Epidemics and Diseases in Eastern Jordan in the Period 1864-1918 (Historical Study)

Dr. Ibrahim bin Yahya Al-Busaidia, Prof. Mohammad Salem Al-Tarawnehb, Dr. Badr bin Hilal Al-Alawic, a,bSultan Qaboos University, Muscat, Oman, cSultan Qaboos University. Email: aibrahimalbu@gmail.com, bdr_tarawneh64@yahoo.com, bm.altarawneh@squ.edu.om, calawib@squ.com

This study aims to identify diseases and epidemics in eastern Jordan in the late Ottoman period. Most of those who dealt with the study of modern Arab history in general have suffered from studying the political, administrative and military aspects without directing their attention to studying many aspects of modern Arab history. There are still mysterious aspects of the social and economic history of the Arab countries and their administrative units, awaiting the efforts of researchers and researchers to reveal it, and the issue of epidemics, diseases and natural disasters in eastern Jordan still needs more than a million studies that did not receive the attention of researchers and historians. This study is a serious attempt to document epidemics and diseases in eastern Jordan at the end of the Ottoman era, a time period whose history suffered from neglect, and talk about epidemics and diseases in eastern Jordan, however, this period is sporadic parts and hints that do not block the researcher's breath, and do not address The glories of the learner, the differences that are not organized by Nazem, which you will find sometimes in documents and sources, sometimes in the books of foreign travelers, and sometimes in the context of talking about the history of the Arab East in general, and it was necessary to make an effort to search for information related to epidemics and diseases of the original forms, and to point to Those sources in that era, along the way, show facts about the history of epidemics and diseases in eastern Jordan for the period from.

Key words: Eastern Jordan, epidemics, diseases, health measures.
Introduction

Diseases and epidemics

East of Jordan was exposed to a number of deadly epidemics and infectious diseases, and the Al-Bashir newspaper, which was published in Beirut, concerned with reporting a yellow epidemic (cholera) spread in all regions of the Levant, including eastern Jordan in 1292 AH/1875 AD, and this epidemic died in large numbers of the population in villages, rural areas and the desert, the newspaper continued to follow the epidemic until its subsequent siege. The traveler Silé Merle (Salé Merrill) mentioned that when he visited the region in 1294 AH/1877 CE, a cholera epidemic spread widely among people (Merrill, 1881), and a cholera epidemic also spread in eastern Jordan between 1306-1307 AH/1888-1889AD and lethality in large numbers of people (Gaza 1926), and the back of the epidemic in Karak governorate in 1320 AH/1902 CE. The yellow air epidemic (cholera) spread in Ajloun rigorously, causing many of the deaths, where the yellow epidemic (cholera) appeared among the Arab camps in Ajloun.

The cholera epidemic broke out in the year 1320 AH/1902AD between the Hejazi railway near the center of the hand in Amman, and the outbreak of the epidemic in large numbers of workers, as it was dying every day between (13-15) people (Rogan, 1991) They referred to the documents of the Sharia Court of Oman, the first record, dated 20 Rajab 1321 AH/October 11, 1903 CE, to the spread of the epidemic in terms of Oman belonging to the jurisdiction of the Salt, and has been investigated with the Sharia judge in Amman, the death of Bakr bin Haj Mutkar bin Abdullah Al-Jerksi who He works in the (police) wire of Zanderma from the second bloc stationed in the Syrian government center in Damascus. "He attended from eight or ten months in the month of Ramadan last year in the village of Amman, and then died in the village mentioned in the disease of the epidemic. The German traveler Moselle (Moselle) mentioned during his stay in eastern Jordan between 1313-1323 AH/1895-1905 AD, the yellow air (cholera) appeared in the center of his hand in the Madaba region being spent, and he killed large numbers of its residents, and was among the victims of this prestigious epidemic In the Latin series in Madaba, Youssef El-Menfredi. (Moselle, 1989, p. 121).

The Al-Bashir newspaper issued in Beirut in 1321 AH/1903 CE, according to Al-Ahram newspaper published in Cairo, said that the yellow air epidemic (cholera) appeared in eastern Jordan, especially in the areas of Karak and deaths in it. Large numbers of people, the state has taken preventive measures to limit its spread and impose quarantine on the city of Karak and the infested homes where all preventive measures have taken the necessary precautions, in order to prevent the spread of an epidemic. Which was published in Damascus that in the year 1328 AH/1910AD the measles epidemic (Humaira) spread in Karak Governorate, and resulted in the death of large numbers of people, as rumors have spread. He received in Damascus State Center that he dies every month because of this epidemic (700) children This prompted the state government to send a medical mission to the region, and the health status
of the inspector confirmed that the spread of the epidemic in the center is from the Karak district, the Salt and Tafila regions, and Maan, and the number of deaths in them, where he died within four months of an epidemic (76) children Tawfiq Jikla said in an article entitled "Cholera", published by the newspaper quoted in issue (587), on the 29th of Muharram 1329 AH/ January 30, 1911 CE, in the spread of the cholera epidemic in general. As for the provinces of the Levant, explained in an article Causes and how to prevent them, and he mentioned that one of the causes of this disease is soft water, as was transferred by the pilgrims coming Maine from Eastern Europe and Anatolia on their way to the holy places in Hejaz and mentioned that they are transmitted through food, drink and contact with people. The newspaper also mentioned in the same issue that the spread of this epidemic among pilgrims heading to the Holy Land in the Hijaz, and caused the spread of this disease in eastern Jordan. And Al-Muqtaz newspaper reported in 1329 AH/ 1911AD the spread of diphtheria in Karak, killing two children.

Al-Muqtaz newspaper mentioned in its issue (1459) the date of 4 Jumada Al-Awwal 1333 AH/ April 10, 1914AD. Smallpox outbreaks among the inhabitants of Transjordan, and caused the death of many citizens, most of them children. The documents of the Karak Sharia Court in Rabi` al-Awwal 24, 1337 AH/ 1918 CE, indicated that an infectious epidemic broke out in the Karak region that led to the death of many, but the legal documents did not refer to: the name of this epidemic, and Al-Muqtaz newspaper in Number (1366). On Muharram 23, 1332 AH, December 21, 1913 AD, to the diseases that invaded eastern Jordan and destroyed the population, including: typhus (fevers), cholera, smallpox, measles (donkeys), typhoid, tuberculosis, and influenza, and the newspaper stated that these Diseases have spread throughout eastern Jordan and killed large numbers of the population. Restricted to infectious diseases in the Emirate of Transjordan according to Article 12 of the Health Law issued on May 19, 1926 AD, and published in the Official Gazette on June 11, 1926 AD, and these diseases are: A for defamation, Hamma Malte se, Abu Kaab Cerebral spine inflammation, plague, cohineal Hamma, cholera, mother Hamma, Hamma reactions, diphertheria diphertheria, typhus, tuberculosis, dysentery, pertussis (Pertussis), malaria, typhoid, black fever chicken, Bartovyad, smallpox, rubella, diseases Genitals, influenza, encephalitis, walking, pneumonia, leprosy, leprosy, diarrhea, and fever.

Epidemics and animal diseases:

Residents of eastern Jordan suffer from epidemics and infectious diseases that kill their livestock and disrupt their economic activities. In the year 1309 AH/ 1892AD, Al-Bashir newspaper in Beirut published No. 1016 on March 11, 1892AD, and an epidemic appeared among the animals in the Karak region that caused the death of a large number of them ((15))/ 1911 AD that a cattle epidemic appeared in the villages of the Ajloun district, and this epidemic, which the journalist did not refer to, caused large numbers of deaths. The number of cows in the region, which led to the assignment of Syria to the recruitment of Kamil Effendi, the Sheriff of the Police Commissioner, in the Homs brigade to combat this
epidemic, as reported by the Al-Bashir newspaper in its number (2260), and on May 30, 1913 the epidemic of cows spread in the region caused the death of large numbers of cows. Al-Asimah newspaper, the official newspaper of the Arab government in Damascus, No. (6), on March 16, 1919 CE, stated that the cow disease epidemic spread widely in the Ajloun region as of November 1918, which prompted the Arab government in Damascus, and it was vaccinated to send doctors to preserve on the cows with the corresponding serum. The newspaper stated that (63) cows died in the village of Hartha, (30) cows in Irbid, and (37) cows in Ramtha.

Preventive measures and health measures in eastern Jordan:

1- Quarantine: Al-Bashir newspaper stated that the yellow air (cholera) appeared in Karak destinations in 1320 AH 1902 AD, and killed large numbers of people, and the Ottoman Empire took national measures and measures to limit its spread, by imposing it. Quarantine (Corinthia) around the city of Karak and the villages and houses endemic to it, with taking all preventive measures and precautions necessary to prevent the spread of this epidemic, and the municipalities in eastern Jordan had an important role in combating diseases and epidemics, by maintaining public order and punishing Violators, imposing penalties on them, monitoring public slaughterhouses and foodstuffs, as well as preserving water wells. The quarantine system was issued according to the Quarantine Law on May 19, 1926, and this law came in seven articles as follows:

1. Foreign countries coming to Transjordan are required if the Health Department deems it necessary:
2. They are kept under medical supervision for a period of five days after the date of their arrival in eastern Jordan, either in their homes or in the health department in the area in which they live.
3. Or they may remain under medical examination in the quarry or any other place specified by the Ministry of Health.
4. Accordingly, upon entering the Transjordan region, these persons are required to provide the Ministry of Health chief with the correct address of the place they intend to go to, and the place where they will reside within the five days following their arrival in the area.
5. When they reach that place, they must go to the health doctor on the first, third and fifth day, and if the place where they will reside during the mentioned five days is more than three hours (15 kilometers) away from the health doctor's center, it is sufficient that they come to it on the day The first one who is on their way to their place of residence, and on the third day, it is sufficient for them to be examined by the village head, clan, or police station. On the fifth day, they should come to see a doctor at the health doctor.
6. If they go to a place other than the address given to the Commissioner of the Ministry of Health upon entering the area, they must go directly to the health department in the governorate in which this place ends for the purpose of inspection and they must inform the department referred to the address specified first.

7. The Ministry of Health is authorized to perform the required cleansing or testing if it deems it necessary.

8. The Health Department has the power to vaccinate or vaccinate these people if it deems it necessary.

9. Whoever does not act in accordance with this system or intentionally gives a false address after his conviction, shall be punished with a fine not exceeding (15) pounds or by imprisonment for a period not exceeding one month.

They are the most important hospitals in eastern Jordan

Military Hospital in Karak

The documents sometimes refer to it as the building (Khaja Khanna), i.e. the hospital. (22)) (Onsi, 2002), located in the hospital building located next to the Al-Hamidiya Castle Karak neighborhood, was built north of the era of representation Karak Hussein Helmi in 1311-1316 AH/ 1893-1898 AD, this hospital was built in 1314 AH 1896 A.D., and the hospital is dedicated to treating members of the army in the Karak district. He was also treating members of the security forces from Xanderma and a police force in the Karak region, for a daily wage of a quarter of the Majeedi riyal for each patient (Dowling, 1996), and we have no indication that he is addressing people. The hospital is built of ancient limestone and construction materials, and is constructed on one floor surrounded by a square. The hospital contains forty beds for patients, and the hospital building takes the shape of a rectangular shape (49 m), width (9 m), height (5.5 m), and a thickness of maturity of up to one meter. The building is oriented from east to west, facing the castle, and it has two entrances: the first entrance is located in the northern wall with a height (2.8 m) and width (1.5 m) and the second entrance between the south wall, and its height (3.5 m) and width (4 m), and contains the interior From the building there are two main rooms open to each other, separated between the two halls, and a corridor connecting the two entrances to the building (Al-Majali, 2005).

Irbid Hospital

The legal document dating back to 25 Shaaban 1332 AH/ July 19, 1914AD indicates that there is a (Khashkhana) hospital in the city of Irbid, and the document said that the hospital is commanded by local elements, called Khaled bin Deir. Joshua Joseph did not refer to the document as to its location, nor did it refer to hospital staff and workers.
Military hospital for the workers in the railway

This hospital is located in the center of Amman, and it is two houses that the leader of Mirza donated to your waiting list for gendarmes in the state of Syria in 1320 AH/ 1902AD; for the treatment of military personnel working in the Hejaz Railway.

The role of municipalities in preventing epidemics and diseases

In every town council there was a doctor the system "Image of the arrangement of municipal councils that are formed in cities and bronchial sites within the state" states in the first and sixth items that a doctor must be appointed to each municipal council by the government, and he will receive his salary from the state and not from the municipal treasury. Article (112) of the General State Administration Law promulgated in 1287 AH/ 1871 CE stipulated the appointment of a physician in each department of the Municipal Council as an advisory member in the Council (26) according to the Municipalities Law issued in 1294 AH. In 1877 AD it was decided to appoint a doctor in each municipality (Lewis 1966), and the Ottoman Empire assumed municipal medicine, and on 3 Jumada I 1288 AH/ 21 July 1871AD. Instructions for the general medicine management system, and these instructions came in three chapters and twenty articles, according to which the formations and branches of the medical administration were defined, a statement of the tasks of the municipal doctors, and a picture of the department of municipal pharmacies. The first article of the system stipulated that: “There is a municipal doctor who works everywhere whose boundaries are the city’s secretariat and the house of happiness and governors in the states in intelligence with royal medical affairs, as well as with each of the municipal doctors must be a medical assistant in some of the required places”, and for the salary obtained by the municipal doctor, which stipulates the second article of the system “specializing in pensions for municipal doctors and their assistants, and granting them by the municipal administration to the department of Mummoriat”. The municipal doctor performed many of the tasks and duties specified by the General Medicine Administration System, as the second chapter (11) included an article relating to defining the functions and duties of municipal doctors, and the fifth article states the work of the municipal doctor "to see patients free twice a week at a place that is announced and announced by Prior to the municipal administration, the acquittal of those appointed by them, whether they are poor or rich in general, shall not be taken.

Among the doctors who worked in the Karak municipality and its doctors was Muharram Effendi in 1315 AH/ 1897 AD, where the municipality somewhat hired doctors for the Karak Army Hospital for municipal medical work, and worked as a doctor in the Karak Bozabashi municipality Abdul Ghani Effendi between 1316-1318 AH/ 1898-1900 AD. The state of Syria clarified that in the year 1316 AH/ 1898 AD there was a medical clinic (a drug belonging to the Municipality of Ma'an, and Salmanah stated that among the workers of Dr. Shawkat Effendi he continued to work. In this clinic until 1318 AH/ 1900 CE) (37) he worked in Medical clinic (medicine) affiliated to the municipality of Irbid, then the oldest
evidence indicates the existence of this medical clinic in Salamah, Syria, in the year 1318 AH/1900 CE. Salmana indicated that the human physician Mahran Badru Siyan Effendi took over the supervision of the Irbid municipal clinic, as Salmana indicated that he was working with him as a municipal Jew. To monitor and supervise public health, to monitor street vendors and prevent food and drink fraud, and to impose financial fines on those who do not comply with hygiene and public health instructions, and who did this work Ramadan Ramadan Agha (Department of General Medicine) issued on May 3, 1288 AH / July 21, 1871 AD, contains many articles of exchange, its functions and duties, and the third article states that "pharmacy" on behalf of the municipality of Adzakhan, is opened by the municipal administration in the regions T to be determined by the municipal secretariat in the House of Happiness and local governments in the states, there are special panels on its doors that appear specified in the municipal administrations and the third chapter of the system and articles (17-20) on how to manage municipal pharmacies as follows:

1. Municipal pharmacies under the administration of pharmacists with them leasing securities in the exercise of their profession and doctors, municipal glasses (Article (17) of the system)

2. The medications required for the municipal pharmacies and their tools are given based on the doctor’s and pharmacist’s call by the municipal administration of the municipality, to which they are attributed, and they are brought from the Intelligence House in Agzakhana with the Directorate of Royal Medical Affairs. The medicines and tools brought to the municipal pharmacies remain under the supervision of its municipal administration, and the aforementioned administration sees the accounting of pharmacies once every six months (Article 18 of the Law)

3. If the medication papers (Rajit) given to the poor are certified by the doctor, they are given to them by the pharmacy without fees, and these papers appear every week with the knowledge of the pharmacist of the mayor. Municipal Council in the place to which the municipal pharmacy is credited for approval or the district director in the aspects for approval (Article 19 of the law)

4. Medicinal papers (shelters) for patients with competencies working for them at the price of the fare, the price of medications and their implications, which are subject to the provisions of the official tariff prepared and amended by the Royal Medicine Department to join. The opinion of the local municipal administration, the local doctor, pharmacists and those related to the municipal pharmacies sealed by the municipal administration of the law.

Salamana stated that the state of Syria in 1316 AH/1898 CE mentioned the existence of a pharmacy affiliated with the Municipality of Karak, supervised by a pharmacist from the municipality (41), and among the pharmacists who worked in it. A pharmacy belonging to the municipality of Karak, Atnas Effendi, between the years 1316-1317 AH/1899-1900 AD.
Al-Muqtas newspaper, issued in Damascus on 7 Safar 1334 AH/ 4 February 1913AD, confirmed the existence of a pharmacy affiliated to the Municipality of Karak, which distributes drugs and drugs to patients in the city of Karak. Sponsorship was guaranteed by the Ottoman constitution, but this sponsorship, stipulated in the constitution, was not provided by the state to its citizens in the Karak region, compared to other services, and was limited to the care of the army. This increased the risk of epidemics in the Karak district, and the Ottoman constitution defined the general medicine management system that stipulates the functions of doctors in the municipality and pharmacists, the conditions for obtaining a doctor's license to work, pharmacist stores and drug prices, and was particularly interested in the (Korantina) or stone system. The Sanitary, where the Ottoman Empire established quarries in Karak Governorate: two of them in Ma'an (45) and the other in Zarqa that separates the Karak Brigade from the Ajloun district, Major General Houran, and the municipalities in the region had an important role in combating diseases and epidemics, by maintaining public cleanliness, punishing and punishing violators, observing public slaughterhouses and controlling foodstuffs, in addition to maintaining and cleaning water sources. According to the authority of the Ottoman Empire in the year 1316 AH/ 1898 AD, the state appointed a doctor for the municipality of Karak called Doctor Muharram Effendi. Not to mention the appointment of a doctor in the municipalities of Tafila and Salt.

The role of foreign missionaries in combating epidemics and diseases in eastern Jordan:
Missionary missions that reached eastern Jordan since the second half of the nineteenth century played a medical role that helped alleviate the lack of health services at that time. East of the large and active foreign missionary mission in Jordan, especially in the educational and medical fields, the Latin Church Church has succeeded in dealing with people, and the best evidence of this task is led by William Letbi (W. Lethaby) to Karak and Balqa, and this task included a number of doctors, especially Those concerned with pediatric medicine, and since its entry into Transjordan, the mission has provided medical services to those who need them most (Durley, 2012) and another doctor, Forder, joined this mission (Forder) that was provided at the request of the previous mission to help them Providing medical services to people, and Ford A has contributed to the treatment of people in the Madaba region. Bedker (Behaker) indicated that there was medical activity for this missionary association in Karak and Madaba in 1324 AH/ 1906AD. (Baedeker 2010) It is Sally for the English Church of the Apostle Society (Missionary Church Association) which is an abbreviation (CMS) and is a missionary, missionary, English, terrestrial and statistical message for establishing many schools and medical clinics in eastern Jordan and Palestine (Governorate, 1987). This association started its medical activity in eastern Jordan in 1301 AH/ 1883AD, where it built a medical dispensary in the city of Salt, and the building consists of two floors and included (15) rooms, despite the fear of people from the missionary goals that the missionary was hiding and seeking to achieve Through his medical work, the scarcity of health services in eastern Jordan forced people to visit this clinic for treatment. In the year 1322 AH/ 1904 CE, the dispensary was transformed into a hospital, located on the
southeastern slope of the Citadel of Salt. Among the clinics in which the clinic is located: the medical clinic, the pharmacy, a church, a school for males and another for females. (Ziadat, 1990).

In the year 1331 AH/ 1913AD and other medical services that were introduced to the Missionary Church Hospital in Salt, where the Women's Hospital was opened, and this clinic got great approval from many women who were deprived of this service, which were all medical staff from Men. After opening the gynecological clinic, she joined the British Charlotte Burnell Hospital and specialized in gynecology and children. (Rashdan, 1995) The services of the Missionaries Association to the English Church were not limited to the city of Salt, but rather extended to other areas in eastern Jordan. This association opened a medical clinic in the city of Karak in 1314 AH/ 1894AD. This clinic contains two rooms and a pharmacy, and provides you with its needs of medical devices, drugs and drugs, and doctors in them. The association made weekly visits to the villages surrounding the city of Karak to treat patients, and it is estimated that in the year 1316 AH/ 1898 AD the number of visits by doctors of various clinics to the villages surrounding the city of Karak was about (1062) visits. (Al-Ziadat, 1990) The Missionary Society of the English Church opened a medical clinic affiliated to it in Amman in 1327 AH/ 1909 A.D. The village of Al-Hosn east of Irbid in the central district of Ajloun in 1326 AH/ 1908 AD (1990 increases, pp 125-129). Bad foreign shipments clinics continued a regional leadership role until World War I until 1332 AH/ 1914 CE, and the Turks took over all of these clinics and Aguestro treated soldiers and thus deprived the people of Transjordan of the services provided by these clinics (Ziadat, 1990).

**Folk medicine**

The disease was a major challenge for many people, and some remedial measures had to be taken to ensure the patient's health and well-being. Since the need is the mother of invention, some popular circles intend to experiment in the absence of institutional medicine based on Almarai's origins. Some plants tried many types of diseases, followed the result, and then judged them. If they are positive, it has been described that these plants specialize in treating a group of diseases, and some popular circles may resort to fire for use in treating some diseases; Such as: appendicitis, diabetic bitch, whooping cough (Dear 2004). Ironing supplies include: a nail, a clay plant whose leaves and scales are taken and hammered with stone until it is cotton-like and flammable. During the treatment of fractures, the popular imagination uses environmental assets: soap and eggs, where eggs and soap are kneaded after being sprayed to make a strong patch, and it has been linked in the minds of residents of eastern Jordan that travelers from Europe are wise (doctors), so young travelers (I-Ewing) He always faced this situation on his journey to Ajloun (I-Ewing, 1895), and he observed that villagers from villages who had a fever started chewing tobacco leaves. Herbal medicine and quack meat were the means to treat all diseases of the inhabitants of the region. In his medical notes, Dr. Jamil Totanji gave an accurate description of the extent of the faith of the people of
Madaba and its surroundings in popular medicine and sorcery, as well as their ignorance of public health, and their refusal to cooperate with him at the beginning of his work. (Totanji, 2014) Musil (Musil) stated that Madaba residents were taking their patients to Dibba, on the western side of the village, due to the exposure to pleasant air and bright sun, which helps to heal with them. The most important medicinal plants and herbs that sprout abundantly in the region are: Algada, Bithrin, Wormwood, Qaisum, Chamomile, Fenugreek, Harmel, Blockel, Wasba and Peach. (Saba, 1997)

**Conclusion**

The research faced a problem related to the lack of specialized studies on this subject in time and place, and researchers were forced to explore the depths of Sharia and deductive court documents and two inquiries and readers who were appointed to obtain the documents. That revolves around astronomy in this study. The study relied on a variety of basic sources that contributed to its enrichment, including the rich information that covered it covering various aspects of the study, and from these sources that this study relied on in the official annual books issued by the Ottoman Empire, known as (Salamat), including In that: the general state, the state of Syria, the state of Syria, as it included important official information about the employees who worked in public health in the areas of Transjordan, the information in the newspapers and magazines that were issued at that time, and the notes and personal papers of many of the personalities that lived during that The period and its events lived in addition to what was recorded by foreign travelers who have witnesses and impressions of Transjordan during or during their visit. Jordan, like other parts of the Levant, was constantly exposed to epidemics and diseases, especially the epidemic known as the yellow air (cholera), and when the convoy of Haji Shami was passing through eastern Jordan, which is one of the factors that spread this epidemic, and diseases that killed large numbers of people It caused malaria, especially among those who live near Laayoune and Asul, and the plague was spreading in most areas of Transjordan, killing large numbers of the population. Among the most common diseases in eastern Jordan are measles (donkeys), which have killed hundreds of children, and other diseases that have spread in eastern Jordan: smallpox, typhus, typhoid fever, influenza, tuberculosis and others. As for herbs and resort to quacks, they are two treatments that treat all epidemics and diseases, in addition to exposing patients to fresh air and bright sun, which helps to heal. Absinthe, Agyssum, Chamomile, Hermel ring, Whispers.
References

Al-Ansi, Muhammad Ali, The Ottoman Language Dictionary: Glossary of terms in language groups, Beirut Newspaper Press, Beirut, 1318 AH / 1900 CE.
Durley, Thomas, Mohab: Lethaby of A Record of Missionary Adventure, Peri and Coil, Marshal Brothers, Ltd, London.
Fair increases, the first beginnings of hospitals and treatment in eastern Jordan, 1883-1946, Irbid, Yarmouk University, 1990.
Musil, Alois, Arabia Petraea, III Bands, Georg olms Verlag, New York, 1989, Band III.