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A Historical Analysis of the Nexus between Water Supply and Disease Control in Western Nigeria, 1900-1945

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Abstract. This study examines the correlation between the supply of hygienic water and disease control in Western Nigeria. Focusing on the early years of colonial rule, 1900 to 1945, it interrogates the intersection between the indigenous and colonial modes of water supply and, therefore, illuminates the peculiarities and preferences of both dispensations. Beyond the realm of urbanisation, the study situates the supply of water in Western Nigeria within the context of medical history. Accordingly, it discusses the impact of unhygienic water on the prevalence of diseases such as diarrhoea, dysentery, guinea worm and typhoid fever in the area. The study shows the efforts made by the colonial authorities to introduce scientific parameters into the sourcing of water for domestic use, the challenges that beset the process, their lopsided focus on the larger towns where colonial administrators, missionaries and merchants mostly resided and the relative neglect of the rural areas. The study relies mainly on primary sources, especially data obtained from the National archives, Ibadan, which were subjected to historical analysis. This focus on the impact of water supply on the outbreak of diseases and the earliest search for hygienic water in Western Nigeria, provides a research base for subsequent studies in related themes in Nigerian medical history.

Keywords: Western Nigeria, Colonial, Water supply, Diseases, Healthcare.

1. Introduction

The supply of hygienic water in any society is not only inextricably linked to the process of urbanisation and infrastructural development, it also has a very firm footing in preventive medicine. This study, focussing on Western Nigeria, examines the colonial policies on the supply of hygienic water within the context preventive healthcare. By extension, therefore, the study is contextualised in the social history of medicine. Nigerian Historians, for a very long time, showed little interest in medical history; hence physicians like Adeola Adeloye initially dominated this genre of history writing. (Adeloye, 1985). Even when historians like E. A. Erhagbe and S. Ehiabhi, for instance, discussed water supply in Uromi, Edo state, Nigeria, they made no reference to the quest to contain enteric diseases such as diarrhoea, dysentery and typhoid and other infections like bilharzia and guinea worm, which to a large extent, informed the effort of the colonial authorities. (Erhagbe and Ehiabhi, 2011). This study, therefore, establishes the nexus between water borne diseases, water supply and the preventive healthcare policies promulgated by the British colonial administration in Western Nigeria.

Western Nigeria as captured in this study refers to the region located in the South-western end of Nigeria. The area is helmed by the Atlantic Ocean to the South, the River Niger to the East and Kwara and Kogi states of Nigeria to the north. The area has had a very long history of inter-group relations which pre-dates colonial rule and revolved around trade, politics and cultural exchange. The major groups in the area comprised the Yoruba and the Edoid elements (Benin, Esan, Urhobo, Isoko, Itsekiri, Etsako and Owan). The Ijaw are also found in the southernmost fringes of the region. In the larger part of the colonial period, the area was administered as one political unit. This character subsisted from the constitution of the area into the Western and Central Provinces in 1906 through its re-designation as Western Group of Provinces in 1939 and Western Region in 1951. This administrative history ensured the flow of policies from a common national administrative capital based in Lagos and a regional headquarter based in Ibadan.

Prior to the colonial period, the people of Western Nigeria relied on both natural and man-made sources for water supply. The former consisted of rivers, creeks, mash land, lagoon, streams and rain water while the latter embraced moats (dug out canals) and ponds. Virtually every West Nigerian community, apart from rain water, relied on other natural sources. The distribution and type of the natural sources that were available in a community depended on the environment. Rivers and streams were relatively fairly distributed while creeks were mostly found in lower Niger delta area. Lagoon was mainly available in Lagos, with tributaries flowing mostly eastward. Marsh lands also dotted some areas around Lagos and environ and intermingled with several creeks in the lower Niger delta area. Some of the natural bodies of water that were available to the people included the following:

Table I: Examples of Bodies of Water in Western Nigeria

Name	**Type**	**Location**
Agua	Lake	Irrua, Edo state
Ase	Stream	Delta State
Benin River	Benin	Benin, Edo State
Edion River	Benin	Edo state
Eleyele River	River	Ibadan, Oyo State
Enaa River	River	Udo, Edo State
Erinle	River	Osun, Osun State
Labata River	River	Araromi, Ondo State
Ikpoba River	River	Benin, Edo State
Ikogosi Warm Spring	Spring	Ikogosi, Ekiti State
Lagoon	Lagoon	Lagos and Lekki, Lagos State
Mahin River	River	Ondo State
Mangrove, Marsh land	Swamp/Mash land	Lagos, Epe, Warri and Environ
Niger Delta Creeks	Creeks	Igbodaka Ilaje, Ondo State. Also in Warri and environ, Delta State
Niger	River	Fringes of Esan land, Agenegbode in Edo State and Asaba area in Delta State
Oba	River	Oyo, Oyo State
Ogbesse	River	Ogbesse, Ondo State
Ogun	River	Ogun State
Ogunpa	River	Ibadan, Oyo
Omi Osun	Omi Osun	Omi Osun
Orlie	River	Edo state
Osun	River	Osun, Osun State
Ossiomo	River	Ossiomo, Edo State
Otan	River	Osun, Osun State
Otin	River	Osun, Osun State
Ovia	River	Benin, Edo State
Owena	Lake	Ado-Ekiti
Ugbalo		Irrua, Edo state
Ureje	Lake	Ado-Ekiti

Source: http://ooduafamily.freeforum.net, retrieved17/4/2022 and visits by the researcher to some of the water bodies such Agwa lake, Ugbalo River, Enaa River and the River Niger.

However, some areas like Uromi in Esan land, Edo state, were poorly endowed with natural channels of water. Having no river, they had to rely on man-made constructs, especially, ponds and moats. The man-made sources of water consisted mostly of ponds that were dug to serve as receptacles in low lying areas with a good flow of flood water. Ponds were sometimes fed with flood through a network of moats. Although the moats in ancient Benin are remembered more as defensive devices and protective barriers against external invasion, they also facilitated water collection. The Moats in Uromi were dedicated majorly to the channelling of water into ponds.

The people naturally considered rain and river water as cleaner sources of water for domestic use. The norms and nuances of the people regarding water hygiene were based on their culture and had no bearing with the germ theory. Therefore, rivers and ponds were cleaned for aesthetic reasons and often to appease marine gods and goddesses and not to eliminate germs which the people knew nothing about at that time. Such cleaning exercises were carried out by the youths especially as a prelude to some traditional festivals such as the Oshun festival

in Osun, Osun state, and Ikpede (river washing) festival in Okhuesan, Edo state. When the British colonialists introduced water tanks and wells, they augmented the traditional sources which for much the colonial period remained the dominant sources of water in the villages and hinterland. The introduction of portable water was to wait till the 1910s.

2. Colonial Intervention in Water Supply.

The British colonialists introduced into Western Nigeria a new phase of preventive healthcare that had a modest beginning in the administration of *quinine*, but developed to incorporate other elements like vaccination, sanitation, swamp reclamation, quarantine, leprosy control, health education and supply of hygienic water. In addition to preventive healthcare considerations regarding cross-infection between communities, the presence of vectors like mosquitoes, the long stretch of the Atlantic ocean's coast line that paved the way for the importation of a disease like yellow fever and the unhygienic disposal of waste, the colonial health authorities took cognisance of the health challenges associated with the people's reliance on ponds and rivers for water supply. Access to clean water was daunting. Yet, with the threat of water borne and diseases and death arising from them, which directly correlated with the quality of water, the colonial authorities sought alternative sources of water and create new policies in that regard. Early investigation by Henry Strachan and Edward H. Reed (Medical Officers) had by 1900 established the prevalence of water borne diseases such as guinea worm (*dracuculus medineses*), round worm (*Ascaris lubricoides*) and hook worm (*Ancylostoma duodenale*) and "more than half of the people" suffered from some form of worm infection that were traced, largely, to water polluted with faeces. (NAI. Lagos Annual Report, Medical Department, 1900: 155). Other bowel complaints like dysentery and diarrhoea were also traceable to contaminated water. Some of the earliest statistics that gave insight into the scale of the problem derived from Strachan's report of 1901:

Table II: Death from Bowel Complaints and Water Supply.

Year	Dysentery	Diarrhoea	Total
1901	197	173	370
1902	179	159	338

Source: NAI Annual Report, Medical Department 1901: 9.

Parasite and bowel complaints were rife across Western Nigerian communities. S. D. Onabamiro has identified areas where guinea worm was gravely endemic in the area. They included Lagos, Ilaro district around Eruwa, Ibadan district, Ekiti district – extending to Akure and Owo as well as Agbor area – extending to Ubiaja, Ifon and Ogwashi-Uku. Exception to the pattern was the hilly country around Ilesha and Ile-Ife, where some fast running streams flow. (Onabamiro, 1952: 159). Roundworm (*Ascaris*), dysentery and diarrhoea were even more widespread. From the Yoruba area, eastward to Benin, Esan, Afemai, Agbor and Asaba districts, they occurred with a high level of morbidity and they were among the most common cases treated at St Camillius Hospital, Uromi, Baptist Hospital Ogbomosho and Sacred Heart Hospital, Abeokuta. (Ogbeide, Interviewed, 3/3/2015).

At Ibadan and Abeokuta, the Medical Officer of Health carried out special investigation of bilharzia and hookworm infection in 1930. 58.8 per cent of the respondents from Abeokuta and 23 per cent from Ibadan were infected by bilharzia and 12 per cent of the respondents from Ibadan had hookworm. (NAI. Annual Report. Medical Department. 1930:26). As early as 1899, W. F. MacFarlane had observed that "Europeans on the Coast do not suffer from hookworm because of the habit of washing their hands with clean water after work" and boiling their drinking water.

In Ondo Province, poor and inadequate water supply was linked to frequent the cases of diarrhea and dysentery and the perturbing typhoid epidemic of 1925. Dr MacDonald reported that water supply was the chief source of the disease. For example, the source of clean water was at least a mile and half from the affected villages – Illa, Ogosi, Ikole, Illama and Ihapa. At Illa, the people relied on two shallow ponds that yielded poor quality water. In addition to unclean water, the market at Ogosi was the chief source of spread to the surrounding villages. Ogosi was the commercial centre of the district. The market was held every five days and traders from all the surrounding villages attended it, exacerbating cross-infection. At Ikole, the source of spread was, largely, attributed to the labourers recruited from that district to work on the main road near Ogosi. (NAI. CS 026/2, 15520: 16, 17). By the time it came to the notice of the Resident in July 1925, 700 people had died in Ondo Province. Of these, 300 were from Ogosi. The mortality rate was as high as 3.3%, considering that the population of Ogosi was only 9000. (NAI. CS 026/2, 15520: 16, 17). 200 persons also died at Illama out of a population of 8000. The health authorities also observed that contaminated water, inadequate toilet facilities and failure to report cases promptly contributed to the 1925 disaster. They found out that there was an outbreak in Ishan (Esan)

district three years earlier but it was never reported. The epidemic of 1925 was first noticed in April, but reported in July, thereby giving the disease some time to fester. (NAI. CS 026/2, 15520: 17).

Based on the recommendation of the investigating doctor, Conah, isolation of patients, keeping of compounds clean, burning of rubbish, boiling of drinking water and having proper latrines and improved water supply were recommended. Although the isolation of infected persons was seen as the best preventive method, it was considered impracticable because of the number of villages affected. The medical officer, Macdonald, however, succeeded in isolating some patients, using the school and church compound at Ihapa, and Ogosi. (NAI. CS 026/2, 1552: 2).

Colonial health authorities identified clean water as an antidote to such bowel complaints and as an indispensable variable in preventive healthcare. The traditional sources of water, by scientific reckoning, left much to be desired. As highlighted earlier, the indigenes relied on natural sources such as rivers, springs, rain and artificial constructs such as ponds. Apart from simple filtration of pond-water and smoking of empty water pots, treatment of water was of little moment. Health authorities linked the handling of these water sources with the prevalence of water-borne diseases and came up with policies to address the problem since the provision of portable water was not feasible at the earlier stages of colonial rule owing financial, logistic, technical and manpower problems. At the beginning, the policy was to ensure that "water supply for the Europeans throughout the whole (sic) protectorate is derived from covered tanks in which rain water is collected from the corrugated iron roof of the houses". (NAI. Lagos Annual Report. Medical Department. 1900: 1). For the indigenes such tanks were luxuries. Apart from being expensive, most of their houses, by 1900, still had thatched roofs, which were difficult to harness for water collection. Rivers, streams, ponds and wells remained popular among the people with detrimental consequences for health.

The policy of government, in consonance with the recommendation of health authorities was that public wells should be inspected regularly (once a week in practice) for contamination, safety and proper siting – 150 feet away from the nearest house. To contain harmful seepage, the padding of well with cement or clay was recommended. Shallow wells were also outlawed. In fact, they were ordered closed by 1910 (after the promulgation of anti-mosquito ordinance) because they could easily be invaded by mosquito lava. (NAI. CSO1/1/8. Memo. W.B. Griffiths to Gov. Sam Kowe. 14/3/1882. See also. Annual Report. Medical Department. 1910: 27). The use of pumps and the covering of well were also advocated to reduce contamination. The public wells dug in low land areas like Lagos, Badagry, Warri, Sapele easily yielded water. By 1900, there were four public wells in Badagry, along with numerous private ones. Lagos wells yielded water easily and by 1909 there were ninety-eight of them. Of these, twelve were pump-wells, twenty-six covered, fifty-eight open and two wind-mill wells. However, only nine were considered suitable for drinking purposes. (NAI. Annual Report. Medical Department. 1909:24). Ebute-Metta and Apapa, by 1911, had a total of ninety-four public and 2,120 private wells. Tanks were better rated than wells and, therefore, were recommended for the Europeans. There were 294 government and 119 European (other than government officials) tanks in Lagos area. The natives who were clearly in the majority had only 148. (NAI. Annual Report. Medical Department, 1911: 104). The by-laws of May 1918, 27th November 1919, rule number 2 of 1935 and public notice of 1942 regulated water supply and sanitation in Lagos: no one was allowed to dig a well within a radius of hundred yards from a street fountain or water source. All existing wells were to be rendered mosquito proof to the satisfaction of the health officer who otherwise ordered them covered. (Kingdon, 1958: 2003)

In the Benin, Esan and Etsako axis as well as Ogwashi-Uku and Ibusa area, the water bearing strata was relatively deep and so wells did not yield water easily. Although some form of piping from tanks was done as early as 1910 in European and government Quarters in Benin, the people still relied more on rivers, rainwater and ponds. (NAI. Annual Report. Medical Department, 1930: 27). Bacteriological and chemical analysis of such sources water meant for domestic use were frequently carried out to ascertain the level of purity and always portrayed them as unsafe. In Lagos, a pipe borne water scheme designed and executed by Mr H. Peet, Director of the Public Works Department (PWD), was muted in 1907. Iju valley was chosen. The project was completed in 1919 at a cost of £296,700. Pumping commenced in December of that year. The water works at Iju (twenty-seven kilometres from Lagos) drew water from Iju and Adiyan streams. Water was pumped to ten-million-gallon capacity tanks and from these to eight filter beds and then to a clear water tank with a storage capacity of two million gallons. It was floored and roofed with concrete. From here, a service reservoir, six million gallons capacity was supplied. The service reservoir was also

done with concrete to protect the water from pollutants after leaving the filter bed. Water was conveyed from here by gravity through twenty-six inches pipes to Lagos and Ebute Metta in the first instance. (NAI. Annual Report. Medical Department, 1914: 47).

The health benefit of pipe borne water was, perhaps, the most important consideration, as the colonial authorities expected it to have "a most beneficial effect on the health of the population". (NAI. Annual Report. Medical Department. 1915: 21). Pipe-borne water was, therefore, extended to other districts in Lagos beginning from Apapa, Iddo, Ikoyi and Ijora. Subsequently, Lagos mainland was connected. As indicated earlier, water-related diseases experienced across Western Nigeria necessitated the extension of pipe-borne water projects into the hinterland. Abeokuta received attention in 1913. The water project here was completed and formally inaugurated by the governor in 1914, with limited supply to the town as initial emphasis was on government and European quarters. The original scheme consisted of two steam engines that pumped untreated water from an interior pump well from Ogun River through a set of candy filter to the concrete service reservoir of 300,000 gallons. By 1924, the service reservoir capacity had been doubled and chemical purification with *aluminum sulphate* introduced. In 1932, the steam engine had become unserviceable and electric pump was introduced. In 1936, a pyramid tank was constructed and the number of fountains in the town increased from the initial twenty-four to 110. (NAI. Abe Prof I, ABP 1367 Annual Report Departmental, Abeokuta Province 1938: 106).

By 1926, modalities for pipe borne water in Ijebu-Ode and Ibadan were worked out. A sum of £8000, which was initially earmarked for water supply at Ibadan was not released because of post-World War 1 economic recession. Nevertheless, by 1925, the people of the town had petitioned the government to initiate a water supply scheme. The initial plan was to harness Ogunpa stream for the European population. (NAI. Colonial Report. Annual – Nigeria, 1926: 31). Extension to Ibadan mainland was not done until 1930 when the Agodi and Adeoyo water schemes were initiated. Moor plantation water supply scheme was also completed in that year. (Ibid). The Oyo water scheme also commenced that year. (Ibid). The construction of a dam for Ife water works started in 1929, estimated to produce 500,000 gallons a day. Feasibility studies were also initiated for Oshodi in Lagos mainland and Benin. (Ibid: 80). The water problem in the Benin Province remained acute as rivers, streams, ponds and rainwater remained the main source of water by 1930. Water borne diseases such as guinea worm remained a problem. The Initial attempts to sink public wells failed. The borehole option met with a lot of difficulties because of the depth the water bearing strata was found to be 142 feet in 1933. (Ibid: 31). In Ishan (Esan) Division, water was found to be deeper than expected. (Erhagbe and Ehiabhi, 2011) The Geological Survey Department was, therefore, drafted to take charge of the problem in Benin Province. (Ibid) Thus, sophisticated geo-physical methods were employed. Yet the wells "tapped relatively shallow body of water", which was not suitable for harnessing into pipe-borne water. (NAI. Colonial Report. Annual – Nigeria, 1926: 32).This slowed down the pace of waterworks. Progress was made rapidly in the 1930s, with more efforts to overcome the challenges in difficult terrains like Esanland largely because of the emphasis of the Rockefeller foundation research group that showed the immense importance of water in preventive healthcare. (Ibid: 28). The ground water project in Benin gradually took shape. Ogba River was also harnessed for pipe borne water supply in the town. Being the first major pipe borne water source in Benin Province, *Ogba* (originally name of Ogba River) crept into the vocabulary of Benin, Esan, Etsako, Urhobo and Anioma people and has been adopted as the name of pipe borne water. By 1938, significant progress had also been made in Ishan Division in the sinking and harnessing of wells. (Erhagbe and Ehiabhi, 2011)

At Otta, a water project was completed in June 1938. It involved two deep bore wells drilled by the Geological Survey Department. It commenced by supplying water to the rest-house and five public fountains. (NAI. Abe Prof I, ABP 1367, Annual Report Departmental. Abeokuta Province, 1938:106)

Fig I: An Example Colonial Public Water Fountain Used in Western Nigeria

At Owode, the Owode spring was channeled by means of covered pipes to a walled reservoir to serve government facilities and personnel by 1938. The

people still largely relied on tanks at that time. (NAI. Abe Prof I. ABP 1367 Annual Report. Departmental. Abeokuta Province, 1938: 108). In the same year, a proposal was made to harness the Ilaro spring water to supply 80,000 gallons per day to a high point circular reservoir near the district officer's house. It was to be treated with soda ash and chlorine and supplied to fourteen fountains in the town. (Ibid). Water supply in Egba generally was unsatisfactory, except in Otta. Ifo was yet to be connected at this point in time. At Owode, a stream was walled and piped to protect the inhabitants from guinea worm. As a result of inadequate water supply, poor sanitation and heavy infestation with mosquitoes at Itori, the United African Company (UAC) was advised to relocate and they did, moving to a location near Ife. By 1939, towns such as Ife, Ogbomosho, Iseyin, Oyo, Abeokuta, Iwo, Ede and Oshogbo had also been provided with clean water. (NAI. Abe Prof I. ABP 1367 Annual Report. Departmental. Abeokuta Province, 1938: 108)

To render pipe-borne water safer and less conducive to opportunistic diseases, aeration, chemical treatment (chlorination) was introduced by 1930. It had been observed that although cleaner and safer than other sources, pipe-borne water was sometimes contaminated through rusty pipes, burst pipes, perforations, human contact during repairs and malfunctioning of the filtration bed as it was in Iju water works in 1925. (NAI.CSO2603291 Vol. III. Memo Director of Medical Services to Chief Sec to Govt. 15/6/26). Heavy rain also compounded the problem by increasing the turbidity of the rivers from where water was tapped. Aeration was recommended and done to reduce acidity, which was caused by dissolved carbon dioxide. *Aluminium sulphate* (*alum*) was used to coagulate fine particles before filtration, while chlorination was an anti-bacterial measure. (NAI.CSO2603291. Vol. VI. Lab. Analyst to Chief Sec to Govt. 9/7/27). Well water and tank water, however, continued to exist alongside pipe-borne water. Smaller villages that clearly out-number the major towns were completely neglected in the pipe-borne water scheme and continued to rely on primordial sources of water with negative consequence for water-borne diseases. Even in towns that were piped for water supply, only the central parts were provided with water fountains. However, information about the need to boil pond water circulated widely through teachers, missionaries, propaganda units and sanitary inspectors. The achievements in this domain contributed to the progress recorded in preventive healthcare across the region. Besides water treatment, sanitary inspectors diligently enforced the covering of wells, draining or oiling of pools, filling of tree holes and cutting down of water bearing plants in public places. The idea of boiling, filtering and processing pond water with *alum* was imbibed quickly, but not so for river and well-water because the people assumed they were clean enough for domestic use. So, there were always challenges to contend with. European quarters and offices certainly got a greater share of pipe borne water and associated facilities like water cistern sewage disposal. The uneven distribution of water resources was facilitated by the policy of segregation in residential area between the Europeans and the indigenes.

The policies on preventive healthcare and water supply adopted by the Western regional government in the 1950s up to Nigerian independence in 1960 dovetailed into the character of the policies of the preceding years. The regional government's position was expressed in the public health policy statement presented in a formal declaration of July 1952 which made water supply the foremost issue as follows:
The health policy of the present government is based on three fundamentals. Firstly, the provision of adequate water supply. Secondly, the progressive building up of environmental hygiene… coupled with a vigorous campaign of preventive medicine. Therapeutic medicine must be largely a wasted effort if the patients have to return to the same environment which caused their disease. (NAI. PR/F3. Public Health Policy for the Western Region, Nigeria, 1952)

In spite of this, the attitude of successive government to water supply in Western Nigeria has been rather perfunctory. For instance, a study carried out in Ijebu-North indicates that:

Only three per cent of the people have access to clean and safe pipe-borne water while the remaining 97% relied on streams, rain water, wells and springs. Only 26% of the people had water supply within their houses while 47% of the rural dwellers trek for over an hour to fetch drinking water. (Agbelemoge, 2001).

These limitations have endured because successive governments in post-independence Nigeria have not responded adequately to them. The tripartite responsibility for water supply between the federal, state and local governments spelt out in Decree No. 101 of 1993, and the Government and the Rural Water Supply and Sanitation Policy of 2000 have not translated to effective supply of pipe-borne water and control of water borne diseases. (www.wateraid.org/~/media/Publications/water-sanitation-nigeria-national-policy.pdf.) This is underscored by a report of the World Health

Organisation that inadequate sanitation, water supply and hygiene are major causes of death in Nigeria. (http.//www.thisdaylive.com) In a related development, two students were reported to have died from contaminated water in Queen's College, Lagos, in March 2017. (Ugbodaga, 2017). Sanitary superintendents and inspectors no longer visit schools and hospitals in Western Nigeria on a routine bases. Open defecation, even into rivers, is still a common practice and is yet to be sufficiently tackled by government policies. According to UNICEF report, Nigeria ranks third among the top five countries in the world where the practice has persisted, compounded by inadequate supply of portable water. This dovetails into the untoward situation where "seventy-two per cent of the population …lack access to basic sanitation (which) is harmful to the environment and health of the people and often leave a legacy of disease and poverty". (http.//www.dailytrust.com.ng/daily/environment/40406-no-sewage-treatment- plant-in-nigeria) The failure of the government to provide hygienic water for a sizable segment the population directly correlates with the low level of sanitation and the continuous prevalence of water borne diseases in Western Nigeria.

3. Conclusion

This study has shown the intersection between the traditional mode of water supply and the pattern introduced by the British colonialists in Western Nigeria. Whereas natural sources like rain, rivers and stream, and man-made sources like ponds predominated during the pre-colonial times, covered tanks, wells and pipe-borne constructs were preferred by the colonialists. The colonial authorities ensured that their water supply policies favoured the latter, especially in government reserve areas and urban centres. The colonial order began with the construction of modest water tanks for the collection of rain water and cascaded into the sinking of wells and the harnessing of some streams and rivers for the supply of portable water. Shortly after independence in 1960, the Nigerian government, including the Western regional government maintained the water supply structure they inherited, but extended pipe-borne water to more areas. Besides public water fountains, a network of pipe was laid to supply water to some homes in the major towns. However, the supply of pipe-borne water has dwindled steadily since the 1980s. The reservoirs that facilitated water storage and dispensation have, largely, been abandoned. Very many homes, even in the urban centres, still rely on covered tanks and wells. In addition to these, rivers and streams have remained major sources of water in the rural area. The sinking of boreholes has also become very popular in the urban centres, especially among the elite. These private arrangements for water supply usually do not make provision for water treatment and, therefore, have not resulted in the eradication of water borne diseases in Western Nigeria.

References

Adeloye, A., 1985. *African Pioneers of Modern Medicine*. *Nigerian Doctors of the Ninetieth Century*. Ibadan: Ibadan University Press Ltd.

Agbelemoge, A. 2001. Assessment of Domestic Supply Situation in Ijebu-North Area of Ogun State, Nigeria. *Journal of Environmental Extension*, Vol 2. https.//www.ajol.info-jext-artickle-review

Aibieyi. S., 2010. *Development Strategies in Nigeria*. Benin City: Ethiope Publishing Corporation.

Asiwaju, A. I., 1980. The Western Provinces under Colonial Rule. *Groundwork of Nigerian History*. Ed. O. Ikime. Ibadan: Heinemann Educational Books Nigeria Ltd.

Ebie, J. C., 1973. Preventive vs Curative. *Priority in National Health Planning*– Proceedings of an International Symposium. Ed. O. Akinkugbe. *et.al*. Ibadan: The Caxton Press Ltd.

Erhagbe. O. Eddy and Ehiabhi. O. Simon., The Search for Hygienic Water in Uromi District. The Colonial Attempt. *Canadian Social Science* . 7. 5. 2011. 61-67.

Eisenberg, L., The Social Context of Health. Effect of Time, Place and Person. *Today's Priority in Mental Health. Children and Families – Needs, Rights and Actions.* Ed. H. Fine *et al*. 1981. Holland. Reidel Publishing Company

Kingdon. Donald., 1958. *The laws of the Federation of Nigeria and Lagos.* Revised Edition. Vol. 9. Lagos: Federal Government Printers.

Onabamiro S. D., The Geographical Distribution and Clinical Features of Dracunculus Medinensis in South-west Nigeria. *West African Medical Journal.* 1.1. 1952.

Sabben-Clare, E., Bradley, D. J. and Kirkwood., 1980. *Health in Tropical Africa during the Colonial Period*. Eds, New York: Oxford University Press.

National Archives, Ibadan (NAI). Abe Prof I, ABP 1367 Annual Report Departmental, Abeokuta Province 1938

NAI. Colonial Report. Annual - Nigeria. 1926. London: His Majesty Stationery Office. (H. M. S O).

NAI. Annual Report, Medical Department, 1900.

NAI. Annual Report, Medical Department, 1901.
NAI. Annual Report, Medical Department, 1909.
NAI. Annual Report, Medical Department, 1911.
NAI. Annual Report, Medical Department, 1900.
NAI. Annual Report, Medical Department, 1914.
NAI. Annual Report, Medical Department, 1915.
NAI. Annual Report, Medical Department, 1930.
NAI. CS 026/2, 15520, Ondo Province Outbreak of Infectious Disease.
NAI. CSO1/1/8. Memo. W.B. Griffiths to Gov. Sam Kowe. 14/3/1882.
NAI. Abe Prof I. ABP 1367 Annual Report. Departmental. Abeokuta Province. 1938.
NAI.CSO2603291 Vol. III. Memo Director of Medical Services to Chief Sec to Govt. 15/6/26.
NAI.CSO2603291. Vol. VI. Lab. Analyst to Chief Sec to Govt .9/7/27.
NAI. PR/F3. Public Health Policy for the Western Region, Nigeria 1952. Lagos: Government Printers.
Oral interview with Dr. Ogbeide**.** F. A., Director Ossiomo Leprosarium from 1991 – 2010. Benin City. 3/3/15
The most polluted cities in the world. *http.//www.thisdaylive.com/index.php/2016/06/02/who-nigeria-has-four-of-the-most-polluted-cities-in-the-world/*
Ugbodaga, K., Contaminated Water lead to the Death of two queen's college Students. *www.bellanaija.com/2017/03/contamin...*
Water and Sanitation in Nigeria. A Briefing on National Policy - WaterAid. *www.wateraid.org/~/media/Publications/water-**sanitation-nigeria**-national-**policy**.pdf*.

Sewage Treatment in Nigeria. http.//www.dailytrust.com.ng/daily/environment/40406-no-sewage-treatment-plant-in-nigeria