An Alternative Medical Perspective on Ancient History

An Alternative Medical Perspective on Ancient History:

The Plague of Sumer

By

Philip Anthony Norrie

Cambridge
Scholars
Publishing

An Alternative Medical Perspective on Ancient History:
The Plague of Sumer

By Philip Anthony Norrie

This book first published 2023

Cambridge Scholars Publishing

Lady Stephenson Library, Newcastle upon Tyne, NE6 2PA, UK

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

ISBN (10): 1-5275-1898-1
ISBN (13): 978-1-5275-1898-8

This book is dedicated to the many people, forgotten by history, who died from the epidemics that helped end the Sumerian and Indus Valley Civilisations.

and

to the late Prof. Bryan Harle Gandevia –
my original medical history mentor.

“Medical history documents mankind’s struggle against extinction.”
—Dr. Philip Norrie

“Micro-organisms, whether they be viruses or bacteria or fungi or protozoa, are the true enemy of mankind – always have been and always will be.”
—Dr. Philip Norrie

“Because contagions, such as bubonic plague or dysentery, leave few edifices or easily documented traces, historians have underestimated their devastating effect on ancient civilisations.”
—Thomas Gottlieb, Clinical Associate Professor of Microbiology, University of Sydney

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

I would like to thank the following people for helping me research and write this book.

Dr. A. Narayana, the Director of the National Institute of Indian Medical Heritage; Prof. Nancy Lovell, Professor Emeritus of Anthropology, University of Alberta, Canada; Prof. Dong Hoon Shin, Professor of Bioanthropology and Paleopathology, Institute of Forensic Medicine, Seoul National University, South Korea; and Prof. Vasant Shinde, Professor of Archaeology, Deccan College, Pune, India.

Mrs. Kerry Norrie, my sister-in-law, for her translation of all French material. Mr. Peter Dzubiel, a kind patient of mine, for his translation of all German material, and finally Mrs. Michelle Catterick, a good friend, for her editorial and computer skills morphing my research into my M. Phil thesis and this book.

Dr. Philip Norrie,
Sydney.

FOREWORD

The cause of the decline of ancient civilisations is an oft-contested topic, and made more so when no written records have been found of those civilisations – and even more tantalisingly if there are written records, but no key has been found and it has not been possible to translate those writings. Where records either don't exist or cast no light on the civilisation's demise, other forms of archaeological evidence must be used to draw conclusions about causation.

Dr Philip Norrie's long interest, as a medical historian with a strong focus on population level health effects, is in the impact of infectious disease epidemics on ancient civilisations. In his earlier work *A History of Disease in Ancient Times: more lethal than war*, published by Palgrave Macmillan in 2016, the author argues that infectious disease outbreaks led to the abandonment by Egyptian pharoah Amenhotep III of the city of Karnak around 1350 BCE, and of Hattusa the Hittite capital around 1200 BCE, and moreover that, a thousand years later, an epidemic so weakened the Carthaginian army that Rome was finally able to vanquish and annihilate Carthage.

In the present volume, *An Alternative Medical Perspective on Ancient History: The Plague of Sumer*, Dr Norrie turns his attention to two contemporaneous civilisations. The Sumerian civilisation, in the southern portion of Mesopotamia, the land between the Tigris and Euphrates Rivers in what is now Iraq, lasted from the Neolithic period 4000-6000 BCE to around 2000 BCE. Norrie suggests that an epidemic of the highly and rapidly transmissible pneumonic form of the plague brought about the end of Sumer. The Indus Valley Civilisation which ranged from the foothills of the Himalayas through what are now northwestern India, Pakistan and northeastern Afghanistan, also went into a decline around 2000 BCE. The similarity in timing of the contraction of both the Sumerian and Indus Valley Civilisations has led Dr Norrie to suggest that the plague epidemic spread from Sumer to the Indus Valley. He hypothesises that the means of this

spread of disease was the sea trade between the two. He returns to the question of causes of the major impacts on the peoples of Pharaonic Egypt and marshalls evidence of indirect contact between the Indus Valley and Egypt via Sumer, allowing the plague epidemic to reach Egypt in this same period.

Throughout, Dr Norrie examines in each situation what evidence there might be for a limited number of infectious diseases that might have had the potential to decimate communities or civilisations. Of course the reason these are hypotheses rather than accepted facts are that the microbiological analysis of ancient human remains was either not possible or not considered. The lack of consideration of this possibility in some cases is the basis of Dr Norrie's plea that medical historians or at least medical expertise be part of any archaeological team where there are human remains to be examined.

In recent years, the science of palaeomicrobiology - the detection and identification of microorganisms in ancient remains – has emerged to help answer these questions. Moreover, in recent years immense and rapid improvements in genomic technology - in part spurred by the necessitudes of the COVID-19 pandemic - have led to the creation of the science of paleogenomics. This refers to highly sensitive and specific methods for detection of both human and microbial DNA in ancient specimens as well as the sequencing of bacterial pathogens such as the plague bacterium, *Yersinia pestis*, and viruses, including the smallpox virus. The wide application of these cutting edge technologies to further elucidate, or even confirm, the hypotheses proposed in *An Alternative Medical Perspective on Ancient History: The Plague of Sumer* is Dr Norrie's other plea.

Dr Mark Julian Ferson
MBBS MPH MD MArtTh FRACP(Paeds) FAFPHM FRSPH
Public Health Physician and Paediatrician
Adjunct Professor, University of New South Wales Medicine, Sydney
Adjunct Professor, School of Medicine Sydney, Notre Dame University

CHRONOLOGY

DATE (in BCE)	**INDUS VALLEY**	**SUMER**	**EGYPT**	**ELAM**	**MARI**
7000	EARLY FOOD PRODUCING ERA				
5500	REGIONALISATION ERA				
3500		BEGINNING			
3300	EARLY HARAPPAN PHASE				
3100			EARLY DYNASTIC PERIOD		
3000 to 2900					CITY 1
2700			OLD KINGDOM	BEGINNING	
2650					CITY 1 ENDS

2600	MATURE HARAPPAN PHASE				
2500 to 2290					CITY 2
2266					CITY 3
2000		DECLINE			
1900	LATE HARAPPAN PHASE				
1850					SHAKKANAKKU DYNASTY ENDS
1761 to 1759					CITY 3 ENDS
1575			NEW KINGDOM		
1450				HAFT TEPPEH MASS GRAVE	
1380			MALKATA BUILT		
1346			AMARNA BUILT CHILD MASS GRAVES		
1332			AMARNA ABANDONED		
1322			EGYPTIAN POW INTRODUCE PLAGUE INTO HITITTE EMPIRE		
1300	HARAPPA ENDS				
1200 to 1150			END OF BRONZE AGE IN NEAR EAST		

INTRODUCTION

"Historians find war exciting and pestilence dull; they exaggerate the effects of the former and play down the latter".
(Grove and Rackham 2001)

One of the great mysteries of ancient history is why the Indus Valley Civilisation, the largest of the five original ancient civilisation regions, declined. The aim of this book is to document the role of infectious disease on the decline of the Indus Valley Civilisation c. 1900–1300 BCE. This is the first time this has been done. There have been many theories about possible causes for the end of the Indus Valley Civilisation, such as climate change, the shift of the monsoon eastwards from the Indus River basin to the Ganges River basin, tectonic forces changing the course of the Indus River to variously cause drought or flooding, and finally Aryan invasion. The hypothesis of this book is that infectious diseases may have contributed to the decline of the Indus Valley Civilisation.

This book will also show that an infectious disease epidemic, most likely pneumonic plague, may have helped in the decline of the Sumerian Civilisation c. 2000 BCE. This epidemic could have come from what is today Russia or China via the Zagros Mountains or from the Indus Valley Civilisation onboard boats used in their mutual sea trade. Conversely the Sumerian epidemic could also have gone in the opposite direction and infected the Indus Valley Civilisation instead.

Both the Sumerian and Indus Valley Civilisations did not end abruptly but instead slowly declined, with their ideas, beliefs, language, writing methods, mathematics and moral values being absorbed into subsequent civilisations.

This book will mainly use a historiographic approach to propose that up to twelve different infectious diseases which existed in ancient times were possible major causes or co-factors in the decline of the Sumerian and Indus Valley Civilisations. These diseases include five that are so lethal that they have been used as biological warfare agents, namely smallpox, plague,

tularemia, shigella dysentery and anthrax. The other seven diseases are leprosy, poliomyelitis, tuberculosis, malaria, measles, haemorrhagic fevers and influenza.

Currently ancient historians think that there was no direct contact between the Indus Valley Civilisation and Pharaonic Egypt but this book will show that there could have been such direct contact because the plague was most likely introduced into ancient Egypt from the Indus Valley Civilisation by sea.

Another thing this book will show is that the "massacre" in the major Harappan city of Mohenjo-daro was not a massacre but most likely its citizens dying during an infectious disease epidemic and being dumped or buried in a haphazard manner. It is difficult to understand why historians have clung to this myth for so long given that there was no real evidence to support the idea.

The final thing that this book will show is that archaeologists need to look harder to find evidence of infectious disease when they excavate. They need to not only do ancient DNA analysis on all skeletons but also engage a paleoentomologist to look for evidence of rodents or fleas to eliminate or confirm the presence of bubonic plague for example. They also need to engage a paleoparasitologist to look for eggs of parasites which had infected the deceased and get specialist forensic paleoanthropologists to scientifically and medically examine all the bodies found. As Professor Thomas Gottlieb points out, "Because contagions, such as bubonic plague or dysentery, leave few edifices or easily documented traces, historians have underestimated their devastating effect on ancient civilisations."

Thus ancient historians and archaeologists need to change their mindset and always factor in the possibility of infectious diseases being present and playing a role in the decline or demise of whatever civilisation they are studying. If they do not factor in the possibility of infectious diseases being present then their research is incomplete and thus their resultant history and conclusions could be flawed.

"Historians find war exciting and pestilence dull; they exaggerate the effects of the former and play down the latter" (1). When one thinks of ancient

history one thinks of ancient historians, archaeologists and anthropologists for example – in other words all "arts" based disciplines. One does not think of doctors or medical historians. But one should, because most major changes in the ancient world were precipitated by an infectious disease epidemic of some type, such as the end of the Mycenaean Palatial Empires; the end of the Hittite Empire; the end of the Bronze Age in the Near East and Egypt's retreat from the Levant c. 1200–1150 BCE; the fall of Athens; the end of Carthage; the end of the Western Roman Empire; the invasion of Islamic forces into Europe during the latter half of the Plague of Justinian; and maybe even the decline of the Sumerian Civilisation and the Indus Valley Civilisation. Micro-organisms, whether they be viruses or bacteria or funguses or protozoa, are the true enemy of mankind – always have been and always will be. Medical historians investigate and document the struggle of mankind against these natural assassins.

This book will examine the role of infectious diseases in the decline of the Sumerian Civilisation (c. 2000 BCE) and the Indus Valley Civilisation (c. 1900–1300 BCE) to help find out why one of the earliest empires and the largest empire of the ancient world, respectively, came to an end. Infectious diseases have killed more people than all wars. "More lethal than any firearms, viruses and bacteria have accompanied soldiers and traders around the world, and the epidemics they caused have changed the course of history" (2). The demise of the Indus Valley Civilisation may be multifactorial because of its large size. Hence, the climate-based cause that applies to one region, such as drought or flooding, may not apply to another region many hundreds of kilometres away; but infectious disease can cover all areas rapidly. Even though infectious disease may be only one of many possible causes for the decline of the Indus Valley Civilisation, it should at least be recognised as a possible cause and factored in rather than ignored, as is the current situation.

The book will, I hope, help medical history take its place at the forefront of modern historical thinking by showing how important and relevant it is within the wider field of history. "Historians study change" (3) and causation is the key to this change. In other words they study what factors were involved to make things turn out the way they did or "how chains of

interaction become pathways of historical development" (4). Diseases in their various forms are 'causation' links in these chains.

The term infectious disease refers to the full spectrum of all forms of infectious disease which manifest as plagues and epidemics. Because this book will be looking at infectious diseases 4,000 years ago it may not be possible to identify the exact infectious cause, but it will nevertheless try. Another problem studying disease in the Indus Valley Civilisation is that, as yet, nobody has been able to understand or read their writing, hence there is no written record or text that scholars can consult. By contrast, the Sumerians invented writing using cuneiform symbols impressed into clay tablets. Thousands of these tablets have now been examined by scholars and it is from these translations that this book obtained its information (currently there are no Sumerian [c. 2000 BCE] skeletons in existence to be examined by ancient DNA analysis to find infective agents). Indus Valley Civilisation period skeletons – mainly from Mohenjo-daro – do exist and have been examined, but no ancient DNA analysis has been done on these skeletons so far.

The late Roy Porter (1946–2002) was Professor of Social History of Medicine at the Wellcome Institute in London. When he wrote his book *The Greatest Benefit to Mankind* (which is what Samuel Johnson, the inventor of the dictionary, thought about medicine) he wrote the following: "Writing this book has brought home the collective and largely irremediable ignorance of historians about the medical history of mankind…The historical record is like the night sky; we see a few stars and group them into mystic constellations. But what is chiefly visible is the darkness." (5)

This book will try to reduce the darkness by investigating the role of infectious disease on the decline of the Sumerian and Indus Valley Civilisations, something ancient historians seem to have ignored thus far. Infectious diseases are neutral and indiscriminate killers – they will kill anyone from king to commoner. An empire cannot survive if its inhabitants are dying during an epidemic because there are no farmers to grow food, no administrators to govern, no sailors and merchants to do the trading and no soldiers to fight and defend the empire.

Roy Porter also wrote that "Medicine has played a major and growing role in human societies and for that reason its history needs to be explained so that its place and powers can be understood" (6). This is yet another appeal by medical historians for non-medical historians to take medical history seriously.

There are several good examples of mistakes in ancient history being made by ignoring the possibility of disease causing the deaths of people and thus contributing to the end of a civilisation. Firstly in ancient Egyptian times – mid-1300s BCE – why did Amenhotep III (ruled c. 1391–1353 BCE) move his well-established court from Karnak to the new 'virgin soil' site at Malkata and why did his son Akhenaten (ruled c. 1353–1336 BCE) do the same thing by moving his court to the new 'virgin soil' site of Amarna? Egyptologists talk about power struggles between the Pharaoh and the priests as being the cause, but an alternative hypothesis is that a plague epidemic was also present and these Pharaohs were trying to escape from its effects by going to new 'virgin soil' plague-free sites.

The second example is the cause of the deaths of the Indus Valley Civilisation Mohenjo-daro Bronze Age skeletons. For decades ancient historians said the cause of their deaths was due to trauma from the Aryan invasion and subsequent massacre of the inhabitants of the city of Mohenjo-daro. But examination of these skeletons in the 1970s by Professor K. A. K. Kennedy, Professor of Physical Anthropology at Cornell University, proved the ancient historians wrong by showing that there were no signs of trauma on the skeletons. He stated that they died from other causes such as disease (7). The opening paragraph of this article sets the tone of his scathing criticism of ancient historians:

> Over the course of the past fifty years of archaeological investigations of Harappan settlements, a thesis has persisted which concerns a massacre of a number of individuals some four millennia ago at Mohenjo-daro, the large urban centre on the Indus. It is ironic that this preoccupation with a traumatic demise of these Harappan citizens, or their aggressors, has been based upon the mode of disorderly disposal of the dead at Mohenjo-daro – essentially an archaeological datum – rather that upon the skeletal evidence of the trauma: the critical biological datum. (8)

Because his research was done before the era of ancient DNA he was not able to do any further analysis of the skeletons. If he did, the author of this book believes he may have found plague (*Yersinia pestis*) in the ancient DNA. Hence plague may have contributed to the end of the Indus Valley Civilisation.

The third important example of ignoring the possibility of an infectious disease epidemic being present comes from the archaeological dig at Haft Teppeh in Iran (ancient Elam) being done by the Archaeology Department at Mainz University in Germany. This dig is (at the time of writing) being led by Dr. Behzad Mofidi-Nasrabadi and again trauma has been blamed for the deaths of an estimated 300 men, women and children whose skeletons were found dumped behind a brick wall. A bulletin put out by Mainz University stated that the skeletons had been slaughtered (9), but so far no signs of trauma have been found on the skeletons. If ancient DNA analysis was done on these skeletons the author of this book suspects plague (*Yersinia pestis*) may again be found. Hence plague could have been a factor in the demise of this city. Is the same thing happening with Sumer – are ancient historians closing their eyes to the possibility of an infectious disease epidemic such as plague being present and contributing to its demise?

It is very naïve of ancient history scholars to think infectious diseases did not exist in ancient times. Infectious disease would have been a constant threat to the whole population, from the ruling class to the pauper class. It is axiomatic. In ancient times it would have been a daily struggle for survival, either avoiding or fighting against infectious diseases such as sepsis from staphylococcus aureus or tetanus from a scratch; childhood diseases such as whooping cough, diphtheria and measles; or the infections from contaminated food and water; let alone major infections such as leprosy, tuberculosis or malaria. Then came the ‘big two’ mass killers, namely smallpox and plague – highly refined mass murderers, perfected by nature to kill populations ‘en masse’ in epidemics that would totally devastate an empire. There would have been nothing that could be done to stop them. The Italian writer Giovanni Boccaccio, when writing about the Black Death in the 1330s, said that the victims “… ate lunch with their

friends and dinner with their ancestors in paradise" (10) to show how quickly people died from plague.

The medical historian Robert Arnott from Oxford University has stated: "Many such scholars are completely unaware of the social effects of disease and the major consequences that ensued whenever contacts across disease boundaries allowed a new infection to invade a population that lacked any acquired immunity." He then went on to paint a very bleak picture for the ordinary man in ancient times: "…the harsh reality of a society where life was hard, death and disease were everyday occurrences and the day to day ambition of those who lived outside the palaces was simply survival" (11). In ancient times, when there would have been little resistance to infections because of lack of previous exposure, epidemics would have set in with their full fury, killing most people they came in contact with. There was no such thing as "a touch of" plague or smallpox, like one can have a "touch of flu" today. It would have been total devastation, like an Ebola outbreak today.

Hence there is a need to factor in infectious disease at all times as a possible sole factor (such as in the case of plague or smallpox) or a significant co-factor (as in the case of leprosy, tuberculosis, malaria or dysentery) in the demise of any ancient civilisation being studied. Infectious disease is a crucial explanatory variable that should not be missed by ancient historians in future.

CHAPTER 1

THE FIVE ORIGINAL MAJOR CIVILISATION CENTRES IN ANCIENT TIMES BASED ALONG RIVERS: A BRIEF HISTORY

1.1.1 The Nile River

The Egyptian Empire was one of the great empires of the ancient world, if not the greatest, extending along the course of the Nile River initially and then later into the Levant. Its dynastic system of Pharaohs gave it a stability of Divine Rulers that allowed it to flourish for thousands of years.

Egyptian history usually begins with the Early Dynastic Period (Dynasties One and Two) beginning c. 3100 BCE (+/- 150 years) with the reign of Menes, according to the classification by the Egyptian priest Manetho. Prior to this time were the Pre-Dynastic Kings, of which little is known.

After the Early Dynastic Period came the Old Kingdom (Dynasties Three to Seven) from c. 2700, then the First Intermediate Period (Dynasties Eight to Ten), followed by the Middle Kingdom (Dynasties Eleven and Twelve) from c. 2134 BCE and then the Second Intermediate Period (Dynasties Thirteen to Seventeen).

The New Kingdom (Dynasties Eighteen to Twenty) began c. 1575 BCE and was followed by the final period – the Late Dynastic Period (Dynasties Twenty One to Thirty One) from c. 1087 BCE until the end of the Egyptian Empire in 332 BCE when it was conquered by Alexander the Great. During this time it consolidated the kingdoms of the Upper and Lower Nile plus expanded once again into the Levant (Palestine and Syria, which it had done before during the late Bronze Age or Eighteenth Dynasty period) (1).

1.1.2 The Tigris and Euphrates Rivers

The Tigris and Euphrates supported ancient Mesopotamia, which included over the centuries several empires such as Sumer in the south, Akkad and then Babylon in the middle, and Assyria, Mari and Ebla to the north. These empires were made up of many powerful city-states such as Kish, Uruk, Lagash and Ur (2). The history of ancient Sumer will be discussed in detail later in Chapter 2.

1.1.3 The Yellow River

The Yellow River or Kwang Ho River stretches for 5,464km across the northern regions of China, beginning in the Bayan Har Mountains, a branch of the huge Kunlun Mountain chain, crossing Mongolia and ending in the Pacific Ocean. It is the sixth longest river in the world. Along its banks developed the first great civilisation of ancient China c. 5000 BCE. Development along China's two other major rivers, the Yangtze River in the middle of China and the Pearl River in southern China, came later. The Yellow River Valley differed from these two river systems because it grew mainly millet as its staple crop whereas the Yangtze and Pearl River Valleys grew rice as their main cereal crop.

Jiahu is the oldest Neolithic archaeological site in China, dating from about 12,000 years ago, and is located in the valley in the middle of the course of the Yellow River.

The Yellow River Valley is the cradle of Chinese civilisation and is referred to as the 'Mother River' of the Chinese nation; it fostered initially the Yangshao culture from 5000 BCE to 3000 BCE, then the Longshan culture from 3000 BCE until 2100 BCE. This was followed by the Xia Dynasty from 2100 BCE to 1600 BCE, the Shang Dynasty from 1600 BCE to 1046 BCE and eventually the Zhou Dynasty from 1045 BCE until 256 BCE.

From this base or core in the Yellow River Valley the Chinese nation developed continuously for the next 7,000 years, resulting in such inventions as gunpowder, paper, grape wine, noodles, pottery, the compass and printing (3).

1.1.4 The Indus River

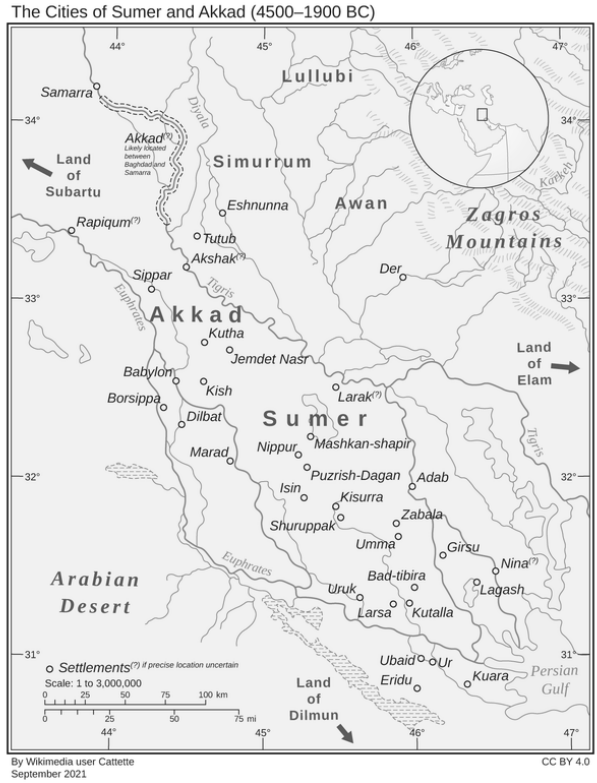
The Indus Valley Civilisation was the largest of the five original ancient civilisations. Occupying today's western India, Pakistan and eastern Afghanistan, it was based along the Indus River and its tributaries. It began c. 5500 BCE and ended c. 1300 BCE. Its history will be discussed in detail in Chapter 5.

1.1.5 The Rio Grande de Nazca

Traditionally ancient historians have thought that there were only four original ancient civilisations as listed above; but now, after years of excavation we can add another ancient civilisation to this list – Nazca. The Nazca Civilisation was also based along a great river, namely the Rio Grande de Nazca in the Ica Valley in southern Peru. It flourished 4,000 years ago with a complex system of irrigation using aqueducts called 'puquios' to support lush fields adjacent to a great desert. The Rio Grande de Nazca eventually dried up and the lush fields were incorporated into the desert.

Analysis of its mummies, preserved by the dry desert, showed that its doctors practiced trephination (cutting holes into the skull to release evil spirits) successfully and people had their skulls bound to produce elongated skulls to show their different ethnic identities.

The Nazca are also famous for producing the 'Nazca Lines' which are various drawings and lines on the ground that are so large that they can be seen from high flying aeroplanes. There have been many explanations for these huge drawings and lines including communicating with aliens and alien spaceship runways. The current explanation is that they are either ethnic or clan identity markings or they were done to praise the gods.



A general map of ancient Sumer and Akkad featuring countries, rivers, historical coastline and populated settlements.

CHAPTER 2

THE SUMERIAN CIVILISATION: A BACKGROUND HISTORY

Mesopotamia means 'the land between the two rivers', namely the Tigris River and the Euphrates River in the Middle East. It is known as the 'Cradle of Civilisation' by the Western world, because the first civilisations began there, and it included the 'Fertile Crescent' between the Mediterranean Sea and the Zagros Mountains, which as the name implies, was a very fertile agricultural area which supported many civilisations over the centuries.

Bronze Age Mesopotamia (c. 3300–1200 BCE) saw the coming and going of many empires including the Sumerian, Akkadian, Assyrian, Babylonian and Kassite Empires over the centuries. Powerful city-states to the south such as Kish, Uruk, Ur and Lagash were another feature of the Mesopotamian region.

It saw the invention of the first form of writing – a wedge shaped writing on clay tablets called cuneiform writing. It also saw the invention of the wheel – one of man's great inventions; plus, irrigation from the two rivers allowed large food surpluses to be amassed. This allowed empires to flourish because there was abundant food to feed large populations. Agriculture was introduced into the region between 10,000–8700 BCE. This was followed by the domestication of animals from 8700–6800 BCE.

The Sumerian Empire was well established by the middle of the 4th millennium BCE and occupied southern Mesopotamia. It was followed by the Akkadian Empire in c. 2270 when Sargon the Great of Akkad conquered Sumer. The Sumerian language and writing died out and the Sumerian people were incorporated into the new Akkadian Empire. Sargon the Great then went on to conquer an empire stretching from the Persian Gulf to modern day Syria. After the Guti, from the Zagros Mountains, conquered the Akkadians, the Uruk and other southern city-states came into being.

The Assyrians ruled northern Mesopotamia from 2500 BCE until 605 BCE, while Babylon, in the middle of Mesopotamia, was founded by the Amorite chieftain named Sumuabum in 1894 BCE. Hammurabi the Amorite ruler of Babylon (ruling from 1792 to 1750 BCE), made Babylon a major power in the region. He introduced his famous law code and kept large amounts of records, which archaeologists have found. The Hittite King Mursilis II conquered Babylon and they in turn were conquered by the Kassites.

In 550 BCE, under the Persian King Cyrus the Great, Mesopotamia became part of the Persian Empire, which in turn was conquered by Alexander the Great in 331 BCE when he defeated the Persian King Darius III. It continued to be part of the Greek Empire for the next two centuries.

The most important thing about Sumer was that intangible things such as its ideas and beliefs continued on after its decline and were incorporated into subsequent civilisations. Things such as its language, writing, mathematics, astrology, medicine, religious beliefs, military formations, legal system and government were very important and needed to be preserved for future generations.

Ancient Sumerian stone carving with cuneiform script

CHAPTER 3

CURRENTLY ACCEPTED THEORIES FOR THE DECLINE OF THE SUMERIAN CIVILISATION

i. Introduction

There have been only a few theories about the decline of the Sumerian Civilisation and only one involving infectious disease. Prof. Amjad D. Niazi proposed in his article 'Plague Epidemic in Sumerian Empire, Mesopotamia, 4000 years ago' (1) that plague helped end the Sumerian Civilisation c. 2000 BCE. This book will explore and expand on this hypothesis later.

ii. Environmental Degradation

The Tigris and Euphrates were the lifeblood of Mesopotamia. Over the centuries these two rivers supplied the irrigation water to keep the agricultural fields from ending up the same as the surrounding desert. This intensive irrigation over hundreds of years went hand in hand with intense evaporation of the water in the hot desert climate resulting in salt build up in the soil. This salination of the fields later caused a significant drop off in food production which in turn caused famine (2). Later, new crops which were more saline tolerant, such as barley, had to be found to cope with this soil salination.

iii. Drought

An alternative theory to that stated above has been proposed by Harvey Weiss from Yale University. In his article 'The Genesis and Collapse of Third Millennium North Mesopotamian Civilization' (3) Weiss used a pollen-based record of agriculture in the region and proposed that there was a three hundred year drought in northern Mesopotamia starting from c. 2200

BCE. This extensive drought caused famine and resultant mass migration of the population out of the region.

iv. Warfare

The final theory for the decline of the Sumerian Empire was that after existing for so long it eventually went into decline and was invaded by its neighbours such as the Amorites to the north and the Elamites to the south. But this is more of a consequence of its decline and not a cause of its decline. What was the thing or things that caused Sumer to go into decline; and, once weakened, why was it vulnerable to invasion by its neighbours? This book will argue that drought and salination of the fields caused famine which weakened the population. This weakened population then migrated south into Sumer and were packed into now crowded cities thus setting up a situation that predisposed it to infectious disease which was the final blow or ‘coup de grace’. This weakened and diseased population would not be fit enough to defend itself against neighbouring invaders.

CHAPTER 4

INFECTIOUS DISEASES IN SUMER: AN OUTLINE

The Mesopotamians had a very sophisticated medical knowledge and system. The vast number of collections of medical texts written in cuneiform on clay tablets that have been found by archaeologists attests to this fact. These texts describe in detail human anatomy, signs and symptoms for the diagnosis of different diseases, surgical procedures and all manner of treatments which included a large corpus of 'materia medica' using mainly plants and herbs, but also animal and mineral components.

One misconception about Mesopotamian medicine is that it was all based on the 'supernatural'; that you had a disease because you had offended the gods "The god's hand was heavy upon me, I could not bear it" (1); or that someone had put a curse or spell on you or that a demon "…caused by the grip, Akkadian sibtu, of a certain demon" (2), ghost or witch wanted to harm you. The ghost may have been a relative who was neglected by the family or someone who had died from unnatural causes such as by trauma or drowning. So the diagnosis of the "hand of a ghost" is a relatively frequent cause for a patient's illness (3). The patient also may have broken one of the many 'taboos' and so needed to be punished.

They also recognised that there could also be 'natural' causes for a patient's disease or illness such as trauma, contaminated food and water, consuming excess alcohol or other foods and drinks, poisoning, plus some contagious diseases described as a "place that had been touched" (4) and fevers.

The Mesopotamians recognised many different types of fevers. It is interesting to study the different types of fever in detail because fever was a common symptom in infectious disease epidemics. Firstly there was 'isatu', meaning 'fire' which was used as a metaphor for 'feverish heat' (5). Then came 'ummu', which meant 'repeated fever' (6). This could be used