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From *Pelita* to electric lamp: An evolutionary study of lighting technology in Kuala Lumpur, 1880s–1940

Abstract. *This article aims to examine the transformation of lighting systems in Kuala Lumpur, a major town in Selangor, Malaya from the late 19th century to the early 20th century. This study analyses how the process of illuminating the home at night shifted from a laborious hand-on task to a significantly more convenient and efficient system as a result the development of science and technology-based infrastructure particularly the provision of electricity. In additional, this article explores how exactly lighting technology has been introduced and integrated into homes in Kuala Lumpur. To investigate these questions, the study applied qualitative and historical research methods. Most of the information and statistics used in this article were collected from primary sources, including archives and official documents of the Electrical Department and the Selangor Secretariat Files published in the late 19th century to the first half of the 20th century. The study demonstrated that the provision of electricity as a domestic energy source by the Electrical Department played a significant role in advancing lighting technology in homes. The need to illuminate homes at night which was traditionally met through the use of the pelita, a container filled with kerosene that produces light through a lit wick has shifted to the use of electric lighting which provides illumination with just the flick of a switch. The development of lighting technology meant that the process of illuminating homes was no longer managed entirely by homeowners but also became the responsibility of the Electrical Department. Starting with the generation and distribution of electricity to consumers, the Electrical Department was subsequently responsible for managing household wiring systems and ensuring that the installation of electric lighting was properly carried out before it was used by consumer. Therefore, the evolution of lighting technology in Kuala Lumpur from oil lamp to modern electric lamp not only widened the nocturnal living spaces within homes but also afforded users with an enhanced sense of safety and comfort.*

Keywords: *lighting; electricity; Kuala Lumpur; home; electrical department; urban modernization*



Introduction.

By the end of the 19th century, Kuala Lumpur experienced a very significant development, with its transformation from a small village into a major city in Malaya. The development of the tin mining sector and its selection as the British administrative centre led to large-scale migrations to Kuala Lumpur. In 1880, the population of Kuala Lumpur was estimated to be around 3,000 residents, before increasing to 4,054 residents in 1884 (Gullick, 1955, p. 40). By 1890, the population showed a sharp increase to 19,000 residents, and within the next five years this number shot up to 25,000 (Rus, 2005, p. 102). By the dawn of the 20th century, Kuala Lumpur had 30,000 residents (Ismail, 2015, p. 259). The drastic population increase, especially of European and Chinese communities, turned Kuala Lumpur into a high population density area. At the same time, many houses were erected, leading to an unorganised settlement, and causing a congested and unclean environment. This situation indirectly affected the residents' security, comfort, and health. To accommodate the ever-growing population, each house was built close to one another, and only separated by a 10- to 12-foot-wide road. The small distances between houses and the use of building materials such as wood posed a safety risk to the residents in the event of a fire (Jackson, 1963, p. 119). Meanwhile, the neglected sewage and garbage disposal system and untreated water supply also facilitated the spread of diseases such as malaria, tuberculosis, and dysentery. Therefore, it was clear that the population increase in Kuala Lumpur posed major security and health risks.

To ensure the residents' well-being, the government paid special attention to professional urban governance and sought to design a liveable urban environment. Thus, the Sanitary Board was established in May 1890, responsible for management of urban affairs (Rus, 2001, p. 45). They took steps to improve the sewage system, provide clean water, control the spread of disease, and prevent fires to ensure the survival of Kuala Lumpur as a liveable city. In addition, there is one other important feature of the development of Kuala Lumpur, namely illumination. Although lighting was only used for night-time, the government realised the necessity of an efficient lighting system for crime prevention. Kuala Lumpur, a commercial city of shophouses, clubs, and elite residential areas consequently exposed it to the risk of burglaries, robberies and other crimes. For example, in 1895, there was the Li Choi Gang, involved in robberies and murders (Gullick, 2017, p. 105). In another incident, ten robbers armed with revolvers broke into a shop owned by one Chong Yew. The incident resulted in the owner deprived of \$400 and his life (Gullick, 2007, p. 622). Aside from shops and residents' homes, government and private offices were also targeted by criminals. Around 1894, a number of cases of theft were reported to have occurred at the Government Printing Office, the Residency Surgeon, and the Selangor Club (Gullick, 2007, p. 623). Therefore, lighting was very important to ensure the safety of Kuala Lumpur residents. The emphasis on this aspect coincides with the Crime Prevention through Environmental Design (CPTED) model by Newman (1972). Through this model,

crime prevention can be implemented by paying attention to urban designs such as roads, buildings, housing, and residential lifestyles. The construction of business and residential premises with a good lighting system can potentially reduce or prevent crimes, thereby increasing the level of residential security. Aside from crime, illumination with efficient and safe energy sources such as electricity can also reduce fire hazards.

Although studies on the history of Kuala Lumpur's 20th century urbanisation received scholarly attention, most discussions do not emphasise on urban illumination. Gullick (2017), who studied the history of Kuala Lumpur between 1856 and 1939, discusses the various aspects of urbanisation, but barely focused on the development of the lighting system. Both Rus (2001) and Ismail (2015) discuss the role of the Sanitary Board in managing aspects of urbanisation in Kuala Lumpur. Although both studies concentrated on the Engineering Department under the Sanitary Board, the ensuing discussions only focused on the sewerage system and clean water supplies. Even Rus (1996; 2006), in his other studies, evidently still focused on the same aspects, namely administration, urban hygiene, and disease control. The latest study by Arbi, Zainol, and Ahmad (2025) on aspects of Kuala Lumpur's urban planning also skipped discussing lighting as one of the important features for city life.

Based on this observation, studies on the implications of western scientific and technological advancements on Kuala Lumpur in particular and Malaya in general have yet to be explored in depth. In fact, when viewed even in the context of Singapore, an important colonial port-city in the “Far East” of the British Empire, research is still lacking (Goh, 2013, p. 3). Although Goh (2013) focuses on technological developments in Singapore, discussion on electricity remains superficial and cursory. Instead, the discussion is more focused on technology in regards to ports, agriculture, sanitation, and public health. Ditto for Yeoh (2003) who only focuses on technology in Singapore's urbanisation such as sanitation and housing. Both of these studies ignored urban illumination, even though in the late 1920s, the government paid attention to the provision of electricity for street lighting and residential uses in Singapore. India, another British colony, saw the development of electrical facilities as a new energy source (Sarkar, 2018). However, based on several studies by Sarkar (2015; 2017; 2020), his discussion only framed this energy source within the economic and technical knowledge development.

Based on existing studies, illumination has yet to receive its due attention within the writing of the history of colonial-era Kuala Lumpur in particular and Malaya in general, even though a good lighting system has become an important feature in the growth of Kuala Lumpur as a modern city. The presence of Chinese and European communities in Kuala Lumpur with their distinctive lifestyles has led to the emergence of a new culture, namely nightlife. Night-time social activities in clubs and hotels, including illicit pastimes such as gambling and prostitution, necessitated illumination. In addition, the process of developing electrification facilities in Kuala Lumpur by the

1920s showed progress, thus providing a stable source of lighting for the population. Therefore, this article aims to study the development of the lighting system in Kuala Lumpur by focusing on residential homes from the late 19th century to the early 20th century. This study analyses the changes that occurred in the process of illuminating the home at night as a result of electrification, and identifies how exactly the progress in lighting technology was introduced and integrated into the homes in Kuala Lumpur. The discussion highlights illumination as one of the important features in ensuring the security and comfort of the residents of Kuala Lumpur. Furthermore, this study provides a new perspective on the history of Kuala Lumpur's urbanisation, namely the development of lighting technology, previously overlooked by researchers.

Research Methodology.

In line with the research objective which aims to examine the transformation of the illumination system in Kuala Lumpur and the integration of modern lighting technology in the process of lighting homes in the past, this study uses the historical and qualitative research methods. Starting with the heuristic method, primary sources such as the Annual Reports of the Electrical Board and the Annual Reports of the Electrical Department were collected. The use of both of these sources is very important and suitable to the focus of the study on electrification facilities. As the department responsible for managing electricity supply services, the Electrical Department has recorded various information and statistics related to this energy source. Furthermore, although the Sanitary Board was established to manage urbanisation in Kuala Lumpur, the development and provision of electricity was the purview of the Electrical Department. Other primary sources used in this study are the Selangor Annual Reports and the Selangor Secretariat Files. These sources contain information about Kuala Lumpur as one of the districts in Selangor. Although these sources do offer information to explain the process of providing electricity in Kuala Lumpur, there are limitations in the information, and it is difficult to determine its development in detail. Some important information such as the number of residential houses that receive electricity, and user groups according to ethnicity, class, or area are not stated. Therefore, it is difficult to analyse the implications of electrification and its utilisation as a source of lighting on the socio-economic aspects of the population. In addition, these sources only explain the services provided by the government, and ignore information on the private companies involved. To compensate for this deficiency, newspapers are also used to obtain information about private companies. In addition to primary sources, secondary sources such as books and articles are also consulted. Therefore, the use of primary and secondary sources ensures the relevant information is collected and adapted to the discussion. After collection, the next method is criticism to confirm the suitability of the sources for the study. After collecting relevant information and statistical data from primary and secondary sources, the next step is interpretation. This step aims to identify appropriate

information and statistical data to support the arguments presented in the discussion. The final step is writing, whereby all the collected facts are systematically arranged according to set objectives to ensure the proper flow of ideas. The three objectives are a historical review of traditional illumination systems to identify methods and problems in their utilisation, the provision of efficient and stable energy sources through the development of electrification facilities and then the process of introducing and integrating modern lighting technology in residential homes. The chronological arrangements of these three objectives aim to present a historical narrative on the evolution of the lighting system in Kuala Lumpur from the end of the 19th century to the beginning of the 20th century.

Results and Discussion.

Kuala Lumpur was designed and constructed at the tail-end of the 19th century to function as the administrative centre for the Federated Malay States (a combination of four states, namely Perak, Selangor, Negeri Sembilan and Pahang) as well as the centre of commercial economic activities. With this position, Kuala Lumpur became a focal point for the population. To balance the function of Kuala Lumpur and its ever-increasing population, the government focused on local affairs by developing various modern basic facilities. The provision of these basic facilities has not only transformed the physical structure of Kuala Lumpur, but more importantly has added value to the daily lives of residents in terms of security. In this context, the provision of electricity has led to significant changes in the process of night-time illumination in residential homes. The adaptation of technology such as electricity and electric lamps as a source of lighting has made the night-time atmosphere brighter, further increasing the level of security. Although this lighting technology is something new and involved engineering, the integration process was facilitated by government support, especially its Electrical Department.

Lighting the Pre-electric Home.

Traditionally, for residents of Kuala Lumpur before the arrival of the British, the largest source of lighting in residential homes usually came from fire. This source of lighting was produced through the combustion process, using fuels such as coconut oil or kerosene. The need to provide this source of lighting was the sole responsibility of each homeowner. Therefore, the source of lighting was obtained and managed with local knowledge, which was then adapted with simple nature-based technology to illuminate the house at night. Residents used coconut shells or bamboo as containers, filled with oil and placed a wick at the top to light it. The simple technology used to generate light was described by an English traveller, Isabella Lucy Bird, who travelled to Malaya in the late 19th century, who recorded that the local residents used a “nutshell filled with palm-oil and containing a pith wick” as an *pelita* (oil lamp) (Bird, 1883, p. 24).

Urbanisation and the development of social activities necessitated night-time illumination. Hence, the increase in the demand for oil lamps. Since there was no lamp manufacturing industry in Kuala Lumpur in particular and Malaya in general, oil lamp supplies had to be imported. By the beginning of the 20th century, many companies emerged that became importers and distributors of oil lamps with more modern designs and made of pewter. It was discovered that the import value of lamps and lampware in 1908 increased to \$74,036 compared to \$73,287 in the previous year (Selangor Administration Report for the year 1908, 1909). The John Little and Company Limited was among the companies involved in importing and marketing oil lamps in Kuala Lumpur (Malaya Tribune, 1916, p. 2).

In general, the provision of oil lamps has brought about changes to the night spaces of residents in Kuala Lumpur, including in residential homes. However, oil lamps produced dim light, smoke, and soot in addition to being a fire hazard. Undoubtedly, oil lamp manufacturing companies were always making improvements to reduce the risk of fire for users. For example, the Kitson Company introduced safer oil lamps because they have glass covers to prevent other objects from catching fire, as well as an adjuster that could control the intensity and use of fuel (Selangor Secretariat File 3981//1920). However, these oil lamps still used liquid fuels such as kerosene and petroleum, which were potential fire hazards. In January 1881, a fire occurred as an oil lamp fell over in an opium shop. The incident resulted in 500 residents becoming homeless and three casualties (Rus, 2001, p. 19). In another incident, four victims died due to an explosion that occurred when one of the victims was filling kerosene to light the lamp (Selangor Secretariat File 875/1899). Furthermore, the use of oil lamps required users to ensure fuel supplies availability at home. Therefore, residents needed to properly prepare and manage space and storage of the fuel to prevent accidents. In other words, residents were fully responsible for providing lighting to their homes at night.

Advent of Electricity: The Modern Lighting Source.

As early as the 1890s, the government had planned to develop electrification facilities in Kuala Lumpur as a source of lighting (Selangor Secretariat File 3921/1901). Thus, Charles Edwin Spooner as state engineer was responsible for drawing up an electrification scheme. Based on Spooner's scheme, a hydroelectric station using the flowing Gombak River was built in 1899, and it was completed and started its operation in 1905 (Selangor Secretariat File 1577/1909). However, the electricity generated was still limited to public use such as street lighting and government buildings. This was because the process of developing electrification facilities in Kuala Lumpur was still in its early stages and only on a small scale. In addition, residents' homes were not equipped with an electrical wiring system, and electrical goods were not yet widely marketed in Kuala Lumpur.

By the early 1920s, the government recognised the fact that electricity needed to be explored and capitalised. Frederick Bolton, who had experience as a hydro-electrical engineer and involved in several projects in Britain and South Africa, was appointed as electrical adviser to design a more efficient supply scheme for Kuala Lumpur and several other cities in the Federated Malay States (Tate, 1989, pp. 58–75). As a result of his report, the Electrical Board was established in 1921 before being restructured in 1927 and known as the Electrical Department. The establishment of the Electrical Department led to the development of properly planned electrification facilities, and managed by professional electrical engineers supported by science and technology-based infrastructure. However, the government's main goal in developing electrification facilities was to provide a source of manpower to meet the needs of the tin mining sector. As the largest contributor to government revenue, the provision of an efficient source of power for the tin mining sector was paramount. Furthermore, by the early 1920s, the tin mining sector in Kuala Lumpur was facing a shortage of manpower (Ken, 1965). Thus, in 1927 began a construction work on a power station in Bangsar with a capacity of 9,000 kW (Selangor Secretariat File 363/1924). The Bangsar Power Station, completed and began its operations in July 1927, supplied most of the electricity for the tin mining sector (Annual Report and Accounts of the Electrical Department for the year 1927, 1928).

The construction of Bangsar Power Station with its large generating capacity indirectly became the starting point for the expansion of electrification involving domestic users. Based on Table 1, it is clear that the use of electricity for the domestic sector in general recorded an increase since 1927. In 1930, the initiative taken by the Electrical Department by adding a 10,000-kW generator set to meet the increasing demand also further increased the Bangsar Power Station's electricity generation capacity to 19,000 kW (Annual Report and Accounts of the Electrical Department for the year 1930, 1931; Selangor Administration Report for the year 1927, 1928, p. 10). The installation of this additional generating set allowed more electricity to be generated and supplied to domestic users. In addition, around the 1930s there was a lot of information about electricity published in newspapers showing its advantages as an energy source. For example, an article titled "Benefits of Electricity" explained the advantages of electricity as a brighter and less risky source of illumination compared to gas, oil, and spirits (Malaya Tribune, 1932, p. 2). The publication of articles about electricity indirectly contributed to the increase in electricity use for the domestic sector. Based on an article published by the Malaya Tribune (1934), it is clear that the use of electricity for lighting purposes has become the go-to choice of the population. Only in 1933 did the use of electricity for the domestic sector recorded a decrease due to the downturn economic situation that had yet to recover from the effects of the world economic recession. This decrease also affected the use of electricity in the economic sector. This situation caused domestic consumers to return the electrical appliances rented from the Electrical Department (Annual Report and Accounts of the Electrical

Department for the year 1933, 1934, p. 11). In fact, the total number of consumers connected to the system in 1933 also showed a decrease from 6,529 consumers to 6,868 consumers in 1932 (Annual Report and Accounts of the Electrical Department for the year 1933, 1934, p. 10; Annual Report and Accounts of the Electrical Department for the year 1932, 1933, p. 11). When the economic situation improved in 1934, the use of electricity for the domestic sector showed an uptick, due to the increase in consumers connected to the system, to 6,945 consumers (Annual Report and Accounts of the Electrical Department for the year 1934, 1935, p. 11).

Table 1. Electrical Energy Unit Usage In Kuala Lumpur, 1927–1937 (Source: Author’s reconstruction based on data from *Annual Report and Accounts of the Electrical Department*, from 1934 to 1937).

Year	Domestic	Industry
1927	10,571	654,511
1928	138,194	7,620,295
1929	387,915	14,974,268
1930	795,162	15,155,908
1931	1,003,137	11,152,065
1932	1,043,376	8,395,499
1933	958,195	9,789,535
1934	1,244,330	20,207,889
1935	1,515,388	33,223,588
1936	2,076,321	53,767,591
1937	3,587,825	59,444,880

To ensure that domestic users were connected to the electrification system, two aspects were given due attention by the Electrical Department, namely the building of substations and the connection of transmission lines. The construction of substations functioned as a distribution centre for electricity from Bangsar Power Station to consumers by residential areas. In addition, substations are also built to ensure that the electricity supplied to residential homes were at a lower voltage to suit the level of home use and ensure safety. Many substations were built by the Electrical Department for suitable use for residential areas in Kuala Lumpur. Among them were at Brickfields Road, Ampang Road, Circular Road, Imbi Road, Hospital Road (Annual Report of the

Electrical Board for the year 1926, 1927, p. 3), Sungei Besi Road, Bungsar Road (Annual Report and Accounts of the Electrical Department for the year 1928, 1929, p. 6), Batu Road, Pudu Road, Maxwell Road, and Rodger Street which were equipped with low tension switchgears (Annual Report and Accounts of the Electrical Department for the year 1929, 1930, p. 5).

Table 2. The Extension of Transmission Line Connections in Kuala Lumpur 1928–1939 (Source: Author’s reconstruction based on data from *Annual Report and Accounts of the Electrical Department*, from 1928 to 1939).

Year	Overhead Mains (Miles)	Underground Mains (Miles)
1928	135.00	45.00
1929	162.00	50.00
1930	210.75	62.00
1931	227.00	64.60
1932	224.36	67.28
1933	269.61	65.77
1934	285.02	67.94
1935	298.14	68.04
1936	326.06	68.22
1937	382.43	73.12
1938	393.13	76.48
1939	463.35	83.07

With the increase in the number of substations, the Electrical Department also carried out transmission line connection works to channel the electricity generated from Bangsar Power Station to each substation before they were supplied to the end-users. Table 2 shows the increase in the distance of transmission line connections made by the Electrical Department between 1928 and 1939. There were two types of transmission line connections used by the Electrical Department to supply electricity to consumers, namely the overhead mains and underground mains. The connection of these transmission lines shows that the electricity supply in Kuala Lumpur had been expanded. In other words, more residents in Kuala Lumpur have access to electricity.

In 1928, 4,109 users have access to electricity. This number increased to 12,546 users by 1939 (Annual Report and Accounts of the Electrical Department for the year 1928, 1929, p. 7; Annual Report and Accounts of the Electrical Department for the year 1939, 1940, p. 62). Behind the development of electrification facilities, it also shows that the residents of Kuala Lumpur now have a more stable and guaranteed modern lighting source. The transition to the use of electricity as a lighting source subsequently caused the development of illumination technology in the context of residential homes in Kuala Lumpur.

Bringing Electric Light into the Home.

Undoubtedly, the idea of encouraging homeowners in Kuala Lumpur to use electric lights had been around since the late 1890s. At that time, the private companies involved in providing electrical engineering services and supplying electrical goods had influenced the especially elite segment of the population. For example, Mr Sanderson, a representative of Riley, Hargreaves and Company, took the initiative to organise an electric light show in his quarters in High Street (Gullick, 2007, p. 413). In addition, the company also installed electric lights in workshops and invited several Chinese investors to witness the efficiency and advantages of their use (Gullick, 2007, p. 416). However, it is difficult to obtain information on the use of electric lights among the people of Kuala Lumpur around the late 19th century and early 20th century. Although the electrification facilities provided by the government began in 1905, there is no information on its use as a source of lighting in homes. In fact, the Annual Reports of the Public Works Department and the Annual Reports of the Electrical Board also did not clearly state the use of electric lights. Only after 1927 was the use of electricity for lighting started to be recorded in the Annual Report of the Electrical Department. However, the information only referred to electric lights provided by the Electrical Department, and did not mention private companies or other suppliers. The use of electricity as a source of lighting was also not categorised by ethnicity or social class. However, as a new energy source, electricity was seen as a symbol of prestige and modern identity for its consumers. Therefore, it can be concluded that the use of electricity in the early stages was only concentrated among the elite, such as European and Chinese capitalists. Viewed within the context of Singapore, electricity as a source of lighting at home was also only concentrated among foreign capitalists (Edwards, 2017, p. 105). In addition, electricity usage was also not stated in detail for lighting sources, but was instead included under the domestic sector category.

The construction of the Bangsar Power Station and the connection of the transmission line have provided a very important foundation for the modernisation of lighting in homes. However, one issue requirement management by the government, especially the Electrical Department, which was to integrate the electricity into residents' homes. This posed a huge challenge to the Electrical Department because existing homes in Kuala Lumpur were still not equipped with an electrical wiring

system. The Electrical Department took steps by installing an electrical wiring system in residents' homes, which included electrical points, sockets, and electrical wires on the wall to be connected to fans, cookers, water heaters, and lamps. In 1928, the Electrical Department installed 1,480 electrical point installations for lights, fans, and cookers (Annual Report and Accounts of the Electrical Department for the year 1928, 1929, p. 7). Within a year, there was an increase of 1,766 electrical points installed by the Electrical Department for new users, which further increased to 1,874 electrical points in 1930 (Annual Report and Accounts of the Electrical Department for the year 1929, 1930, p. 6; Annual Report and Accounts of the Electrical Department for the year 1930, 1931, p. 8). This increase marked the inclination of residents in Kuala Lumpur to switch to the use of electrical goods, including electric lights. To further expedite the process of installing electrical points in residents' homes, the Electrical Department authorised contractors or companies involved in electrical services to manage the installation process. However, to ensure the safety of residents while using electricity, the Electrical Department set regulations that every installation must be handled by certified workers. This regulation, as stipulated in The Electricity Enactment (1914), states:

No installation or electrical plant or apparatus shall be worked or operated except by or under the control of persons possessing such qualifications and holding such certificates as may be prescribed, and no person not possessing such qualifications or holding such certificate shall work or operate any installation or electrical plant or apparatus except under such control as aforesaid.

At the same time, the Electrical Department held examinations that awarded certificates as wireman, chargeman and engineer to passing candidates. For example, 187 candidates sat for the examination in Kuala Lumpur, Ipoh, and Seremban in 1927, and from that number, 25 people passed the test as wireman, while 29 candidates passed as chargeman (Annual Report and Accounts of the Electrical Department for the year 1927, 1928, p. 17). The number of candidates taking the examination to become wireman and chargeman showed a continued increase. In 1928 alone, 63 candidates obtained certification as wireman, and another 36 candidates as chargeman (Annual Report and Accounts of the Electrical Department for the year 1928, 1929, p. 19). This increase enabled the Electrical Department to hand over the work of installing electrical points in homes to contractors. In 1929, 1,383 electrical point installations were carried out by contractors (Annual Report and Accounts of the Electrical Department for the year 1929, 1930, p. 7). By the 1930s, the need to equip residential homes with electric lights was increasingly well-received by the residents of Kuala Lumpur. For instance, 6,073 applications were submitted by users who had received electricity so that the Electrical Department could install a wiring system to be connected to electric lights (Annual Report and Accounts of the Electrical Department for the year 1932, 1933, p. 12). It was discovered that between 1933 and

1938, no less than 6,500 consumers who were supplied with electricity had applied for wiring systems to be fitted at their home for electric lights and several other electrical items.

Table 3. Table Lamp Rental in Kuala Lumpur, 1927–1939 (Source: Author’s reconstruction based on data from *Annual Report and Accounts of the Electrical Department*, from 1928 to 1939).).

Year	Table Lamp (Unit)
1927	43
1928	39
1929	29
1930	36
1931	22
1932	19
1933	18
1934	16
1935	16
1936	18
1937	13
1938	12
1939	11

After the installation of the electrical wiring system, the final process that completed the transformation of illumination technology in homes in Kuala Lumpur was to encourage residents to use electric lights. To facilitate the transition process from oil lamps to electric lights, the Electrical Department once again played an important role by establishing the Hiring Department (Annual Report and Accounts of the Electrical Department for the year 1927, 1928, p. 10). There were two main functions of the Hiring Department, namely (i) disseminating information on the benefits of using electrical goods and teaching residents how to use them, and; (ii) providing electrical goods for rent or sale to consumers. They took the initiative by holding an electric light show with the slogan “Better Light-Better Sight”, during the Malayan Agri-Horticultural Association Show (Annual Report and Accounts of the

Electrical Department for the year 1937, 1938, p. 5). The interest shown by visitors led the Hiring Department to build a showroom in Gombak Lane to expose residents to better lighting in the home (Annual Report and Accounts of the Electrical Department for the year 1938, 1939, p. 6).

Meanwhile, for the rental of electrical goods, the Hiring Department only provided table lamps with a small number of units compared to other household appliances such as fans and cookers. Table 3 shows the number of rented table lamps for each year. This figure only represents the rental of table lamps because the Electrical Department did not provide the type of electric lamps hung from the ceiling. Instead, those types of lamps were brought in and marketed by agents who were awarded tenders, such as Aktiebolaget Lux Company and Kitson Empire Lighting Company Limited (Selangor Secretariat File 1749/27; Selangor Secretariat File 3981/1920). In addition, several other companies also sold electric lamps. For example, the Huttenbach, Brothers and Company Company supplies 500- and 1,000-candlepower lamps to consumers (Wright, 1908, p.789; Nasution, 2006, p. 61–65). The imported lamps consisted of several international lamp brands with a proven reputation in lighting technology such as Philips, Osram, and Mazda. For example, The General Electric Company Limited, with sales representatives in Singapore, Kuala Lumpur, and Ipoh, sold Osram brand electric lamps that followed the specifications set by the British Engineering Standards Association (The Straits Times, 1932, p. 13). The company also supplied various types of lamps with a power ranging from 15 watts to 100 watts, thus providing many choices to consumers (The Straits Times, 1932, p. 16). Meanwhile, Robinson and Company Limited and William Jacks and Company (Malaya) Limited were both suppliers of Philips brand lamps, which gave out brighter lighting while avoiding high electricity consumption costs (The Straits Times, 1933, p. 6; The Straits Times, 1935, p. 1). The Borneo Company Limited supplied Mazda brand electric lamps by the British Thomson-Houston Company Limited in Kuala Lumpur, Singapore, Ipoh, and Penang (The Straits Times, 1930, p. 14). Apart from selling electrical appliances, the private companies also offered services for the installation of wiring systems and electrical appliances in consumers' homes.

The businesses run by these companies provided more choices for residents in Kuala Lumpur to access electric lighting. Thus, the decrease in table lamp rentals (Table 3) did not reflect the residents' rejection of the use of electric lighting, but instead influenced by the increasingly widespread marketing of domestic lighting, due to the role of private companies as suppliers of electric lighting. In other words, consumers could obtain electric lighting from these companies, which offered more modern models and designs that suited the lifestyle of the elite community in Kuala Lumpur. Furthermore, the light bulbs sold was cheap, around 50 cents to \$1.19 (The Straits Times, 1932, p. 16). The emergence of these companies as distributors or suppliers of internationally-branded electric lighting gave the impression that the business of electrical goods, including lighting, has sound and profitable economic

prospects. This situation indirectly shows that the use of electric lighting was indeed in demand among the residents of Kuala Lumpur. In fact, there was also an increase in the revenue collected by the Electrical Department for the sale of electricity for lighting purposes. In 1936, the revenue from the sale of electricity units for lighting was \$633,755 (Annual Report and Accounts of the Electrical Department for the year 1936, 1937, p. 60), before increasing to \$693,134 the following year (Annual Report and Accounts of the Electrical Department for the year 1937, 1938, p. 64). By 1939, the total income recorded was \$823,979 (Annual Report and Accounts of the Electrical Department for the year 1939, 1940, p. 44).

Conclusions.

The period between the end of the 19th century and the beginning of the 20th century saw major changes in the illumination of homes in Kuala Lumpur. The need to illuminate homes at night, which was originally a laborious hand-on task and required residents to be involved in every step, was later simplified by the end of the 1920s. The establishment of the Electrical Department was a very important turning point in the transformation of lighting technology in Kuala Lumpur. The electrification facilities, provided through the construction of the Bangsar Power Station, supplied energy for the domestic sector and provided a more efficient and safer source of lighting. Simultaneously, the Electrical Department paid attention to home mechanisation through the installation of wiring systems, electrical points, and sockets to enable residents to utilise electricity in their daily lives at home. Furthermore, the involvement of private companies as distributors of electrical appliances, including lamp, further accelerated the transition toward a modern lighting system in Kuala Lumpur. Thus, electric lamps began to become the residents' choice to improve their lighting. The transition from oil lamps to electric lamps marked the beginning of modern illumination in Kuala Lumpur. This modernisation has further improved user safety. Undeniably, the use of electricity and electric lamps also has risks to residents. However, at least the risks could be managed with the installation and monitoring by trained and skilled technicians from the Electrical Department. This entire process, starting from the generation and supply of electricity to consumers, to the installation of wiring systems and electrical goods, managed by the Electrical Department, has indirectly led to government involvement in providing light in residents' homes. This situation meant that illuminating the house was no longer the responsibility of the homeowner, but the Electrical Department. Residents no longer have to bother with the hard work, as the need to illuminate their homes at night with brighter light became easier just by simply flipping a switch.

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The author declare no conflict of interest.

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Від гасових до електричних ламп: Еволюція технологій освітлення в Куала-Лумпурі, 1880–1940 роки

Анотація. У статті розглядається трансформація систем освітлення в Куала-Лумпурі – одному з головних міст штату Селангор (Малайя) – від кінця XIX до початку XX століття. Дослідження аналізує, як процес освітлення житла в нічний час перейшов від трудомісткої ручної праці до значно більш зручної та ефективної системи внаслідок розвитку науково-технічної інфраструктури, зокрема впровадження електроенергії. Крім того, у статті досліджується, яким саме чином технології освітлення були запроваджені та інтегровані в домогосподарства Куала-Лумпура. Для вивчення цих питань застосовано якісні та історичні методи дослідження. Більшість інформації та статистичних даних, використаних у статті, зібрано з періоджерел, зокрема архівних матеріалів і офіційних документів Електричного департаменту та секретаріату штату Селангор, опублікованих наприкінці XIX – у першій половині XX століття. Дослідження показало, що забезпечення електроенергією як джерелом побутової енергії з боку Електричного департаменту відіграло важливу роль у розвитку технологій освітлення в домівках. Потреба освітлювати житло вночі, яка традиційно задовольнялася за допомогою пеліти – посудини, наповненої гасом і оснащеної гнотом, що давала світло під

час горіння, – поступово змінилася використанням електричного освітлення, яке забезпечує світло простим натисканням вимикача. Розвиток технологій освітлення означав, що процес освітлення домівок більше не контролювався повністю лише власниками житла, а також став відповідальністю Електричного департаменту. Починаючи з виробництва та розподілу електроенергії споживачам, департамент згодом відповідав за управління системами внутрішньої електропроводки та забезпечення належного встановлення електричного освітлення перед його використанням споживачами. Отже, еволюція технологій освітлення в Куала-Лумпурі – від газової лампи до сучасної електричної – не лише розширила можливості нічного життя в домівках, а й забезпечила користувачам підвищений рівень безпеки та комфорту.

Ключові слова: освітлення; електроенергія; Куала-Лумпур; житло; електричний департамент; урбаністична модернізація

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