustion. In the case of diathermy, a patient needed to apply the two electrodes to his body, and the points of body to receive the electricity differed for each disease and symptom. For example, there were points for indigestion, points for neurasthenia, and points for sterility. These numerous electrified points on the body were simply associated with therapeutic points and channels and vessels. Most companies sold their appliances with their own original manual explaining the electrified points for each disease. Some of those manuals introduced a Western-born concept, motor-point which made its therapeutic method appeared more scientific, yet when the manuals explained precisely what the motor-point was to the readers, they finally referred to therapeutic points and channels and vessels as if birds go back to their nests every night.

When Japanese pioneers of engineering were enamored with *erekiteru*, they sometimes assimilated its therapeutic function to acupuncture and moxibustion as well. For instance, Hashimoto Sokichi, who was one of the first electrical engineers, described in his book *Erekiteru kyurigen* (Basic Principle of the Static Electricity Generator, supposed to be written in around 1813) that *erekiteru* could be substituted for acupuncture and moxibustion. Similarly, the other Japanese engineers and doctors of the time generally compared electric current and electrodes with *ki* and *inyo* (Chinese: *qi* and *yinyang*). They transformed and translated Western science and technology in the context of their own culture, and a cultural translation was going on in many fields at this time in Japan.

However, although electrotherapy made the most of the essential ideas of massage, acupuncture and moxibustion, undoubtedly it did not completely identify with those traditional practices. Instead, it also attempted to gain an ascendancy over other therapies with exploiting its scientific and modern semblance. Electrotherapy could tickle the public curiosity and interest with gaining its reliance and relief, because it included both the newest technology and the traditional medicine.

In addition to that, it is noteworthy that electrotherapy spotted a niche where the dominant Western medicine was ineffective: chronic and incurable disease such as rheumatism, impotence, and indigestion. In particular, people who remain in a low condition yet present no discoverable reasons why they should not get better were targeted. By avoiding competing against Western medicine in areas where medicine and surgery were very successful, electrotherapy was succeeding in expanding its influence. This relationship between Western medicine and electrotherapy was similar to the coexistence between Western medicine and traditional medicine. In summary, while electrotherapy seemed scientific and distinguished itself from traditional medicine, it also kept its distance from Western science. Electrotherapy positioned itself on the margin between Western medicine and traditional medicine, and such ambiguity helps explain why it could thrive in the popular culture.

5. Birth of New Occupation: Electrotherapist

As I mentioned above, various ads of electrotherapy appliances appeared in newspaper and magazines in the 1920s and the 1930s. They included not only product ads but also ads for electrotherapeutic clinics and for vocational schools to train electrotherapists. In the 1920s, after the deep recession after the WW I, business prospects were somber, and unemployment remained relatively high. Both employed and unemployed looked for new kinds of jobs, hoping to improve their chances of success. Electrotherapist was one of new occupations born under such economical conditions, and its rise also helped electrotherapy flourish so widely.

Here, let me give an example of vocational schools of electrotherapists : *Tokyo denki chiryoho kenkyusho* (The Institute for Electrotherapy of Tokyo, fig.7). According to its newspaper ad pretending an article on Yomiuri Newspaper in 16 February 1929, this institute had a two month-program to train electrotherapists. Everyone could enter the program without examination, and the students learned several subjects such as electrophysiology and ‘electrotherapeutic diagnostics’ and how to operate electrotherapy appliances. The ad conclusively emphasized that after finishing the program the students would be able to open their own clinic and earn as much money as a doctor. Of course, in



Fig.7: A typical ad of the *Tokyo denki chiryoho kenkyusho*. It placed such ads several times a month in many kinds of newspapers during the 1920s and the 1930s. The catch copy reads: “Gospel for job applicants. New, high-grade, and favorable occupation.” (Yomiuri Newspaper, 13 October 1929)

order to open their own clinic, they had to buy an electrotherapy appliance at the institute with which they were associated.

Many ads for other electrotherapist schools also frequently appeared in newspapers and magazines. Some of them claimed to send off more than two thousand alumni.⁵ Unfortunately, because at first there were no clear government authorities, statistical evidence that shows how many vocational schools of electrotherapists existed and how many electrotherapists worked is not available.

Nevertheless, an article on Asahi Newspaper in 19 April 1935 reported that there were more than ten thousand electrotherapists in Japan. From reports like these it is apparent that the number of electrotherapists and electrotherapy clinics continued to increase through the 1920s and the 1930s.

As might be expected, there were many troubles concerning electrotherapy clinics and electrotherapists. Newspaper articles reported cases in which a patient’s condition deteriorated after electrotherapy, cases in which a dealer fraudulently sold useless

⁵For instance, according to Ikematsu Shigeyuki’s researches, more than two thousands people graduated from the Noishiki Electro Medical School in ten years up to 1931. Ikematsu, *Ryozhutsu kouji torishimari ron* (Tokyo: Iyaku horei kankou kai, 1936), pp.72-74. Yet all of alumni was not supposed to become an electrotherapist. Not few students learned electrotherapeutic techniques and bought its appliance for self help practices at home.

appliances, and so forth. Although the Central Sanitary Bureau of the Department of the Interior licensed both medical practitioners, namely doctors and nurses, and traditional practitioners such as acupuncturists and masseurs and regulated their practices based on law, yet, there was no category for the newcomer electrotherapists. The government could not take action against them without valid regulations. In 1930, the Metropolitan Police Department enacted the Regulation for healing practices to sweep away quack remedies and empirics including electrotherapy and ordered non medical practitioners except acupuncturists, moxibustionists, and masseurs (those three had been already licensed by other laws) to obtain permission before opening a clinic.

By the enactment of the Regulation, on the surface it appeared that control and restraint of electrotherapists and electrotherapy clinics became strict. However, the government faced two regulatory difficulties. First of all, the Regulation prescribed that the authorities did not permit opening a clinic in the case that its healing practice was ineffective or harmful against health and hygiene. As mentioned above, electrotherapy had been already practiced as one of physiotherapy at university hospitals and public hospitals and, viewed in this light, was regarded as a genuine medical practice. Thus, it was difficult for the authorities to affirm that individual electrotherapies were ineffective or harmful and to refuse permission unless the practice would obviously cause troubles.

Second, what was more awkward is the comparison of electrotherapy to traditional medicine such as massage and acupuncture. The government admitted the efficacy of those traditional practices and accordingly licensed them. If electrotherapists emphasized the similarity of their therapy with lawful traditional medicine, the authorities could not refuse their application, either. As a result, it did not seem difficult to receive the permission to open an electrotherapy clinic. Furthermore, from the view of electrotherapists, once they received permission from the authorities, they could insist that they were certified by the government and therefore their practices had a real therapeutic effect.

Effectiveness of the Regulation seemed limited at least against electrotherapy after all, and the number of electrotherapists continued to increase. Because becoming an electrotherapist required neither troublesome procedures nor a qualification such as those needed to become a doctor or an acupuncturist, many people viewed electrotherapy clinics

as a new business chance. Electrotherapy seemed modern and scientific so that it was also considered most suitable job for the new age. Although to emphasize only their commercial venture is misleading, yet it is clear that business-minded practitioners, electrotherapists, provided the public more chances to try electrotherapy. By the birth of the new occupation of electrotherapist, the sign for the ‘electrotherapy clinic’ was a common sight in the cities, and the practice of electrotherapy became an accepted part in Japanese society.

Electrotherapy grew rapidly in popularity under these favorable conditions, but it just as rapidly fell from favor by the end of the 1930s. Japan entered a new war footing and favored the munitions industry instead private and civic life. The Japanese government began severely to restrain the electricity supply for individual homes as well as the production of home electric appliances from 1938. Under this state control of resources, electrotherapy quickly declined.

6. Conclusion

Through an analysis of three conditions in the 1920s and the 1930s, I have investigated the process in which electrotherapy took root among the public. Popularization of electrotherapy owed more to the current of social and economical changes than to the progress of medical science. The development of electric industry enabled technologically and commercially production of electrotherapy appliances, and the birth of the occupation of electrotherapist also gave the public more opportunities to access electrotherapy. Electrotherapy can be supposed to be an embryonic and typical example that the collaboration between market-oriented technology and business interests developed therapies and therapeutic appliances into commercial goods. It is clear from this example that when a new therapy becomes popular among the public the way of sales, marketing, and distribution is an important factor in appealing to the public. In relation to this, on the market people who received electrotherapy or bought electrotherapy appliances were no longer merely a passive recipient of medical services who used to be called simply a patient; they turned out be a consumer or a customer who had an undeniable power to produce a new age by a choice of his/her own cure.

Electrotherapy is also a good example which shows us how the public integrates the new instrument into the existing culture. When the public, which lacks detailed knowledge about medicine and science, accepts a strange therapy and its instrument, it needs to interpret them in the context of familiar and well-known things. Ads for electrotherapy appliances often employed the rhetoric that presented electrotherapy as similar to traditional medicine. Electrotherapy made the best use of this ambiguity to appeal to the public as being modern and fashionable, but at the same time as being a part of familiar culture and tradition. Such cultural interpretation makes the existing culture and tradition gradually change as well as produces a new culture, and the ambiguity is indispensable for cultural interpretation.

Popularization of electrotherapy, moreover, demonstrates another ambiguous boundary: the one between medicine and non-medicine. The Regulation for healing practices in 1930 tried to control electrotherapists and their clinics, but it could not regard electrotherapy as mere quackery. This improves that it is hardly possible to split naively all therapies and treatments into medicine and non-medicine. The boundary between medicine and quack medicine or para-medicine is actually more ambiguous and unstable than we realize. In order to distinguish medicine from non-medicine, we first need to define what medicine is, yet the outline of medicine has been consistently changing, and inevitably the one of non-medicine has been unclear as well. The changing is sometimes based on the development of medical science and sometimes on the social needs toward medicine, in any case, such ambiguity and instability cannot be completely erased. Electrotherapy succeeded in targeting and diving into such margin between medicine and non-medicine.

In summary, electrotherapy was, and is still, coming and going between two sets of poles—one set of modern and tradition and another set of medicine and non-medicine -- like alternating current passing up and down between the positive pole and the negative pole. The history of electrotherapy then tells us that our perspectives on medicine and disease have been changing as well.