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THE SOTHIC STAR THEORY
OF THE EGYPTIAN CALENDAR
(A Critical Evaluation)

A Post-Graduate Thesis Presented to
the History Department of
the University of Sydney.

By
Damien F. Mackey
(BA. B PHIL)

Completed December, 1993
SYDNEY, New South Wales.
OUTLINE OF THESIS

PART ONE: INTRODUCTORY SECTION

Introduction (i)-(xiv)
Chapter One: The Foundations of Egyptian Chronology -- 1-17
Chapter Two: The Development, and Related Astronomy, of the Egyptian Calendar ------------ 18-38

PART TWO: THE SOTHIC THEORY

Chapter Three: The Sothic Star Theory of Meyer and His Colleagues ----------------------- 39-54
Chapter Four: Some Basic Implications of Meyer's Theory ------------------------------- 55-77

PART THREE A: PRE-MENOPHRES ERA CITATIONS (i.e. Pre-1320 BC)

Chapter Five: The Illahûn Papyrus ----------------------------- 78-93
Chapter Six: The Ebers Papyrus ----------------------------- 94-118
Chapter Seven: The Elephantine Stele ---------------------- 119-131

PART THREE B: POST-MENOPHRES ERA CITATIONS (i.e. Post-1320 BC)

Chapter Eight: The 'Era of Menophres' -------------------------- 132-160
Chapter Nine: Decree of Canopus -------------------------- 161-175
Chapter Ten: The Statement of Censorinus --------------------- 176-192

PART FOUR: A CRITIQUE OF MEYER'S SOTHIC THEORY

Chapter Eleven: Assessment of Meyer's Theory in General ---------------------- 193-207
Chapter Twelve: Some Conclusions About Meyer's Theory ----------------------------- 208-229

ADDENDA

APPENDICES

Appendix A: A Further Explanation of Astronomical Terms -------------------------- A1-A22
Appendix B: Correctly Identifying the Sothic Star- B1-B25

BIBLIOGRAPHY
PART ONE

INTRODUCTORY SECTION

CONTENTS:

INTRODUCTION: ----------------------------- (i)-(xiv)

CHAPTER ONE:  The Foundations of Egyptian Chronology ----------------------------- 1-17

CHAPTER TWO: The Development, and Related Astronomy, of the Egyptian Civil Calendar ----------------------------- 18-38
INTRODUCTION

The Egyptian dates from the second millennium BC onwards, by contrast with those of the other ancient nations, are now widely regarded as being fixed. This is especially true of the period beginning at c.1580 BC; the supposed commencement of the Eighteenth Dynasty. Current historiography conveniently tends to divide the world’s past into two great epochs, separated one from the other by that date of c.1580 BC. It is generally believed that, especially for the period after this date, all the histories of the various ancient peoples are quite firmly aligned together alongside the history of Egypt.

What is of particular interest to us in this thesis is to discover how the much vaunted mathematical certainty that now characterises Egyptian chronology came to be determined. As we intend to discuss more systematically in the following chapter on the foundations of Egyptian chronology, one of the primary bases upon which these fixed dates for Egypt first became established is the Sothic star theory, with its long-range cycles of 1460 years. The beginnings and endings of assumed Sothic periods have been calculated mathematically, to assist in providing a chronological outline of absolute dates for Egyptian history. After that, relative dates could be slotted into place using data from the monuments and king lists.

By employing a method such as this, the Egyptologists have been able, for example, to arrive at their major date of c.1320
BC for what they regard as the commencement of a new Sothic cycle, as well as the inauguration of the famous Nineteenth Dynasty. Inasmuch as this date of c 1320 BC is considered to be a veritable lynch-pin in the Sothic calculations, it has come to assume an importance perhaps even more crucial to the current chronology than that assumed by the date of c 1580 BC. Now, considering that this thesis is basically about the Sothic theory, c 1320 BC will take its place throughout the following chapters as the most pivotal date of all.

It is thanks largely to the Sothic theory that nearly all commentators now agree that Egyptian chronology is so well devised, century by century, decade by decade, and often year by year, that no new evidence could dismantle the elaborate structure. Amongst the supporters of the Sothic star theory, there is little variation from one to another in regard to major dates. Much of this assurance may well stem from the time of Breasted, himself an enthusiastic promoter of the Sothic theory. For it was Breasted who, in his classic text *A History of Egypt* (2nd ed., London, 1924), included an annex, "Chronological Table of Kings", in which the author boldly proposed that all the Egyptian dates marked with an asterisk "are astronomically fixed"; fixed that is apparently by reference to calculations of the rising of Sothis.

It is worthwhile carrying out a check in order to find out for how long, in Egyptian studies, there has existed a clear-cut uniformity of opinion amongst scholars in regard to the Egyptian dates. What we discover when we do this, as we
might well expect, is that uniformity of opinion took a fair amount of time to develop. It can easily be demonstrated in table form that, until 1904 when Eduard Meyer in his *Aegyptische Chronologie* (28ff.) "sothically" fixed the difference between the end of the Twelfth Dynasty and the rise of the Eighteenth Dynasty (i.e. the interim period, commonly called the Second Intermediate Period) at 210 years — thereby establishing the beginning of the Eighteenth Dynasty's rule at c.1580 BC — renowned Egyptologists had varied widely, for instance, in their dating of the Second Intermediate Period.

In the following Table I (see next page), taken largely from R. Weill's *Bases, Méthodes et Résultats de la Chronologie Égyptienne* (3-4), we shall provide the reader with such information as will enable him or her easily to see just how radically the chronological assessments of fourteen well-known Egyptologists differed one from another during the sixty-five years (i.e. 1839-1904) prior to the publication of Meyer's book. In the case of each of the above-named Weill has supplied, not only the estimated date for the beginning of the Eighteenth (XVIIIth) Dynasty, but also the total interval for the interim period, during part of which the "Hyksos" invaders are known to have dominated, mainly lower, Egypt. It will be seen from the table that, for the interim period, estimates amongst these scholars vary in some instances by more than a millennium.

Little wonder, then, that so astute a chronologist as Eduard Meyer felt compelled to introduce into Egyptian dating as much uniformity and mathematical precision as he possibly
could. It was in his classic, Aegyptische Chronologie, that Meyer was able to present his new chronological scheme based upon the heliacal rising of Sirius/Sothis.

Eduard Meyer and his Aegyptische Chronologie will therefore be the focal point of this thesis; not unnaturally considering that the subject chosen is the Sothic star theory of the Egyptian calendar. Meyer, the chief systematiser of the Sothic scheme, will therefore - more than any of the other Egyptologists listed in the table below - occupy the centre stage throughout the following chapters.

TABLE I

Assessments By Leading Egyptologists of the Second Intermediate Period

<table>
<thead>
<tr>
<th>Name of Egyptologist</th>
<th>Year of publication</th>
<th>Total interval between XIIIth &amp; XVIIIth Dynasty</th>
<th>Absolute date for the beginning of the XVIIIth Dynasty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Champollion-Figeac</td>
<td>1839</td>
<td>1595 years</td>
<td>1822 B.C.</td>
</tr>
<tr>
<td>Wilkinson</td>
<td>1842</td>
<td>1595 years</td>
<td>1575 B.C.</td>
</tr>
<tr>
<td>Boeckh</td>
<td>1845</td>
<td>1589 years</td>
<td>1655 B.C.</td>
</tr>
<tr>
<td>Bunsen</td>
<td>1845</td>
<td>1009 years</td>
<td>1625 B.C.</td>
</tr>
<tr>
<td>Lepsius</td>
<td>1858</td>
<td>676 years</td>
<td>1591 B.C.</td>
</tr>
<tr>
<td>Brugsch</td>
<td>1859</td>
<td>893 years</td>
<td>1706 B.C.</td>
</tr>
<tr>
<td>Unger</td>
<td>1867</td>
<td>1359 years</td>
<td>1796 B.C.</td>
</tr>
<tr>
<td>Lieblein</td>
<td>1873</td>
<td>618 years</td>
<td>1490 B.C.</td>
</tr>
<tr>
<td>Mariette</td>
<td>1876</td>
<td>695 years</td>
<td>1703 B.C.</td>
</tr>
<tr>
<td>Brugsch</td>
<td>1877</td>
<td>533 years</td>
<td>1700 B.C.</td>
</tr>
<tr>
<td>Lauth</td>
<td>1879</td>
<td>600 years</td>
<td>1585 B.C.</td>
</tr>
<tr>
<td>Wiedemann</td>
<td>1884</td>
<td>1500 years (?)</td>
<td>1750 B.C.</td>
</tr>
<tr>
<td>Maspero</td>
<td>1897</td>
<td>1306 years</td>
<td>? B.C.</td>
</tr>
<tr>
<td>v. Bissing</td>
<td>1904</td>
<td>1299 years</td>
<td>? B.C.</td>
</tr>
<tr>
<td>Eduard Meyer</td>
<td>1904</td>
<td>210 years</td>
<td></td>
</tr>
</tbody>
</table>
The Sothic theory was essentially the brainchild of the Berlin School of Egyptologists. To be fair it should be noted that, whilst Meyer rightly deserves the main credit for its enunciation and development, it was actually Lepsius (1810-1884) who had been the first to envisage the concept of using the vast Sothic period of 1460 years as a basis for dating historical events. But Meyer, with support from Mahler, Borchardt and Weill, was primarily responsible for specifically stating the theories involved. Meyer fully developed the theory that Egyptian reckoning was based on a Sothic calendar; and he fixed Egyptian chronology accordingly. Since Meyer, the greater majority of Egyptologists have retained his estimate of 210 years approximately for the interval between the Middle and New Kingdoms of Egypt.

Some Early Dissension

There were some even in those early days, however, who were unable to accept Meyer's system of astronomical computation as being a legitimate means of calculating realistic dates. Maspero, von Bissing and Jéquier, for example, were generally unwilling to embrace the Sothic theory, believing it to create more problems than it solved. Brugsch, for his part, could accept neither the interpretation placed upon the Illahûn Papyrus by the exponents of the Sothic theory, nor the manifold assumptions upon which he believed the theory to be based. Thus he, and other authorities, did not hesitate to reject the
theory since they simply could not find in it any solid basis for providing a system of dating, and more specifically for dating as far back as the Twelfth Dynasty.

Perhaps we may collectively sum up the views of these non-sothically inclined Egyptologists by quoting from the following pages of Jéquier's *Histoire de la civilisation égyptienne* ... (1913, 26-27. My translation):

The Sothic periods, far from simplifying the chronological calculations for us, have no other effect than to introduce a new element of uncertainty and perhaps a new opportunity for error.

But, despite this early dissension and the strong warnings voiced by those who believed there to be some serious inadequacies in the whole Sothic concept, it was the Sothic scheme which prevailed. Thus we find that, even today, it is this system of dating which - with some modifications - is the one universally taught in colleges, academies and universities, and found in all standard text books.

With so strong a consensus of opinion now in favour of Meyer's overall scheme of chronology, and with the huge edifice of Egyptian history seemingly so firm in its place, may today's historians be justifiably entitled to rest securely in the knowledge that no significant alterations will need to be made in the future? Has this elabo-structure been assembled on such rock solid foundations as to be able to stand the test of time?
Indeed, such is the distinct impression that one might gain from a superficial study at least of the conventional history of Egypt.

Lately, however, dissenting voices anew have begun to be raised. These belong to those who are of the firm opinion that there are in fact inherent weaknesses in those historical foundations, undermining them so as to leave them in danger of collapsing at some future point in time. Just like the early Egyptologists who felt compelled to reject Meyer's method as invalid, these too claim that its product is an unrealistic and unworkable chronology of antiquity.

Perhaps in the light of this modern re-evaluation, it is timely for Egyptologists to take stock; to carry out their own major re-assessment of Egyptian chronology, at its very foundations! To take seriously these new challenges, if only as a means for gauging the sturdiness of what is already standing. A renewed evaluation of the whole Sothic edifice can only be healthy for Egyptological studies in general.

The Aim of this Thesis

It is the beginnings of just such a re-evaluation, albeit small in scope, that we intend to undertake in the following chapters; to get the ball rolling, as it were. Such is the whole raison d'être of this thesis: to make a start towards a rigorous re-assessment of the foundations of Egyptian history, especially those pertaining to the Sothic theory. By so doing,
we may perhaps be able to help determine whether these foundations are sound, and ought therefore to be left in place undisturbed, or perhaps are a bit weak and in need of a degree of bolstering; or maybe they are so shaky as to warrant being demolished, in order that reconstruction can be undertaken, according to a different plan.

As we are going to discuss in the following chapter, the entire edifice of the standard chronology of Egypt depends greatly for its support upon these three basic "pillars":

1. Manetho's Dynasties;
2. The Sothic Calendar Theory;
3. The Era of Menophres (1320 BC).

The following Table II provides the reader with a standard outline of Egyptian history, as based upon Sothic calculations:

**TABLE II**

An Outline of Egyptian Chronology

(All Dates are B.C. and are most approximate)

<table>
<thead>
<tr>
<th>Phase</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNIFICATION OF EGYPT</td>
<td>3100</td>
</tr>
<tr>
<td>Early Dynastic Period</td>
<td>3100-2686</td>
</tr>
<tr>
<td>OLD KINGDOM (Dynasties III-VI)</td>
<td>2686-2180</td>
</tr>
<tr>
<td>(Great Pyramids)</td>
<td>2600-2500</td>
</tr>
<tr>
<td>First Intermediate Period - Anarchy</td>
<td>2180-2080</td>
</tr>
</tbody>
</table>
TABLE II
(continued)

MIDDLE KINGDOM (Dynasties XI-XII) ------- 2080-1640
Eleventh Dynasty (Thebes) ------- 2080-2040
Twelfth Dynasty - "Classical" Egypt ------- 2040-1785
Second Intermediate Period ------- 1785-1580
"Hyksos" Era -------------------------- 1690-1580
NEW KINGDOM (Dynasties XVIII-XX) ------- 1580-1075
El-Amarna Period ---------------------- 1400-1350
Third Intermediate Period ------- 1075- 650
Assyrian Conquest ------------------ - 671
SAITE KINGDOM (Dynasty XXVI) ------- 663- 525
Persian Conquest ------------------ - 525
Alexander's (Greek) Conquest ------- - 332
PTOLEMAIC EGYPT ---------------------- 306- 30
Roman Annexation of Egypt ------------------ 30

(Table II compiled from a combination of data found in the following: J. Breasted's A History of Egypt (1924); C. Roe- buck's The World of Ancient Times (1966); and G. Roux's Ancient Iraq (1966)).

But returning to the "pillars" of Egyptian chronology, since the whole framework is now subject to the rule of mathematical certainty, as thought to have been achieved by the
Sothic scheme, it is "pillar" no. 2 above, The Sothic Calendar Theory, that will be the focal point of this thesis. No. 3, The Era of Menophres, being to a large extent a product of 2, will also come under its fair share of scrutiny.

Our aim, as already said, will be to examine the Sothic theory in order to determine (a) whether or not it is intrinsically sound and is supported by the evidence; and (b) whether it has yielded a workable chronology of the ancient world, for example in relation to the Mesopotamian data. For regarding this latter point, it would be of little use for Egyptologists to work in splendid isolation - if such were the case - establishing what might in the end turn out to be a largely theoretical scheme, quite out of harmony with the evidence and all the major facts arising from widespread research in other areas of ancient history and archaeology.

Indeed there may be some indications that not all the Mesopotamian data can be absorbed satisfactorily into the Sothic scheme. We shall consider these later. But it has become a major bone of contention with Meyer's scheme that, according to those who criticise it, the Sothic framework fails to provide solid synchronisms in early history between Egypt and the other nations. Therefore, in regard to both (a) and (b) above (ie whether the Sothic theory is sound and supported by the evidence, on the one hand, and whether it has provided a workable chronology, on the other), such critics would answer a very definite "no".
The Use of Astronomical Data

A further point that needs to be considered is that since to a large extent the current system of Egyptian chronology has been established on the basis of astronomical data, a great deal of precision is required when defining astronomical terms. Considering the enormous advances made in the science of astronomy since the early days of Egyptological studies, when those initial astronomical calculations were made to determine the outline of the Sothic scheme, a lot of new ground has been covered. Thus there is far less excuse for sloppiness and imprecision now, than before, in the treatment of astronomical data. Especially in a study such as this, which involves quite a deal of astronomy in regard to the question of Sirius and the Egyptian calendar, it is imperative to make frequent reference to relevant research by professional scientists.

One wonders to what extent the early Egyptologists attended to this important aspect of their study. Can the Sothic theory really be said to be based on accurate astronomy, or is it largely the work of historians who might have had an inadequate grasp of astronomy? The matter is too important to be brushed aside. Ideally, since it is unlikely that there would be many who genuinely specialise in both Egyptology and astronomy, the Sothic theory ought to be completely re-assessed in the light of modern discoveries by qualified historians working in close co-operation with professional astronomers and mathematicians.
Happily, in the authors of the *Egyptian Astronomical Texts* we find that very necessary combination. These volumes represent the result of years of exacting research by R. Parker, an eminent Egyptologist, and O. Neugebauer; a truly unique combination of first-rate mathematician, highly skilled historian and expert in ancient languages. Not surprisingly, then, we have depended upon information supplied by the *Egyptian Astronomical Texts* to decide some crucial issues arising in this thesis.

Basic Outline of The Thesis

In this introductory section (Part One) of the thesis, to assist the reader, I have included a chapter (i.e., Chapter Two) on the development of the Egyptian calendar. This chapter is intended to provide the reader with such astronomical detail of a non-technical nature as will be needed for an overall grasp of the thesis. It should be noted, however, that the treatment of any technical points of astronomy, those that may require further elaboration, will be reserved for Appendix A at the end of the thesis.

In Part Two, Meyer's Sothic theory will be presented in a general fashion, though in some detail (Chapter Three), after which some basic implications for chronology will be drawn from this theory (Chapter Four).

In Part Three (A and B) we shall pass from the general, to a more particular, assessment of the Sothic theory. Following
Long (in "A Re-examination of the Sothic Chronology of Egypt", Orientalia 43, 1974, 263), I shall examine, chapter by chapter, each of the six major Sothic citations from Egyptian and Classical documents as gleaned from Meyer and used by other historians to support the Sothic theory. (Some writers actually refer to seven Sothic citations, including Medinet Habu. But since the information supplied by this document appears, from a Sothic point of view, to be extremely meagre, we shall exclude Medinet Habu from this discussion). These six citations, which will be separated chronologically by that all-important date of c.1320 BC, into pre-Menophres and post-Menophres eras, will be thus arranged in Part Three:

A: Pre-Menophres (ie before c 1320 BC)

Chapter Five: The Illahun Papyrus (commonly attributed to the Twelfth Dynasty);

Chapter Six: The Ebers Papyrus (Early Eighteenth Dynasty);

Chapter Seven: The Elephantine Stele (mid-Eighteenth Dynasty);

B: Post-Menophres (ie after c 1320 BC)

Chapter Eight: The Era of Menophres (beginning of Nineteenth Dynasty);

Chapter Nine: Decree of Canopus (Ptolemaic Period);

Chapter Ten: Statement of Censorinus (Roman Empire).
In the introduction to each of these chapters the reader will generally be provided with a brief explanation of that particular document's relevance to Egyptian chronology. But mention will also be made of the special problems that might arise from this citation. Likewise, at the end of each chapter there will be a brief assessment of the value of the document as a chronological tool. As will become abundantly evident, the relevance of these six citations is dependent on the assumption that the Egyptians never altered or reformed their civil calendar during the many centuries of its use.

Part Four will commence with a critique of Meyer's theory in general (Chapter Eleven), and then (in Chapter Twelve) the entire thesis will be concluded with a critical summary in which the six citations will be finally assessed.

At the very end of the thesis, the reader will find two appendices: Appendix A, dealing with technical points of astronomy; and Appendix B, on the question of identifying the star, Sothis. Whilst I do not want to say very much about alternative views relating to the identification of this star, apart from Sirius, I believe that the matter has been raised sufficient times now to warrant a brief consideration of it. Indeed, such re-assessment is consonant with our aim of examining anew the whole basis of the Sothic star theory.
CHAPTER ONE: THE FOUNDATIONS OF EGYPTIAN CHRONOLOGY.

INTRODUCTION

The traditional structure of Egyptian chronology may be likened to a gigantic scaffold, supporting parts and pieces of the history of the various past kingdoms and civilisations. A student who embarks upon the study of early Near Eastern history, particularly that pertaining to the second millennium BC approximately, is generally taught to relate the chronology of the entire ancient East to Egyptian reckoning. This fact is attested by Crawford (1), when he explains that:

A system of relative chronology can be established by excavation in any country that has long been inhabited, but it is left hanging in the air until linked up with Egypt, whether directly or indirectly through a third region.

It is Egyptian chronology which provides the standard or rule according to which the kings and dynasties, with their law-giving and building programs, wars and peace treaties, are to be allocated to their respective centuries. Thus, when there is unearthed a document which records the relations of a particular, non-Egyptian, ruler with a pharaoh of a certain dynasty, the era of that ruler becomes fixed immediately
because the date of the pharaoh is presumed already to be known. And while, of course, the succession of the Babylonian and Assyrian kings - with the dates of their reigns - is studied with constant reference to the Mesopotamian king-lists, it must needs be adjusted regularly to comply with the Egyptian dates wherever a synchronism is assumed.

A classic example of this procedure is that of the famous Mesopotamian king, Hammurabi, of the First Babylonian Dynasty. The question regarding to which era this long-reigning monarch ought to be assigned, has ranked amongst those most extensively debated topics of ancient history. The dates in the twenty-third century BC - attributed to Hammurabi by the earlier historians - have had to be periodically adjusted as a result of new archaeological finds; first to c.2100 BC, and more lately to c.1700 BC, with differences of opinion still amounting to nearly a century. Not inappropriately, therefore, has one commentator described Hammurabi as "floating about in a liquid chronology of Chaldea" (2).

The reason for the most recent major shift of Hammurabi, to the eighteenth century BC, was in order for historians to synchronise the First Babylonian Dynasty with the Middle Kingdom of Egypt, on the basis of material from both places having been found in a common deposit on the island of Crete. For it should be noted that the pasts of the western kingdoms too - such as the Minoan culture on Crete and that of Mycenae on the Grecian mainland - have likewise been divided and apportioned among the centuries with Egypt playing the defining
rôle.

Generally, by contrast with what is the situation with the other ancient nations, the dates for Egypt from the second millennium BC - but most especially from c.1580 BC - are now regarded as being fixed. The date of c.1580 BC, the standard date for the commencement of the New Kingdom of Egypt with the inauguration of the Eighteenth Dynasty, has become pivotal. Historiography, in fact, seems to divide the world's past into two great epochs: the period before c.1580 BC, for which chronological hypotheses generally are not disallowed, and the period from the New Kingdom onwards, for which historians have no significant changes to propose - no greater than a few years for one or another event. By and large, all the histories of the various ancient nations appear to be firmly aligned together alongside the history of Egypt from c.1580 BC down.

How Such Precision Was Achieved

From whence arose this mathematical certainty about the later Egyptian chronology? In this chapter we intend to point to three major bases according to which the Egyptian chronology first became established: viz.

1. Manetho's dynasties;
2. The Sothic Calendar;
3. The Era of Menophres.
Of these three, by far the most significant from the point of view of rigorously determining the chronology of Egypt, has been number 2, the Sothic Calendar theory. This one, of course, is the central subject of our entire thesis. The Era of Menophres (number 3) is, as we shall learn, an intrinsic part of this theory. Manetho's sequence of dynasties (number 1), constituting as it does the very backbone of Egyptian chronology, and the whole framework for the Sothic theory, is indispensable too. So, while this latter may not be the focal point of this particular thesis, it must nonetheless be the subject of continual reference throughout.

Let us now take an introductory look at each of these three bases of Egyptian chronology in turn, giving the reader a brief description of them, and noting some of the deficiencies of each as pointed out by the Egyptologists:

1. Manetho's Dynasties.

The Aegyptica, written in Greek by the Egyptian priest Manetho during the Ptolemaic period (third century BC), has been preserved for us by Julius Africanus and by several other ancient historians. This important document, the only systematic history of Egypt that we have, has always been a primary source for the study of the pharaohs. Still true today therefore is Weill's early observation about Manetho's king-list, that (3):
It is no exaggeration to say that we continue to arrange the history of Egypt and to place the facts of this history in the very same order that is a legacy of Julius Africanus who wrote in the third Christian century.

Manetho's classification of the dynasties still largely provides the Egyptologists with their general structure. His is the only chronicle source for the regnal year data of the kings over long periods, such as the Archaic era and that of the New Kingdom; and he is considered to be useful for the Fifth, Sixth and Twelfth Dynasties. On the other hand, the *Aegyptica* does in fact record a far greater number of kings in almost every era than can presently be accounted for archaeologically. Its dynastic totals, too, are incredibly high: 518 years for the relatively obscure Sixteenth Dynasty, for example, and 453 years for the Thirteenth.

Not surprisingly, therefore, there has developed an apparent ambivalence towards Manetho and his dynastic arrangement on the part of the Egyptologists. On the one hand, his figures tend to be rejected because of the seeming unreliability of his totals - and in some areas research students are allowed a degree of latitude for making alterations to Manetho's regnal years. Yet generally speaking his lists are still accorded the utmost respect. This ambivalence is typified by Meyer himself, for example, who - while daring to break away from the high figures accepted by the older generation Egyptologists, and
thereby largely rejecting the Manethonic data - nonetheless virtually retained intact the sequence of dynasties of Manetho as a framework for his shortened Egyptian history.

Egyptologists, despite their dependence on Manetho, have been highly critical, not only of his figures, but even of his overall reliability. Breasted, for example, unflatteringly described the figures of Manetho as being "absurdly high throughout", and Manetho's writings in general as "a compilation of puerile folktales", which are "hardly worthy of the name history" (4). In another place Breasted wrote that (5):

... the chronology of Manetho [is] a late, careless and uncritical compilation, which can be proven wrong from the contemporary monuments in the vast majority of cases, where such documents have survived.

This view was strongly supported by Hall, who claimed that Manetho's list of rulers is "so terribly mangled by copyists that it would be unsafe to trust its data" unless it were confirmed by other evidence (6); and later by Sir Alan Gardiner, who wrote that what we now have of Manetho is "only a garbled abridgement in the works of the Christian chronographers [i.e. Africanus, Eusebius and Syncellus] ..." (7).

More recently O'Mara, in his controversial analysis of the Palermo Stone, has vigorously criticised Manetho and his lists of dynasties, saying - among other things - that Manetho (8):
... woodenly wove patent duplications togeth-
er, considered the slightest variation
in spelling or regnal years to be proof of
distinct reigns. Where the pure Old King-
dom list [gives] ... 28 names ... [Manetho]
... managed to increase the number to 43.

Despite all this, and faced with the dearth of useful
chronological material provided by excavations in Egypt, the
Egyptologists feel compelled nonetheless to submit to Manetho's
scheme. But for those who understand the implications of this,
like Gardiner, the effect created is one of resigned pessimism.
Thus Gardiner could write of the Manethonic system that (9):

In spite of all defects this division into
dynasties has taken so firm a root ... that
there is but little chance of its ever being
abandoned.

Although Gardiner, able scholar that he was, had clearly
identified such serious defects in Manetho's scheme as, in his
own words, "inaccuracies of the most glaring kind ... royal
names [being] incredibly distorted", and lengths of reigns
showing "wide departures from the definitely ascertained fig-
ures", he appeared not to offer any way out of the difficulty.
Instead, he merely concluded resignedly again that: "None the
less, his [Manetho's] book still dominates our studies" (10).

At least Meyer and his colleagues, realising that the figures of Manetho were impossibly high, had been bold enough to seek a way out of the difficulty. In this they had shown that they were willing to challenge a system which, in their opinion, had obvious defects. Meyer in particular, in his efforts to arrive at greater mathematical precision in the construction of Egyptian chronology, discovered what he believed to be astronomical evidence in certain Egyptian and classical texts for determining the numerical values for the basic plan of a revised chronology. Thus was conceived a new scheme pertaining to the Egyptian civil calendar: the "Sothic theory".

2. The Sothic Calendar Theory.

Many of the earlier Egyptologists had perceived what Gardiner would later enunciate so emphatically; viz. that a comparison of Manetho's dynastic sequence with the contemporary monuments, showed up clear "defects" throughout the Aegyptica. Thus the Egyptologists, confronted by the frustrating lack of reliable data on which to erect a chronology, and yet yearning no doubt for that kind of mathematical precision that so satisfies the modern mind, must needs look for other means for compiling an accurate chronology of Egypt. It was perhaps out of such sheer necessity, therefore, that there began to emerge the idea of basing Egyptian chronology on astronomical data.

But for those in pursuit of precise mathematical inform-
ation for the establishment of an exact chronology, there was little help to be gained from the usual eclipse data. No clear and unequivocal references to solar or lunar eclipses were thought to have been found in Egypt; leading historians to conclude that the Egyptians, unlike the Babylonians, did not keep regular records of such astronomical phenomena. Something else of an astronomical nature had therefore to be looked for. And so it happened that the Sothic theory of calendrical computation, based on the heliacal rising of the star Sothis (or Sirius), became the alpha and omega for the numerical fixing of Egyptian chronology, with Manetho's dynasties still providing the framework.

Ever since Eduard Meyer first elaborated the Sothic theory in his famous *Agyptische Chronologie* of 1904, proponents of this theory have presumed that the Egyptians used a civil calendar of 365 days, without interruption, throughout nearly all of their long history - going back at least as far as the Fifth Dynasty of the Old Kingdom period. It was further presumed that the Egyptians used for historical computation a long-range calendar of 1460 years; that period of time being the duration of a Great Sothic Year.

This period of 1460 years could be estimated by a basic comparison of the 365-day civil year of the Egyptians with the 365\(\frac{1}{4}\)-day Julian year. The vague Egyptian year would, so to speak, catch up again with the Julian year only after there had elapsed a period of 1460 Julian years (i.e. 365\(\times\)4). According to Meyer's theory the Egyptians had determined, by observations
noting the time required for Sirius to rise heliacally (see Appendix A) on New Year's Day after its similar appearance 1460 years previously, the length of the Sothic period. And they had actually used this 1460-year time-span as a kind of long-range calendar.

In his Aegyptische Chronologie Meyer drew upon many ancient sources, Egyptian and classical, including Ptolemy's Almagest. But a veritable lynch-pin of his Sothic theory was the combined classical evidence of that other Alexandrian, Theon (fourth century AD), and the Roman author, Censorinus (third century AD). Meyer believed that the development of a significant relationship between the heliacal rising of Sirius, and the historical dates, had become possible due to a statement made by Censorinus (in AD 238) that New Year's Day for the Egyptians in AD 139 had fallen on the 21st of July. It was on that day that the bright star Sothis was supposed to have made its annual appearance.

This important data led Meyer to the calculation of what has become one of the most pivotal dates of ancient history: viz. c 1320 BC. For Meyer, presuming that Censorinus had recorded here precisely when a Sothic period of 1460 years had ended, had no difficulty after that of arriving at 1320 BC by simply subtracting 1460 Julian years from this terminal point of 139 AD. Thus he concluded, what still is maintained today, that a Sothic period commenced in 1320 BC (11).

From that starting point, Meyer was then able to calculate an entire sequence of presumed Sothic cycle commencements, us-
ing multiples of 1460: viz. 139 AD; 1320 BC; 2780 BC; 4240 BC. Meyer called the latter date of c. 4240 BC, the 'erste sichere Datum', or earliest fixed date of ancient history. He regarded that date as the one representing the very year in which the civil calendar was introduced into Egypt.

Once Meyer had drawn up the basic outline of the Sothic theory, it became possible within that scheme to date any historical event whose position in the Sothic cycle might be given in one or another ancient text. Historians now, following Meyer's comprehensive examination of such likely texts, consider themselves to have a number of such astronomical references.

After Meyer's original enunciation of the Sothic theory, its chief promoter appears to have been Professor Breasted. The latter took the theoretically possible dates within the Sothic scheme and set them down as astronomically certain. And, despite the fact that certain notable historians of that era - e.g. Maspero, von Bissing, Sir Flinders Petrie and Neugebauer - did not really go along with Meyer's theory (Neugebauer, in fact, absolutely rejected it), Breasted's History of Egypt, which incorporated Meyer's figure of 4240 BC, subsequently became the standard work for a whole generation of Egyptologists (12).

Breasted indeed used asterisks in his chronological table to denote those dates that he considered to be astronomically fixed. He even specified the precise day of each of two events which occurred during Thutmose III's first Asiatic campaign: viz. his crossing of the Egyptian frontier "about the 19th of
April, 1479 BC", and his going "into camp on the plain of Megiddo on the 14th of May" of that same year (13).

3. The Era of Menophres.

Not only had Theon collaborated Censorinus' Sothic information - so Meyer believed - but he also provided some extra crucial data which seemed to reinforce the date of c 1320 BC. "Since Menophres and till the end of the era of Augustus, or the beginning of the era of Diocletian," wrote Theon in his manuscript, "there were 1605 years" (14). Now, since it was well established that the last year of the era of Augustus fell in 283/284 AD, Meyer - by deducting Theon's figure of "1605 years" from that same era - arrived at c 1320 BC; coincidentally the very same year as that which had been calculated from the Censorinus data as constituting the beginning of a Sothic period.

From the above we can begin to understand why this date of c. 1320 BC is such an important one within the context of Meyer's Sothic theory. Indeed this pivotal date, having been arrived at by independent data from two classical scholars, is now recognised as a veritable lynch-pin of Egyptian Sothic chronology. Historians today consider this date to be a fixed point of reference, not only for Egyptian chronology, but indeed for that of the history of the world.

Unfortunately, however, Theon did not provide any further details about this "Menophres"; hence depriving historians of
the opportunity to arrive at an unequivocal identification of this name. "Menophres" is generally presumed to have been an Egyptian pharaoh; especially of the early Nineteenth Dynasty. Some, in fact, have elected to identify Theon's "Menophres" with Ramses I (Menpeḥtire); whose approximately one-year reign was believed, not only to have occurred during c. 1321/20 BC, but - equally conveniently - it inaugurated the Nineteenth Dynasty.

Theon's lack of information about "Menophres" has led to considerable debate as to what this name was meant to signify. Egyptologists examined the various names of pharaohs in Manetho and in the various Egyptian king-lists to determine which of these best matched Theon's "Menophres". Some of them actually transliterated more exactly from "Menophres" into Egyptian than did Menpeḥtire. To give two examples, there were Mennofirre of the Hyksos era and Merneptah of the Nineteenth Dynasty; the latter being most seriously considered, and who for a while seemed to be the most likely candidate of all. But, on a consideration which some regard as being a 'petitio principii', it was ruled by Meyer and his colleagues from the Berlin School of Egyptology that it would be impossible to place Merneptah in the year c. 1320 BC, because - in Meyer's words - "the earliest date when Ramses II [i.e. Merneptah's father] could come to the throne is about 1300 BC" (15).

But nowhere does Theon state that this "Menophres" was a king. This, therefore, represents only one of the various possible choices for identification. It is not surprising then
that, in regard to the legitimate question: Who, or what, was Menophres?, opinion has been divided. Basically, however, two main schools of thought have arisen in regard to the question; viz. those who considered "Menophres" to be a person (usually a king – though some have suggested a sage or an astronomer who, for instance, computed a Sothic period); and those who believed the name to refer to a city, especially Memphis (i.e. Men-Nofre).

The reader will find a detailed discussion of the "Era of Menophres", and the debate about the meaning of the name, in chapter 8 of this thesis.

Need for a Re-assessment

From the above brief description of three of the main bases upon which the current chronological system of Egyptian history has been established, the reader can begin to appreciate that the entire edifice may not have been erected on such unshakably firm foundations as might at first have been imagined. Perhaps something of a new perspective is needed. Since Egyptian chronology is, by and large, the measuring rod for the histories of the other ancient nations, there may well be good reason for considering a most rigorous re-assessment of the entire scheme, with an eye to determining just how well it aligns with the rest. How precisely, for instance, does the data from Egypt mesh with that of Mesopotamia? Have there been established rock-solid synchronisms between these two regions
of the ancient world, down through the centuries? For surely its capacity to integrate with genuine historical data must be the litmus test of the value of any absolute chronology.

According to the testimony of the Egyptologists themselves, the Egyptian monumental evidence has in many ways proved to be rather disappointing. From the point of view of erecting a chronology, this evidence apparently has not yielded sufficient data by itself for achieving such a purpose. Breasted conceded as much when he remarked that the monumental sources, "even when full and complete are at best insufficient records affording data for the meagrest outlines of great achievements and important epochs" (16). And Gardiner, noting the paucity of historical inscriptions, wrote: "What is proudly advertised as Egyptian history is merely a collection of rags and tatters" (17).

In the light of such strong statements as these by highly respected Egyptologists, and considering that the chronologies of the ancient nations are so dependent upon the Egyptian data, it is of the utmost importance that the Egyptologist operates from a broad data base, taking fully into account what is being learned in the other major fields of archaeological research. By working in close collaboration with the Assyriologist, for example - by conjoint effort rather than in splendid isolation, if such be the case - the Egyptologist may be able to work towards a most satisfactory and realistic scheme of ancient history, with all the data properly integrated, thereby increasing the consistency of positive synchronisms.
NOTES

(1) Crawford, O., Man and His Past, (London, 1921), 72.


(5) Ibid.


(9) Gardiner, ibid.

(10) Ibid., 47.


(13) Breasted, op. cit., 285, 287.

(14) Theon of Alexandria, as cited in I. Velikovsky's, Peoples of the Sea, (Abacus, 1977), 229.

(Notes continued)

Ramses II. frühestens erst gegen 1300 auf den Thron gekommen sein kann'.

(17) Gardiner, op. cit., 53.
CHAPTER TWO: THE DEVELOPMENT, AND RELATED ASTRONOMY, OF THE 365-DAY EGYPTIAN CIVIL CALENDAR.

INTRODUCTION

The purpose of this chapter will be to trace the development of the Egyptian calendar from its earliest form, regarded by the most reliable scholars as being luni-stellar, into the known, civil calendar, which was in use from its inception (considered to have taken place at some point during Old Kingdom history) until the advent of Christianity in Egypt. An attempt will be made to include in this present chapter whatever basic astronomical information may be deemed necessary for assisting the reader in understanding this thesis. However, the reader is also referred to Appendix A for a more detailed explanation of astronomical calculations and of the meaning of technical terms (such as 'heliacal rising' of a star, 'arcus visionis', 'precession of the equinoxes', and so on).

Nature of the Original, Pre-Civil Calendar

How did the Egyptians of the earliest historical times define the year, and how was it linked to the original calendar? For many Egyptologists of the nineteenth century, such as - for example - Lepsius, Martin and Brugsch (1), the original Egyptian year was defined by the annual rising of 'Sothis' (this being the Greek version of 'Spdt' the star which virtually all identify with the bright Sirius, and which the
Egyptians themselves equated with their goddess Sopde (2). For these early Egyptologists, belief in the existence in Egypt of a lunar calendar before the advent of the civil calendar was, to use Parker's description (3):

... based almost exclusively on analogy with other primitive peoples and on passages, frequently obscure, in classical writings.

They universally spoke of a fixed Sothic year being in use in those early days. But this concept is now generally discredited. More recent views (4), reflecting a great familiarity with early calendrical systems world-wide, coupled with a more intensive study of the actual workings of the schematic Egyptian calendar, have substituted a luni-stellar calendar: a natural lunar year of twelve fluctuating months, oriented around the star Sirius, whose annual rising announced a New Year and determined the occasional intercalation of a thirteenth month. Parker for instance, from his intensive examination of the calendars of ancient Egypt, could assert that whatever calendar may have been used in pre-dynastic times (5):

... the first Egyptian calendar of record was lunar, and it was based upon the heliacal rising of the star Sothis.

For Parker, a further proof of the antiquity of the luni-
stellar calendar (i.e. one whose beginning is determined by a star) was the fact that such a calendar was "by no means unique among primitive peoples" (6). Parker cited the example of the Loango people on the west coast of Africa, whose lunar calendar was likewise based on Sirius, and whom he suggested must have come under the influence of the ancient Egyptians (7).

It does not really come as a surprise for us to learn that so basic a process as the moon's cyclical motion has played a significant rôle in the most ancient calendars. For, apart from the obvious solar divisions between day and night, and the solstices, the earliest type of astronomical observations made by the ancients would undoubtedly have been those pertaining to the lunar cycles (or lunations). The fact that the moon returns to a particular phase with a periodicity of approximately 29 1/2 days would soon become apparent to the careful observer. It would also become apparent that, in the course of a complete solar year during which the sun returns to the horizon 365 times, the lunar year of approximately (29x12=) 354/355 days was lacking some ten days to keep pace with the solar year.

To compensate for this deficiency it was customary for the ancients, every three years approximately, to add a thirteenth month to the twelve regular months - a process known as intercalation (8).

The Moon's Relation to the Egyptian Seasons

Winlock proposed that, once the Egyptians had become ac-
customed to counting the phases of the moon, they would have been able to relate these to both the seasons and the fluctuations of the Nile (9). Regarding the seasons, Egypt was unique amongst the nations of antiquity. Whereas the other nations were generally inclined to adopt the four annual seasons each of three months duration, the Egyptians counted three seasons of four months duration. This unusual seasonal arrangement was practically forced upon them by the effects of the Nile upon the land. Again, it would not have taken the Egyptian people long to realise that, once the Nile was rising, four moons must pass before the farmers could sow the seed corn on the emerging mud; and how at least another four moons were required for the grain to ripen; and how a third four moons would pass before the flood reappeared.

It was believed that in Old Kingdom times the rising of the Nile (or season of "Inundation") commenced about mid-July, and lasted during Egypt's summer-autumn (10). When the Nile subsided in the winter season (the second of the four moon periods described above), it left a fertilising silt upon the soil, which was ideal for being sown. Lastly, during the third of the four moon periods, there arrived the season of low water after the harvest and before the next inundation.

However, two points should be noted in regard to all this. Firstly, each one of the three seasons described above lasted only approximately, not precisely, for four lunar months. Secondly, the first rise of the Nile for instance was, and still is, quite a variable phenomenon. Parker has recorded
that, between 1873-1904 for example, "the smallest number of days from one beginning to the next was 336 days and the greatest was 415 days" (11). He concluded from this fact that a lunar year controlled by the rise of the river might therefore have "as few as eleven or as many as fourteen lunar months" (12). Obviously, then, there was needed to anchor the Egyptian calendar a fixity more reliable than that presented by such a scheme.

The Importance of Sirius-Sothis

It was Sirius, one of the brightest stars in the ancient sky - the Dog Star of the southern constellation Canis Major (α CMa) - that provided the Egyptian astronomers with a fixed point of reference. The Sothic theorists claim that during early Egyptian history, at the parallel of Memphis, the rising of Sothis occurred on the 19th of July (Julian); coinciding with the flooding of the land by the Nile (13). Presumably, then, Sirius was regarded by the Egyptians as announcing the season of Inundation; which situation may be reflected in the following inscription from the ceiling of the Ramesseum (14):

The divine Sothis, the Great, the queen of the commencement of the year, who makes the Nile swell in its seasons.

But whilst the Nile's variable time of flooding meant that
its coincidence with the heliacal rising of Sirius would be only approximate, it seems to be quite a different matter with the concurrence between the rising of Sirius and the duration of the Julian year. Throughout most of pharaonic history, apparently, the rising of Sirius coincided almost exactly with the Julian year of $365\frac{1}{4}$ days (15). So closely did Sirius keep in step with this form of year that it, and not the tropical year, was held by the Egyptians to be the normal one (16).

The early Egyptian, with the lunar month as his unit of time, would eventually come to the realisation that, while the interval between successive Nilotic floods was highly variable, the interval between the successive risings of Sothis was practically constant. The rising of Sothis, therefore, could be used as a fixed point of reference for a calendar of lunar months with three seasons; a calendar completely agricultural, and based on the fluctuations of the Nile, which were heralded by this star. From then on, trial and error would be sufficient for the Egyptian astronomers to work out the simple rule of intercalation, so that the occurrence of New Year's Day could be properly maintained in the calendar year.

According to the compilers of the Egyptian Astronomical Texts (17), the heliacal rising of Sirius or prt Spt $\xi \Delta \chi$ was for the Egyptians "undoubtedly an important feast, well celebrated". And, whilst every decanal star at its heliacal rising was apparently "honoured with a feast", Sirius-Sothis "gives the pattern for all the other decanal stars" (18).
The Moon and Sothis in Egyptian Texts

While Parker claims to have found various textual references to the moon, or to Sothis, "mainly from the late period", which connect either, or both, to a form of the year (19), O'Mara goes even further, attempting to show what he believes to be "the cyclical relationship existing between the moon and the star Sirius during the Archaic period" (20). And O'Mara's conclusion, reminiscent of Parker's, is that the evidence of ancient canons such as the Palermo Stone and the Turin Papyrus tends to "reanimate old-fashioned theories concerning lunar-stellar origins [and also attests] to the overwhelming significance of the Sothic cycle in the chronology of Egypt" (21).

Note that a distinction must be made here, however, between "the Sothic cycle" to which O'Mara claims the Egyptians attributed such "overwhelming significance", and the modern Sothic theory, which O'Mara's thesis does not fully support. As is clear from the following quotation, O'Mara is pointing to what he says was a simultaneous occurrence of lunar conjunction and the heliacal rising of Sirius every nineteen years (22):

Quite simply stated, 19 Julian years (the period of Sirius in archaic times) mark a cycle in which lunar New Moon (or Old Moon) coincided almost exactly with a regular heliacal rising of the star Sirius. Today Sirius lies far from the latitude where this is
possible, but the phenomenon still occurs regularly with obscure stars lying now where Sirius lay then.

Thus something akin to the well-known Metonic cycle, enunciated by the Greek astronomer Meton (432 BC) (23), O’Mara claims to have been operative in Egypt’s Old Kingdom times as a 19-year cycle based upon Sirius. This cycle perfectly reflected the Julian year then (such a cycle also being known to the Babylonians) (24). Below the reader will find an approximate summary of the hypothetical sequence of events that, according to O’Mara’s speculation, had unfolded for the Egyptians in regard to the introduction of the new, civil calendar, at the end of a regular, 19-year cycle, and under the conditions of an original luni-stellar calendar (25):

Ideally, as he writes, since Sirius was the harbinger of the New Year, its brief appearance just before dawn was followed that night by a New Crescent signalling the commencement of the New Year. (The Egyptian day began at sunrise). Now, due to the highly technical irregularities in the moon’s schedule, this sequence did not always occur, but it probably occurred two out of three times, he says. New Crescent was either a day late or a day early. In the first case, Sirius still heralded the arrival of the New Year, and we would still have the closest approach of moon and star over the 19-year period. Only in the second case, occurring perhaps once a century, would there be a temporary interruption in a predictable sequence of events.
The discrepancy of an hour and a half over a period of 19 years, as O'Mara goes on to explain, will have increased to six hours at the end of the full cycle of (4x19=) 76 years, and to half a day after one and a half centuries. From this time on the system would tend to deteriorate rapidly. More and more frequently, New Moon would be rising before Sirius. By shifting the definition of New Moon to the much broader zone of invisibility, the phenomenon can be saved for a while. "Eventually nothing can save the system".

It is at this hypothetical point that O'Mara thought it most likely that the Egyptians would be ready for the schematic 365-day calendar.

The 365-Day Civil Calendar of Egypt

Although consensus amongst historians as to the true date for the inauguration of the famous civil calendar may not be absolutely unanimous, it is generally believed that at some stage during the Old Kingdom era the Egyptians acquired a 365-day mobile calendar. This calendar comprised three seasons each of four months' duration, or twelve months of thirty days with five epagomenal days at the beginning of the year (26). Being a quarter of a day short every year in relation to the conventional Julian year of 365^{1/4} days, and an entire day short of it every four years, the calendar corrected itself in accordance with the seasons only once in approximately 1460
revolutions of the Julian year (the equivalent of 1461 Egyptian civil calendar years) (27).

Neugebauer regards what he calls "the 'Egyptian year' of a fixed length of 365 days" as being the "most important contribution of Egypt to astronomy"; the reason being, as he goes on to explain (28):

In antiquity this is the only larger time scale which satisfies the basic requirement of any reasonable unit of measurement, namely constancy of length. All other calendric systems entangled time-reckoning with religious and political considerations, or with requirements of unforeseeable astronomical complexity (as the luni-solar calendars), or with both.

Table III below shows the correlation of the Egyptian months with their respective seasons, according to the conventional identification of these latter:

TABLE III

A Schema of the Egyptian Months and Seasons

<table>
<thead>
<tr>
<th>Akhet</th>
<th>Proyet</th>
<th>Shomu</th>
<th>epagomena</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Inundation)</td>
<td>(Sowing)</td>
<td>(Low Water)</td>
<td></td>
</tr>
</tbody>
</table>
TABLE III
(continued)

<table>
<thead>
<tr>
<th>I Thoth</th>
<th>V Tybi</th>
<th>IX Pachons</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>II Phaophi</td>
<td>VI Mechir</td>
<td>X Payni</td>
<td>days</td>
</tr>
<tr>
<td>III Athyr</td>
<td>VII Phamenoth</td>
<td>XI Epiphi</td>
<td>only</td>
</tr>
<tr>
<td>IV Choiak</td>
<td>VIII Pharmuthi</td>
<td>XII Mesore</td>
<td></td>
</tr>
</tbody>
</table>

The discrepancy between the civil and Julian years meant that, if one dated the heliacal rising of Sirius for instance as the first day of Thoth in the Egyptian calendar— which is what is generally done— it would take another 1460 Julian years to elapse before Sirius would rise heliacally again on the first of Thoth. This span of time comprises what modern scholars have labelled the "Sothic period".

O'Neil supplies the following information regarding the intervals between the successive heliacal risings of a star, and of Sirius in particular (29):

The intervals between successive heliacal risings of a star on the Ecliptic will on average be the same as the sidereal year, namely 365.25636 days. As the interval on particular occasions must be expressed in whole days, most intervals will be 365 with about one in four being 366 days. As Sothis, Sirius, lies 40°
south in celestial latitude from the Ecliptic, the intervals between its heliacal risings are affected by:
(i) the precession of the equinoxes; and (ii) the terrestrial latitude of the observer.

The reader is invited to consult Appendix A for further information on (i) and (ii) above.

It should be remembered too that though the heliacal rising of Sirius would rotate through the mobile, civil year, it would have remained, during the Old and Middle Kingdom eras of Egyptian history (30), fixed in the seasonal year; since this latter is linked to the passage of the sun through the constellations (31). This means, furthermore, that the first of Thoth (New Year's Day), and indeed all the days of the year, must move through the various seasons during the so-called "Sothic period". Sirius rose heliacally each summer in ancient Egypt, but on the first of Thoth the Dog Star would rise only once (for four consecutive years) during the 1460-year span (32). Even so, modern scholars assume that the Egyptians continued to celebrate the first of Thoth annually as the day of the (symbolic) rising of Sirius; i.e. the day of the "opening of the Year".

Some scholars believe that the Egyptians had, like other ancient peoples, multiple calendars, as well as several commencements of the year. Parker, for one, refers to the multiplicity of calendars used in Egypt of the Old Kingdom and be-
yond when claiming that (33): "From [2500 BC] the Egyptians had three calendar years, all of which continued in use to the very end of pagan Egypt". Egypt's principal commencement of the year when the luni-stellar system was in use may well have been - as in the case of other nations, such as the Hebrews (34) - at the new moon of spring. The second, for the Egyptians only, was at the rising of Sothis. A third, according to Weigall (35), took place on the 20th of October.

But eventually, it seems, the first of Thoth, commemorating the rising of Sothis, began to take precedence over other commencements in the Egyptian calendrical system, and it came to be regarded by the Egyptians as the true New Year's Day (36).

The Introduction of the Civil Calendar

Whilst O'Mara was not alone in his opinion that the commencement of the new civil calendar would have coincided with a heliacal rising of Sirius, there were others who rejected this view. Both Parker and Crombette for instance, following Neugebauer, were adamant that the 365-day calendar was definitely not tied to Sothis in any way at the time of its institution (37). True, Parker had strongly rejected Neugebauer's notion of a so-called "Nile calendar" of 365 days, because obviously - as he said - "there would be no point to averaging the intervals between inundations in order to arrive at a Nile year, when all the time", as he noted with reference to the
luni-stellar calendar, "there was present and in use a lunar Nile Year" (38). But Parker nevertheless held fast emphatically to the following point which he said "Neugebauer had so forcefully demonstrated" (39):

The civil calendar of 365 days was not tied to Sothis at its introduction but was tied rather to some yearly occurrence which was variable, so that the gradual shift forward of the civil calendar would not be immediately apparent.

Crombette, for his part, believed it to be mere supposition without any documented proof that the inauguration of the mobile Egyptian year had coincided with a heliacal rising of Sothis (40). Before the invention of the 365-day civil year, and even still after its institution, what would count above all for the Egyptians (as it did for the other peoples of antiquity), he said, was the new moon of spring, which showed up around 120 days before the rising of Sothis (41). Crombette was of the opinion that such a new moon's occurrence at the end of a lunar year, would have been an appropriate time for the introduction of a new calendar.

The Institution of the Civil Calendar
According to the Greek Versions

In accordance with the pattern of calendrical development
from luni-stellar to 365-day civil year as given in this chapter, we find that the Greeks also considered the lunar calendar to be the original one used by the Egyptians prior to the establishment of the new civil year. The ancient testimony of Diodorus of Sicily (42) for instance, that in very ancient times the year was counted, not by the movement of the sun, but by that of the moon, appears to run directly counter to Neugebauer's assertion that the year of 365 days undoubtedly represented for Egypt the oldest form of the year (43).

Again Plutarch (44), in keeping with the Greek tradition, declared the Egyptian year to have been a lunar one at first, but added that some time later this "lunar year" was adjusted according to the seasons of the sun. The Roman Pliny also attested to the Egyptian use of a lunar year when - referring to the belief that some men have lived for thousands of years - he noted that certain peoples, including the Egyptians, adjusted their year according to the lunar revolutions (45).

There was a tradition, well known to the Greeks, that it was the Egyptian Thoth - usually equated with the Greek Hermes - who had instituted the 365-day civil calendar at some archaic moment in Egyptian history. According to Plutarch's account of it in his *Isis and Osiris*, it was Thoth who had noticed, as regards the (original) lunar calendar of 360 days, that it lacked approximately five days to make up the complete 365-day total. Plutarch summarised the subsequent correction, or calendrical reform enacted by Thoth, in the following tale (46):
[Hermes] ... playing at draughts with the moon, won from her the seventieth part of each of her periods of illumination, and from all the winnings he composed five days, and intercalated them as an addition to the 360 days.

This explains why Thoth, according to Greek tradition, was regarded as having gained five days from the moon in a game of draughts (or a throw of the dice).

Since, as we have already noted, a complete lunation has a period of about 29\(\frac{1}{2}\) days (in more exact terms, 29.58 days), we find that Plutarch's "seventieth part" is quite mathematically precise. Because 1/70th of 29.58 days is 0.42 days, the lunar cycle thus lacked 0.42 of a day for it to make up the full thirty days. Twelve lunar months each of 29.58 days realise a total of approximately five days. The year thought by Plutarch and other ancients to have been instituted by Thoth-Hermes was therefore not one of 365\(\frac{1}{4}\) days, but of 365 days. It was what is known as a "vague" (i.e. from Latin 'vagus', meaning "wandering") year.

Thoth's supposed solution to the problem regarding the deficiency of the Egyptian calendar was to introduce what is known as the "little month", or five epagomenals, added — as the name suggests — at the head of the regular twelve months, thereby forming the new civil year (47).

Both Meyer and Weigall supported this view in relation to the position of the five intercalary days: Meyer saying that,
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under the Old Kingdom, the epagomenals could be regarded as having been added before the year (48); and Weigall noting (with reference to Breasted) that the beginning of the ancient Egyptian civil year was preceded by five such days, and that (49):

The fifth epagomenal day was New Year’s Eve, as is stated in the Hepthefi contracts [Breasted, Records, I #552].

Conclusion

Having set out the basic astronomy and development of the Egyptian calendar, we are now in a position to examine in detail Eduard Meyer’s Sothic theory.
NOTES:

(1) See R. Parker's "The Calendars of Ancient Egypt", Studs. in Ancient Oriental Civilization, No.26 (Uni. of Chicago, 1950), 30, #'s.144-146.

(2) See e.g. R. Long's "A Re-examination of the Sothic Chronology of Egypt", Orientalia, 43 (1974), 262.

(3) Parker, ibid., 30.

(4) E.g. Parker, op. cit.; g.v. F. Crombette, Chronologie de l'Égypte Antique, (Tournai, Belgium); g.v. P. O'Mara, The Chronology of the Palermo and Turin Canons, (La Canada, 1980).

(5) Parker, op. cit., 31 #151.

(6) Ibid.

(7) Ibid., 153.

(8) See Parker, ibid., 26, #123: "The Rule Governing Inter-calation and the Position of the Intercalary Month".


(10) See E. Meyer's Aegyptische Chronologie, Abhandlungen der Koeniglich Preussischen Akademie der Wissenschaften, (Berlin, 1904), 24ff.

(11) Parker, op. cit., 32, #156.

(12) Ibid.

(13) Eg cf. Parker, ibid., #'s 156-157 & Meyer, ibid.

(15) O'Mara, op. cit., 19.

(16) See G. van Oosterhout's "Tables for the Heliacal and Acronychal Rising of Sirius at Heliopolis and Thebes", Studs. in Astronomical Chronology, No.2 (Oostsingel, Delft, 1989), 2; for the coincidence between Egyptian and Julian dates.


(18) Ibid., # 44.

(19) See Parker, op. cit., 32-33, #'s 158-163, where he refers to e.g. Pyramid Text 965; Hymn to Amon-Re in the temple of Hibe (Darius I); Mariette's Denderah I, 19g = Brugsch Thesaurus, 100; Temple of Khnum at Esna.

(20) O'Mara, op. cit., 38.

(21) Ibid., 40. N.B. that "Sothic cycle" here does not refer to the 1460-year span, but to shorter term, astronomical cycles of 36, 76 and 144 years.

(22) Ibid., 19.


(26) See e.g. Long, op. cit., ibid.


(28) Neugebauer, History, 559.
(Notes continued)

(29) O'Neil, *op. cit.*, 68.

(30) O'Mara, *op. cit.*, 55.

(31) Roy, "Astronomical", *ibid*.

(32) Thus the rising of Sirius would always occur in summer, since the seasons are governed by the sun's passage along the ecliptic. The Dog Days (from the Dog Star, Sirius) in ancient Egypt comprised the end of July and the greater part of August, i.e. the hottest season of the Egyptian year.

(33) Parker, *op. cit.*, 56, #281.


(36) Thus Crombette, *ibid.*, 8.


(38) Parker, *ibid.*, 52, #260.

(39) Ibid. His emphasis.

(40) Crombette, *op. cit.*, 41. His French also reads 'pure supposition'.

(41) Ibid., 41.

(42) Diod. of Sicily; as referred to by Antoniadi, in *L'astronomie égyptienne*, (Paris, 1934), 102.
(Notes continued)


(44) See Plutarch's *Isis and Osiris*, trans. F. Babbit.

(45) Pliny, as referred to by Crombette, *op. cit.*, 104.

(46) Plutarch, *ibid*.


PART TWO

THE SOTHIC THEORY

CONTENTS:

CHAPTER THREE: The Sothic Star Theory of Meyer and His Colleagues .......................... 39-54

CHAPTER FOUR: Some Basic Implications of Meyer's Theory ........................................ 55-77
CHAPTER THREE: THE SOTHIC STAR THEORY OF MEYER AND HIS COLLEAGUES

Meyer’s Explanation of the Egyptian Civil Calendar

Eduard Meyer, one of the foremost chronologists of his time, recognised the fact that the civil year of the Egyptians was entirely an artificial one (‘ein absolut kunstliches Gebilde’), since – as he said – neither month, nor season, nor even year, corresponded to any natural period (1). Like many others he believed that the Egyptians, before the introduction of this year, used lunar months and some sort of lunar year. But he could offer no theory of such a lunar year (2). Meyer referred to the vague, 365-day year as ‘Wandeljahr’ in relation to the Sothic (Julian) year of 365\(\frac{1}{4}\) days (3); and he rightly noted that this vague year was late by a day every four years with regard to the Julian year, and by about three-quarters of an hour less with regard to the Gregorian year (4). However Meyer, despite his great respect for what he deemed to be the profound ability of the Egyptians in matters of astronomy (5), attempted no explanation of the intriguing questions:

- Why did the Egyptians persevere for so long with a defective calendar? And:
- Why did Meyer’s Berlin School of Egyptologists begin to call "Sothic" a civil year of 365 days, which was not tied to Sothis, and which differed quite appreciably from the astronomical year of Sothis?
Meyer certainly had no difficulty in believing that the Egyptians were quite capable of making perfect calculation of the displacement of their vague year in relation to, for example, the solar year and the position of the seasons; and that also their vague year would coincide again with the Sothic year (i.e. our Julian year) after 1461 such civil years had elapsed. But, despite this belief, Meyer did not seem to regard the fact of the Egyptians having for so long persevered with such a year as being a matter worthy of much explanation. And so he wrote (6):

Most certainly ... [the Egyptians] noticed, in the course of the centuries, the retard of the ecliptic, solstices and equinoxes, and that of the commencement of the Inundation, in relation to the year of Sirius, but no one regarded it as being a matter of any consequence.

In many of his views, Meyer was a true disciple of Lepsius - the first person to suggest that Sothic calculations might be useful for the purposes of chronological estimations. Lepsius was quite convinced, for example, that the Egyptians, from of old, knew of both the "ordinary" and "solar" years, and that they could actually estimate the "Sothic period". Thus he wrote with reference to the Old Kingdom era (7):

The simple notion of an ordinary year and of a
solar year, the one beside the other, in the solemnities of the 4th and 5th Dynasties prepares me to justify the hypothesis that the knowledge of the Sothic period of 1461 years is as ancient as these monuments.

And Mahler concurred with Lepsius in this belief of his that the Egyptians were aware of the Sothic cycle at that early period of history (8).

It was in fact during the fifth and fourth millennia BC when, according to Meyer's estimate, the Egyptians first introduced the civil calendar into Egypt (9), that the heliacal rising of Sirius (or Sopdet, as Meyer called it [10]) occurred on the 19th of July Julian, thereby coinciding with the commencement of the Inundation season (11). "That is why Sothis", he said, "was considered as announcing the Inundation" (12). New Year's Day of the civil year, he believed, was quite different from the commencement of the true solar year, and coincided rather with this heliacal rising of Sirius ('Helligkeit ... Fruhaufrag der Sirius') (13).

Classical Influences

Now, according to Meyer's interpretation of the data provided by the Roman author, Censorinus (see chapter 10 in Part Three: B), a coincidence between the rising of Sothis and New Year's Day had occurred in the 100th year before Censorinus
wrote his book, De Die Natali Liber: thus in 139/140 AD (14). Based on this particular interpretation of the Roman scholar, Meyer calculated the following sequence of years for the respective beginnings of Sothic periods (15):

19th July, 140/41 AD - 143/44 AD;
" " 1321/20 BC - 1318/17 BC;
" " 2781/80 BC - 2778/77 BC;
" " 4241/40 BC - 4238/37 BC.

Since, as Meyer presumed, the Egyptian civil calendar of 365 days could only have been invented on one of those occasions of coincidence between the civil and Julian years, and further believing that the second period of c.2781 BC fell in the Fourth Dynasty when the civil calendar was known already to have been in use (16), he concluded that the calendar must have been introduced at the earlier Sothic period beginning of 4241 BC (17). This latter date had for him also the further advantage over c.2781 BC of being able - according to Meyer's own estimation of the span of Egyptian history - to accommodate the whole range of Egyptian dynasties. Meyer therefore regarded the date of 4241 BC as being a "total certainty" ('volliger Sicherheit') for Egypt's first mathematically fixed date (18).

It was a statement made by the Greek scientist, Claudius Ptolemy, which apparently assisted Meyer in coming to this firm
conclusion that the institution of the civil calendar must have been made on the occasion of a coincidence between New Year's Day and the heliacal rising of Sirius, because - as he had interpreted it - this had been the case in the era of 140-143 AD. Ptolemy had written in his Almagest that, in the era of 132-135 AD, the first of Thoth fell on the 21st of July (19). Hence Meyer, taking his cue from this information, was able to deduce from astronomical tables of progressive changes of the heliacal rising of Sirius (20) that New year's Day therefore must have fallen on the 19th of July during the era of 140-143 AD. Weill, then a colleague of Meyer, also examined the data of Censorinus in the light of further evidence from Ptolemy, but came up with a slightly different figure (21).

A third, later author of great importance for the development of Meyer's Sothic theory was Theon of Alexandria. Theon had spoken of a new "Era of Menophres" (see chapter 8 for examination of this era), which Meyer estimated to have commenced on the 19th of July, 1321 BC, and which he said could only be the Sothic period (22). Meyer and his colleagues from the Berlin School of Egyptology identified this Menophres with Ramses I, whom they believed to have reigned at about this time. Theon's information provided Meyer and his colleagues, not only with an apparent confirmation of the date for the commencement of a new Sothic era, but also that for the inauguration of the Nineteenth Dynasty under Ramses I. It is little wonder then that this presumed "Sothic" date of 1320/21 BC has since become one of the cardinal dates of ancient history.
Meyer's Use of the Egyptian Texts

Meyer, Borchardt, Weill and their associates also claimed to have found valuable Sothic information in several Egyptian documents, from which they thought themselves able to calculate relative dates within the overall Sothic scheme of Egyptian chronology. Now, whilst we do not intend here to enter into a detailed analysis of these documents - since that will be done in Part Three - we do wish however to provide the reader with a basic, practical example of the method of calculation used by the Berlin School for achieving those relative dates. Let us take the example of the well-known Illahûn Papyrus: the crucial document from the "Sothic theory" viewpoint for assisting in the reconstruction of the chronology of the Twelfth Dynasty:

From the record of the Illahûn Papyrus, as interpreted by Borchardt, Meyer and Mahler, we learn that Sothis rose on the first of the month Phârmuthi in the seventh year of an unnamed king, presumed to be Sesostris III of the Twelfth Dynasty (23). With the month Phârmuthi conventionally being defined as the fourth month of the winter season, its displacement to the summer season, when the Dog Star rose heliacally, indicates to the proponents of the Sothic theory - with the aid of astronomical charts (24) - that the seventh year of Sesostris III was over 900 years after the beginning of a Sothic period, or 555 years before the end of that same period (four years being allowed for the retreat of the first day of Thoth from the night of the
heliacal rising of Sirius).

From this line of reasoning it is now calculated that the seventh year of Sesostris III was over 900 years after the presumed Sothic period beginning at c.2780 BC (now situated by the Egyptologists mid-way through the Old Kingdom period), or 555 years before its conclusion in c.1320 BC. In other words, the seventh year of Sesostris III can be "sothically" computed to have occurred during the era of c.1876-1872 BC (25). From that mathematically precise point in time, the other Twelfth Dynasty monarchs before and after Sesostris III can then be assigned to their respective eras with the aid of regnal year information supplied by the king-lists and by the monumental evidence.

On the strength of calculations such as these, Meyer believed that the Twelfth Dynasty had been inaugurated before 1940 BC (26). Then, by estimating the regnal years of Sesostris III's predecessors in that same dynasty, he arrived at the era of 1980-1939 BC for the reign of Sesostris I - considered to have been the second king of the Twelfth Dynasty (27). Next Meyer, still using the Twelfth Dynasty as his point of reference, went on to calculate the Second Intermediate Period, including the Hyksos dynasties, on the one hand (28), and the Eleventh Dynasty, on the other (29).

Despite his opinion that Manetho's figures were incredibly high, Meyer tended to retain Manetho's dynastic arrangement. Thus, for instance, he regarded the eleven dynasties preceding the Twelfth as ruling in single file. And since, from his general estimation, he believed that the date of c.2781 BC was
impossibly late for that of the commencement of this sequence of eleven dynasties, Meyer concluded that the Egyptian calendar must have been inaugurated in a presumed earlier Sothic period commencing at c.4240 BC. This date he also thought would allow for the inclusion of those divine and semi-divine dynasties which were supposed to have preceded king Menes, Egypt's first historical king and unifier (30).

Next, the Second Intermediate Period of the Thirteenth Dynasty and the various Hyksos dynasties, separating "Classical Egypt" of the Middle Kingdom from the beginning of the New Kingdom era, would now have to be fitted into Meyer's Sothic scheme in a period mathematically determined by the demands of the major Sothic cycle dates already thought to have been established. From a combination of these latter and the Illahun Papyrus, primarily, Meyer had already set the Twelfth Dynasty firmly in the era of c.2000 BC-1788/85 BC; the latter date being his estimation for the conclusion of the Twelfth Dynasty (31). Thus c.1790 BC became established as the approximate starting point of the Second Intermediate Period. It remained for Meyer to fix its date of termination.

Although Meyer and his colleagues had already "sothically" established the date for the commencement of the Nineteenth Dynasty at c.1320 BC, they nonetheless still had to determine the precise length of the Eighteenth Dynasty to arrive at the beginning of the New Kingdom era and the conclusion of the Second Intermediate Period. One again they were able to call upon other appropriate "Sothic" texts, recording the rising of
Sirius. In this case, conveniently, these were two Eighteenth Dynasty documents: the Ebers Papyrus and the Elephantine Stele. The Ebers Papyrus, presumed to belong to the reign of Amenhotep I, recorded that Sirius rose on the ninth day of the (eleventh) month, Epiphi, during the 9th year of the king's reign (32). Meyer thus computed the 9th year of Amenhotep I as belonging to the era of c.1550/49-1547/46 BC (33).

The second document, the Elephantine Stele, presumably declared that a Sothic rising took place on the 28th day of the month of Epiphi also (34). While this inscription did not actually state the name of the king, nor the year of his reign, it was considered to have been a product of Thutmose III. From all this, therefore, Meyer calculated that the Eighteenth Dynasty had commenced in the era of c.1580/75 BC (35). This left the new Sothic arrangement with a period of approximately 210 years (i.e. c.1790-c.1580 BC) for the entire Second Intermediate Period.

Sothic Theory and Calendrical reform

A final Egyptian text which had important considerations for Meyer's Sothic star theory was the Decree of Canopus (36). Basically, Meyer interpreted this decree as recording that the festival day of the rising of the star of Isis had occurred on Payni 1, in the 9th year of pharaoh Ptolemy "Euergetes" I (37). Meyer dated Ptolemy's 9th year in the era of 22nd October 239 BC to 21st October 238 BC; and he dated the specific event of
Isis’s rising — according to this decree — to the 19th of July, 238 BC (38). Furthermore, he identified the Egyptian version of this star, whose hieroglyph in the tri-lingual Decree of Canopus was $\text{𓊀𓊅𓊞}$, as Sothis (39).

In Part Three: B, we shall go into more detail about the Decree of Canopus and how Meyer used it for chronological purposes in conjunction with the data from Censorinus. But perhaps one of the most significant aspects of this pharaonic decree in regard to Meyer’s theory in general is that it raises the all-important question of calendrical reform. Commentators, whether or not they wholeheartedly support the Sothic theory, are unanimous (40) in stating that the question of calendrical reform is crucial to the theory. A single proof that the Egyptians altered their 365-day calendar at any stage would be alone sufficient to ruin Meyer’s theory. Van Oosterhout, for instance, is therefore quite correct in his observation that “the whole [Sothic] method rests on the fundamental hypothesis that there have been no changes in the Egyptian calendar” (41).

Now, whereas Meyer and his colleagues had argued that the Egyptians paid no heed to the discrepancy in their civil calendar, the Greek pharaohs of the Ptolemaic era apparently were not able to live so comfortably with it. Thus Ptolemy ordained at Canopus that, to rectify this discrepancy, a special day (our Leap Year) should be added to the calendar and celebrated as a feast in honour of the gods “Euergetai”. Ptolemy “Euergetes” had, in effect, designed what later would become known
as a "Julian" reform. But the native Egyptian people, it seems rejected this reform, and it failed to become established. As Meyer observed, Egypt had to wait until the Roman era of Augustus before the Julian calendar of \(365\frac{1}{4}\) days became the standard one in that country (42).

The all-important issue of calendrical reform had already been raised before Meyer, by Lepsius (43). Early it had been thought that a particular pharaoh of the Hyksos era - sometimes given as Aseth, sometimes Saites, and sometimes Apophis (44) - had modified the 365-day Egyptian calendar by the suppression of a month (45). While we are going to say more about this question of calendrical reform in Egyptian history in Part Three, it is sufficient to note here that Meyer was aware of the alteration in the calendar as suggested by Lepsius, and that he referred to it as the "so-called calendrical reform of Saites" (46).

Conclusion

Meyer and his supporters, such as Weill and Breasted, apparently were well satisfied that the Sothic theory had been raised on firm principles. The system became known by the term, "short" chronology; referring chiefly to the fact that Meyer was prepared to ascribe a mere two centuries approximately to the Second Intermediate Period, based on his astronomical calculations. For the sake of maintaining his "short" scheme, Meyer was prepared to assign one hundred years to the Thirteenth Dynasty; whilst the other hundred, he
believed, would suffice for the time of the Hyksos (47).

Apart from Breasted, who never questioned the Sothic theory to any significant degree, Meyer's "short" chronology was stoutly defended by Weill prior to 1945 (48). And despite the fact that certain prominent Egyptologists rejected the basic hypotheses of Meyer and the Berlin School, it was Meyer's "one hundred years for the Hyksos" view which prevailed, and which continues to this day in its essential form to dominate the conventional structure of ancient chronology.
NOTES


(Cf. R. Parker's "The Calendars of Ancient Egypt", in *Studs. in Ancient Oriental Civilization*, No.26, (1950), 30 #147.


"C'est une annee vague".

(4) See Meyer's *Aegyptische*, where he distinguishes 'das (julianische) Siriusjahr' from "das echte (gregorianische) Sonnenjahr".

(5) See e.g. Meyer's *Histoire*, *ibid*.


(9) See Section entitled 'Die Zeit der Entstehung des aegyptischen Kalenders', in Meyer's *Aegyptische*, 38-44.

(10) Meyer, *Aegyptische*, *ibid*.
(Notes continued)

(15) *Ibid*.
(17) Meyer, *Aegyptische*, 41; *Nachträge, ibid*.
(19) Ptolemy’s *Almagest*; as referred to by Meyer in *Aegyptische*, 24.

Meyer makes reference to astronomical Tables from Boeckh and Usener in *Aegyptische*, 26–27.

(21) Weill, R., *Bases, Méthodes et Résultats de la Chronologie Égyptienne*, (Paris, 1926), 9; *q.v.* his *Compléments* (1928). Weill’s figure was actually 139 AD.

(23) See e.g. Meyer, *ibid.*., 7, 18 & 34.
(24) See footnote (20).
(25) This useful explanation of Meyer’s method of calculating from the Sothic data is largely a summary taken from I. Velikovsky’s *Peoples of the Sea* (Abacus, 1977), 230.
(Notes continued)


(27) Ibid.

(28) Ibid., 21-23.

(29) Ibid., 31-39.

(30) Meyer, Aegyptische, 40.

(31) Meyer, Nachträge, 35.

(32) Ibid., 1.

(33) Ibid., 1 & 9.

(34) Ibid.

(35) Ibid., 8.

(36) See Meyer’s Aegyptische, 10, 23 & 26.

(37) Ibid., 23.

(38) Ibid.

(39) Ibid.


(41) Oosterhout, op. cit. His emphasis.


(43) See F. von Bissing’s Geschichte Aegyptens im Umriß, (1904), S 32f.

(44) For Aseth, see Meyer’s Nachträge, 39; for Saîtes, see Crombette’s Chronologie, 40; for Apophis, see Crombette, passim.
(Notes continued)

(45) Crombette, ibid., 40.

(46) Meyer, *Histoire de l'Antiquité*, 28. `... prétendue ré-
forme calendérique de Saïtes`.

(47) Meyer, *Nachträge*, 34ff.; q.v. his *Geschichte*, esp. Section
entitled, `Das Reich der Hyksos`, 313-323.

Actually, according to E. Danelius (in "The Identification
of the Biblical `Queen of Sheba`", *Kronos* I [1975], 4), it
was Champollion who first devised this "short" chronolo-

gical scheme.


As will be explained in chapter 11, Weill later (in 1945)
changed his mind about this.
CHAPTER FOUR: SOME BASIC IMPLICATIONS OF MEYER'S THEORY

INTRODUCTION

Here we intend to discuss certain ramifications of Meyer's Sothic star theory in regard to Egyptian chronology and the calendar; particularly in the context of the reactions - whether favourable or unfavourable - of some of the earlier commentators like Neugebauer, Weill and Petrie.

We shall start with Neugebauer's strong criticism of Meyer's views concerning the nature and development of the Egyptian calendar; to which criticism we shall oppose Parker's defence of Meyer. Then we shall touch on the all-important question of calendrical adjustment; again using Parker as a balance to criticism of Meyer - this time from Weill. And finally, regarding the question of chronology, we shall examine some early reactions by noted Egyptologists to the Berlin School's "short" chronology for the Second Intermediate Period.

THE EGYPTIAN CALENDAR

1. Criticism of Meyer's Interpretation

Perhaps one of Meyer's most trenchant critics was Otto Neugebauer, who was strongly supported by Capart and Scharff. Writing in 1938, some time after Meyer, Neugebauer published an important and provocative study of the Egyptian calendar (1), whose views he re-affirmed in 1942 (2).

We recall that Meyer had shown great faith in the
scientific ability of the Egyptians, even to the extent of hypothesising that they were able to reform their lunar year so as to create the new 365-day civil year, without long-term observations, and that he had actually accredited the Egyptians with the invention of this latter calendar as far back as c.4240 BC. Neugebauer, however, poured scorn on such hypotheses. His belief was that it would have taken the Egyptians a long period of time to notice the difference between the two years (solar and vague) which Meyer, following Lepsius, had claimed the Egyptians had used together since the Old Kingdom era. Neugebauer labelled Meyer's hypothesis of a relatively sudden introduction into Egypt of a 365-day calendar, "an absurdity" from a historical point of view (3).

Neugebauer's paper divides naturally into two sections. In the first part, he vigorously attacked the conception of the Sothic period as an instrument for determining, as Meyer had, the oldest certain date in history to have been July 19, 4240 BC. Unlike Meyer, Neugebauer thought that there could not have existed at that time any theoretical astronomy, as writing and mathematics did not exist, and as the cultural level of the people was very low. In this context Neugebauer also attacked the claim of Borchardt - who shared Meyer's regard for the Sothic theory - that a body of Egyptian astronomers had been responsible at this time for the revolutionary installation of the 365-day year. Neugebauer bluntly stated that the reality of such a claim existed only in Borchardt's imagination (4).
Neugebauer then emphatically pointed to what he regarded as being a contradiction between the revolutionary character of a 365-day year based on Sothis, and the failure of the proponents of this new calendar to adjust it to Sothis when after but eight years the year began two days before the rising of Sothis. He concluded this section with the claim that, while the Egyptians had two conceptions of the year - (a) a period of 365 days; and (b) the interval between two risings of Sothis - in the beginning, these had nothing to do with each other (5).

In the second part of his discussion, Neugebauer presented his own theory of the origins of the 365-day year, entirely apart from Sothis. He argued that an averaging of the intervals between inundations over a period which - as he estimated - need not be greater than fifty years, would inevitably result in an interval of 365 days. If, then, this "Nile" (or Nilotic) calendar were adopted in a year when the inundation was normal, because of the great variability of the inundation it would be some centuries before the calendrical seasons no longer coincided with the natural seasons. A new phenomenon, he claimed, would then be picked as expressing more clearly than the calendar the incipient inundation. This, he argued, was the rising of Sothis (6).

When Neugebauer first announced his theory, he was inclined to place the introduction of the 365-day year in the centuries around 4200 BC; the very same era as Meyer's original date of 4240 BC. But on the strength of conclusions from a
later analysis of his own theory by Scharff (7), Neugebauer eventually switched this event to the centuries around 2800 BC (8). Denying Meyer's claim that the Egyptians had retained two definitions (viz civil and solar) of the year side by side, Neugebauer used the opportunity to comment on the "inefficiency", as he called it, of the Egyptian civil year according to Meyer's interpretation of it (9).

The assessment by more recent commentators of Neugebauer's thesis tends to suggest that, whilst Neugebauer was definitely wrong in trying to assert that the two calendars did not exist in Egypt side by side, he was right when he claimed that the civil calendar had not been tied to Sothis at its introduction. Meyer, too, had been quite well aware of the retardation (or what Neugebauer calls "inefficiency") of the Egyptian civil year (10); but - following Lepsius - he was equally aware that the evidence pointed to the fact of the co-existence throughout the various phases of Egyptian history of the two types of year (11). Neugebauer on the other hand, by claiming the 365-day year to be an illusion, had completely ignored the evidence. For this he was criticised by Parker, who wrote: "Neugebauer's theory fails to take into account the already existing calendaric situation" (12).

However, so forceful had been Neugebauer's attack on the Sothic theory, followed by that of Scharff, that it had impressed itself in part even on critics like Parker. The latter, whilst rejecting the un-scientific aspects of Neugebauer's theory, was absolutely convinced that Neugebauer
had proved beyond doubt, for example, that the new civil calendar was independent of Sothis at its introduction; being tied instead to some variable astronomical phenomenon (13). Meyer's presuming that the institution of the civil year must have occurred at the moment when the beginning of this year coincided with the rising of Sothis - as this had been the case in 140-143 AD - was in fact pure supposition. Meyer could produce no specific evidence to show that such was the case.

Neugebauer's Original 'Nilotic' Year

Parker, however, was not so impressed with Neugebauer's further strong opinion that an averaging of the Nile flood, rather than the luni-stellar calendar accepted by most as being the earliest form of Egyptian year, was the original method of calendation in Egypt. Having stated that "weighty objections" could be brought against Neugebauer's theory (14), Parker brushed aside the latter's early calculation of c.4200 BC for Egypt's original efforts to form a calendar, and then went on to question Neugebauer's point about averaging the Nile. Given Winlock's estimation that "one Nile year might be only 335 days long and another as much as 415" (15), he wrote, it was unlikely that the early Egyptians would have used such a method.

Regarding Neugebauer's revised calculation of c.2800 BC for the beginning of Egyptian civilisation, Parker agreed with his view that Egypt by then was unquestionably in possession of a well organised and developed economic life, as well as
writing and mathematics; these being Neugebauer's conditions *sine qua non* for the creation of a schematic calendar (16). But he went on to add that (17):

... Egypt also possessed at this time, as has been shown [by Parker himself] ..., a "Nile" lunar calendar based on Sothis.

Obviously there would be no point to averaging the intervals between inundations, he said, in order to arrive at a Nilotic year, "when all the time there was present and in use a lunar Nile Year" (18). O'Mara likewise was critical of Neugebauer for positing what O'Mara called a "fancy and utterly modern technique of averaging Nile highs or modified lunar years to calculate the [365-day] year" (19).

2. The Question of Calendrical reform

Meyer and his colleagues would not admit positively to any calendrical changes during the entire period of the civil calendar; from its institution during the Old Kingdom right through until its demise during the Roman period of Augustus (20). In this view, Meyer was strongly supported initially by Weill. But it was probably the later explanation by Parker which supplied the Sothic theory with the strongest arguments in favour of its hypothesis. From Parker's argument, given in the next section, he was able to conclude in support of Meyer's opinion that the cyclical progress of the civil year "did ob-
tain and was not interfered with"; this being a belief which, according to Parker, "had been a cornerstone of Egyptian chronology since it was formulated by Meyer in 1904" (21).

Parker's Explanation

Parker first introduced what he regarded as being the two different ways by which a calendar may be adjusted. These were simply, he said, either "to put in a day or days", or "to cut out a day or days" (22). Both types of reform, he believed, had been suggested at one time or another by Egyptologists as being the type of reform supposed to have been employed by the Egyptians. As an example of the former case, putting in day(s), he cited the view of Alliot, saying (23):

Alliot ... treats the question of calendar adjustment almost as though it were now an accepted fact. Outside of the appeal to authority (´... beaucoup ... spécialistes´), however, his evidence seems to consist only in a belief that since the Egyptians knew the civil year moved forward through the seasons, they must have tried to adjust it.

The objective of this type of calendrical reform, Parker then explained, would be to keep the year in place by adding a day or days in either of two ways: viz. an extra day every four years (as proposed in the decree of Canopus), or by a
greater number of days at less frequent periods (24). Parker explained as follows how such a proposed type of reform would affect Sothic calculations (25):

Suppose various attempts at this, which were not long successful, had been made throughout Egyptian history. The only possible chronological result would be that the period between two Sothic dates might be greater than the normal period. It could never be smaller.

The second method of calendrical adjustment proposed by Parker, of cutting out day(s), was illustrated - he said - by what Weill had done when he reduced the Second Intermediate Period by thirty years from Meyer's figure of 210 years (26). Whereas Weill apparently, according to Parker, had thought that such a reform, enacted after the time of Sesostris III, might have had something to do with the Theban restoration of the Eighteenth Dynasty, Parker himself claimed that in this dynasty the regnal years were counted from the day of the accession of the king, not from the Egyptian New Year's Day as Weill had indicated, and thus "it would hardly seem necessary to force regnal and civil year into concurrence" (27).

Parker's own conclusion on this matter was rather firmly opposed to any notion of calendrical reform during Egypt's long history. And he includes here the important distinction that must be made between what the Egyptians actually did and what
modern scholars might think they ought to have done (28):

Now what we think the Egyptians might have done or should have done about adjusting their calendar carries little weight against the fact [sic] that for some eighteen centuries (ca. 1540 BC to AD 238), which includes more than a whole Sothic period, they almost certainly did not tamper with it, and the one time an attempt was made (decree of Canopus) it failed completely.

Manetho's Testimony

There are in fact a number of apparent evidences from Manetho which indicate changes in the Egyptian calendar after the time of the Twelfth Dynasty (29). But Meyer apparently was not impressed by these. One belongs to a note appended to the name of Aseth, presumed to be one of the late Hyksos kings whose name appears in the Sothis list. It reads (30):

This king added the 5 intercalary days to the year: in his reign, they say, the Egyptian year became a year of 365 days, being previously reckoned as 360 days only.

Another version of Manetho (31) credits a calendrical alteration of the same type to a different Hyksos king, Saites,
at an earlier date. This was the note which Meyer simply dismissed as "the so-called calendrical reform of Saites".

Later however Weigall, in his discussion of the Twelfth and Eighteenth Dynasties (32), returned to this question of calendrical reform close to, and during, the Hyksos era. Weigall began by making reference to what he thought to be "the change in calendar from the Mesore year to the Thoth year"; the former, he said, being what was used during the era of the Twelfth Dynasty and the latter, as attested by the Elephantine Stele, being used at some point during the Eighteenth Dynasty (33). Weigall believed that his awareness of such a calendrical change would enable him, as he said, to "offer some new light" on the length of the Second Intermediate Period (34). He arrived at the conclusion that (35):

Therefore there was an adjustment of the calendar between the Twelfth and Eighteenth Dynasties. The dates of festivals collected by Gardiner (Zeitschrift, 1907, p.136) show that the festivals kept their place in spite of the adjustment.

Weigall next attempted to locate this supposed reform more precisely. For this he used an Egyptian text, the Rhind Mathematical Papyrus - a document which some scholars (36), though, thought to be untrustworthy - which, he said, "is dated in the 33rd year of Apophis, the fourth Hyksos king" (37). Of special interest to Weigall, however, was one of what he called "some
jottings added afterwards", which he gave as follows (38):

Year 11, 1st month, day 3, Birth of Set. The majesty of this god caused his voice (to be heard). Birth of Isis. The heaven rained.

and he suggested that "Year 11" here might be assumed to be that of the pharaoh who had succeeded Apophis; probably, as he said, "Khian or Saites".

But the point that Weigall wanted to emphasise about this statement from the Rhind Mathematical Papyrus was in relation to what he regarded as the coincidence of two Egyptian feasts: viz. the birth of Set and the birth of Isis, which were traditionally celebrated, as he said, on successive days (the former on the third, and the latter on the fourth, of the epagomenal days), "but here these two days are given as belonging to the first month of the year" (39). For Weigall, this meant that the five epagomenal days must have been suspended by the Hyksos monarch for that year (40).

Crombette (41) also supported the notion of a calendrical reform during the Hyksos era. He was critical of Meyer for ignoring, as he said, "the only known modification of the calendar ... towards 1700 BC"; which reform Crombette attributed to pharaoh Apophis. But Crombette also rejected Weigall's interpretation of the supposed reform, saying that it was a question of advancement, not of retardation, of the civil year on the solar year (42).
3. Early Evaluation of Meyer's "Short" Chronology

Proponents of the "Short" Chronology

Many historians contemporary with Meyer were not primarily concerned about chronology; but amongst the best known of those who were, the majority leaned towards Meyer's estimation of approximately 210 years for the Second Intermediate Period. Apart from Meyer himself, the chief advocates of the Sothic-based "short" chronology were e.g. Breasted, Weill and Weigall. And after the death of Petrie (see following section on the "Long" chronology), their main opponent in matters chronological, the "short" scheme of Meyer and his associates really came into its own, and remains the standard one to this day.

It is hardly surprising that a scheme favoured by, say, three experts, rather than that favoured by one, would have drawn votes of acceptance from those who may not have had the time to study the chronological problem for themselves. With the passing of time, however, scholars have been able to ascertain better just how well this standard chronological arrangement accommodates all the well-established historical facts and documentary evidence.

We saw that according to Meyer's scheme, with the end of the Twelfth Dynasty astronomically fixed at c.1790 BC, and the commencement of the Eighteenth Dynasty likewise fixed at c.1580 BC, the Second Intermediate Period must be slotted in during the 210 years separating these two kingdoms. Breasted accepted
this ineluctable conclusion somewhat uncritically, and made no significant contributions in this area. Weill, too, staunchly defended it prior to 1945, but then - in that year - changed his mind, now proposing that the Twelfth Dynasty had in reality been contemporary with the Hyksos Fifteenth and Sixteenth Dynasties, and that the Second Intermediate Period should be reduced by a maximum of thirty years from Meyer's figure (43). Not surprisingly such a proposal, further shrinking the "short" chronology, did not gain many supporters (44).

Weigall, the other notable Egyptologist who strongly supported the "short" chronology, by no means succeeded in accounting for the problematical squeezing into the Second Intermediate period of several dynasties. Nor is his statement below, in favour of the Sothic scheme's arrangement for this period, in any way strengthened by the circular reasoning he employs (45):

... of course the most important argument in favour of the arrangement is that the Thirteenth, Fourteenth, and Fifteenth Dynasties have got to be fitted into a period between the astronomically fixed date of the fall of the Twelfth Dynasty and the rise of the Seventeenth.

Hall, on the other hand, was one who appeared to fluctuate between acceptance of "short" and "long" chronologies, perhaps trying to find some generally acceptable middle ground. Early,
he was prepared to admit that the "short" chronology had some features in its favour from an art-historical perspective, with very little difference between the art of the early Eighteenth Dynasty and that of the Thirteenth: the "fact", as he said, being "very well shewn [shown] on a small scale in the evolution of the scarab-seal" (46). Added to this was the evidence from Crete, which indicated to Hall that (47):

... no very long period of time elapsed between the Second Middle Minoan Period of the Aegean culture, which was contemporary with the Twelfth Dynasty, and the First Late Minoan Period, which was contemporary with the beginning of the Eighteenth.

More will be said about Hall's middle of the road position and attempted resolution of the Second Intermediate squeezing in the next section dealing with the "Long" chronology.

Though Meyer's chronological assessment won the strong approval of some, it did not convince all the Egyptologists of the day. Some rejected outright the entire notion and methodology of the Sothic scheme. Flinders Petrie on the other hand, whilst not rejecting the validity - as he saw it - of the Sothic method of computation, could by no means however accept that the Second Intermediate Period could be contained within a mere two centuries. Thus he developed his unique, Sothic-based system, known as the "Long" chronology.
Petrie's "Long" Chronology

Sir Flinders Petrie, who believed that great chronological difficulties had arisen from Meyer's interpretation of the Sothic data, was seen by Hall as having (48):

... boldly cut the Gordian knot [by] assuming that the [Sothic] calculation is right, but that the date must be pushed back by a whole Sothic period of 1460 years earlier ....

And that is exactly what Petrie did. Unable to accept the "short" chronological arrangement for the Second Intermediate Period, Petrie - on the basis of the data available - arrived at what he considered to be the only rational conclusion, viz. that an extra Sothic period be inserted into this interim (49). Thus for example, according to Petrie's extended chronology, the Twelfth Dynasty pharaoh Sesostris III, instead of reigning during the early nineteenth century BC as Meyer and his school would have it, must have reigned as far back as c.3300 BC (50).

Petrie's own comments on the chronological issues arising from the "short" chronology, prompting a scholar of his calibre to take such a drastic step, are of sufficient general relevance to reproduce here at some length (51):

... The question in debate is in which cycle the XIIth Dynasty occurred; does it end at 1786 BC or 3246 BC?
Or, as it is agreed the XVIII\textsuperscript{th} Dynasty began in 1580, were there 206 or 1666 years between the XII\textsuperscript{th} and XVIII\textsuperscript{th} dynasties? The advocates of the short period claim that there are not enough monuments known to fill more than two centuries. Yet we have remains of at least seventeen kings of the XIII\textsuperscript{th} dynasty, and every year adds to their number, which on an average of 7 years each is 120 years.

Passing on from the Thirteenth Dynasty to the Hyksos era, Petrie continues his interesting comment (52):

The Hyksos age is now fairly defined, and requires us to recognize at least ten important reigns, besides the probability of a large number more, and 150 years would be a low estimate for what is already known. And at least 10 years must be allowed in the XVIII\textsuperscript{th} dynasty. Thus 280 years is covered by reigns which are evident, while we ignore the probability that we only know yet the minor part of the rulers in this very dark and confusing period. To compress this into two centuries seems impossible. The advocates of the longer period consider that the evidence of changes in art, the language, and the burial customs show that much more than two centuries had passed, and that this fully balances the supposed scantiness of monuments as historical material.
No one today of course accepts Petrie's vastly exaggerated "long" chronology; for if modern commentators have unanimously rejected as being far too early Meyer's original date of c.4240 BC, they must a fortiori dismiss Petrie's backward projection of an extra Sothic period. Even Petrie himself abandoned this scheme eventually, thereby enabling for the "short" chronology to become unrivalled. Nonetheless, the essential points raised by Petrie about the need for a longer than two centuries Second Intermediate Period still have force today.

Hall's 'Middle of the Road' Position

Whilst Hall could agree with certain aspects of Meyer's "short" chronology, he nonetheless found facts which he thought also militated against the Sothic theory. According to Hall's estimate of the data, it seemed almost impossible "to force" - as he put it - all the kings of the Thirteenth to Seventeenth Dynasties into "so small a space as 250 [sic] years, cut down their reigns as we may" (53). Hall went on to say, in relation to the Illahun fragment's presumed Sothic date of the seventh year of Sesostris III, that (54):

The XIII\textsuperscript{th} Dynasty gives us the impression of having reigned for a considerable period; and the new kings, probably to be placed at the beginning of the XVII\textsuperscript{th} Dynasty, whose statues have lately been found at
Karnak, cannot have been purely ephemeral monarchs if they reigned long enough for their colossi to be erected at Thebes. The difficulties in the way of the acceptance of this Sothis date are therefore great.

Of even more relevance still for the question under discussion was Hall's further comment on the length of the Hyksos era during the Second Intermediate Period. Whereas Meyer had estimated this at about one century, Hall was of the opinion that (55):

... it seems impossible to find room in two centuries for the two dynasties of the Hyksos ..., preceding the XVIIIth Dynasty, some of whom seem to have had very long reigns and to have ruled the whole land (so that they cannot have been contemporaneous with other kings ruling in the south whose names we know), as well as for the long XIIIth Dynasty that preceded them, some of whose kings also reigned long and ruled the whole country.

But just as much as Hall found it "impossible" to accept Meyer's "slashing" - as he called it - of the Second Intermediate Period to a mere two hundred years approximately, so did he consider Petrie's sixteen hundred years for the same interim period to be "far longer than our material demands" (56). He was also critical of the corresponding view of Petrie
that the Twelfth and Eighteenth Dynasties were vastly different from the point of view of their respective civilisations (57):

... the civilization and art of the beginning of the XVIIIth Dynasty hardly differs from that of the end the XIIth: is in no way so different from it as that of the IVth.

Hall's Conclusion

Had Meyer and his colleagues allowed for "another century only", Hall said by way of conclusion, then his "allegiance" to Meyer's short chronology "might have been conceded willingly" (58). Finding himself stranded, as it were, between the "short" and "long" chronologies - being convinced that the changes in art between the Twelfth and Eighteenth Dynasties were unlikely to have occupied so short an interval as 200 years (Meyer), or so long an interval as 1600 (Petrie), and with his own estimate being "three and a half centuries" - Hall ended up having to abandon entirely the notion of the Sothic period as being a clue to the period elapsed (59).
NOTES


(2) Neugebauer, O., "The Origin of the Egyptian Calendar", JNES, 1 (1942), 396-403.

(3) Neugebauer, as referred to by F. Crombette, in Chronologie de l'Égypte Antique, (Tournai, Belgium), 102. Crombette reads here: "... du point de vue historique, une absurdité".


(5) Ibid.

(6) Ibid.

(7) Scharff, 'Die Bedeutungslosigkeit der sogennanten aeltesten Datums der Weltgeschichte', Historische Zeitschrift 161 (1939), 32.


(9) Ibid.


(11) Ibid.

(12) Parker, "Calendars", #260.

(13) Ibid.

(14) Ibid., #259.
(Notes continued)


(16) Parker, ibid.; with reference to Neugebauer.

(17) Parker, ibid.

(18) Ibid., #260.


(20) Actually the Egyptians persevered unofficially with their calendar even then, and until the advent of Christianity.


(22) Ibid., 105.

(23) Ibid. His emphasis.

(24) Ibid.

(25) Ibid. His emphasis.

(26) Weill, as referred to by Parker, in "Sothic", 105-106.

(27) Ibid., 106.

(28) Ibid., 105. His emphasis.


(30) E.g. see note after name of Saites in Sothis list, ibid.

(31) Manetho, ibid., 99.


(33) Ibid., 34.

(34) Ibid.
(Notes continued)

(35) Ibid.


(37) Weigall, op. cit.

(38) Ibid.

(39) Ibid., 35.

(40) Ibid.

(41) Crombette, Chronologie, 40.

(42) Ibid.

(43) See Parker, "Sothic", 102.

(44) According to Parker, ibid., Weill maintained his position in several articles, and won at least one colleague, viz. Alliot, to his partial support.

(45) Weigall as quoted in D. MacNaughton's A Scheme of Egyptian Chronology, (1932), 10.


(47) Ibid.


(50) Ibid.

(51) Ibid.

(52) Ibid. Emphasis added.
(Notes continued)


(57) Hall, *Ancient*, 24. Hall further qualified this statement, explaining that whilst the difference between the civilisation of the Twelfth Dynasty and that of the middle Eighteenth were very great, it was not the same for the beginning of the Eighteenth Dynasty.


PART THREE A:

PRE-MENOPHRES ERA CITATIONS

(i.e. Pre-1320 BC)

CONTENTS:

CHAPTER FIVE: The Illahûn Papyrus ................. 78-93
CHAPTER SIX: The Ebers Papyrus .................... 94-118
CHAPTER SEVEN: The Elephantine Stele ............. 119-131
CHAPTER FIVE: THE ILLAHÛN PAPYRUS

INTRODUCTION

The earliest Sothic-dated source used by Meyer and his colleagues for establishing their mathematically precise scheme of chronology, were the two papyrii fragments discovered by Ludwig Borchardt in 1899, in a precinct of the Illahûn Temple at Fayûm. This document does not give the beginning of a Sothic cycle, but instead a calendar date, year 7 of an un-named pharaoh, for the rising of Sirius; which - when retrocalculated according to the method explained in chapter three - yielded the approximate figures of 1876-1872. As we are going to see, the key Sothic date for the Middle Kingdom is now derived from these two fragments.

With Borchardt having assigned the Illahûn Papyrus to the reign of Sesostris III of the Twelfth Dynasty, Meyer accordingly was able to settle upon c.1876-1872 BC as being the Sothically-precise time for the 7th year of that same pharaoh. This date quickly became the accepted one. Indeed, that in the days of Meyer and Borchardt it was universally agreed upon that the Illahûn Papyrus belonged to the time of Sesostris III, was attested by Edgerton when he wrote (1):

From 1899 until 1937, inclusive, all publications on the chronology of the Twelfth Dynasty seem to have accepted the view that a certain fragment of the el-Lahun [ie Illahûn] temple register foretold a heliacal
rising of Sothis on the sixteenth day of the eighth month in the seventh year of Sesostris III. No king is named in the fragment.

If what certain Egyptologists say is true, the importance of Borchardt's decision should not be underestimated. It has become a vital factor in determining the Sothic chronology of the pre-New Kingdom period of ancient Egypt and of the nations chronologically tied to Egypt. The currently accepted date for the 7th year of Sesostris III is now, following the universal rejection of Meyer's c.4240 BC date, regarded as being the oldest fixed date in Egyptian chronology (2). It, together with the Turin summary of approximately 950 years from 'Menes' to the end of the Sixth Dynasty, has served as the foundation stone even for the chronology of the Old Kingdom.

Long, from a chronological point of view, attributed to Borchardt's decision concerning the Illahun fragment an even more far-reaching significance. On what he called "this supposition" of Borchardt, rested - he said (3): "... the chronology of the Middle Kingdom, the likewise dependent absolute dating of the Old Kingdom, and the First Intermediate". And, regarding the dependence of the historians of the non-Egyptian nations on Borchardt's estimate, for determining the eras of the earlier Archaeological Ages, Long further claimed that "the dating of the Early and Middle Bronze Ages in Palestine, Greece and Mesopotamia are to a great degree founded on faith in the veracity and accuracy of the document
[as interpreted by Borchardt]" (4).

With the Twelfth Dynasty having proven to be the most difficult to reconstruct, and to harmonise with acceptable precision, of all the early dynasties (5), it is not hard to understand why the majority of the Egyptologists might have welcomed with open arms the Sothically-calculated date for the 7th year of Sesostris III. Today there is no longer any major disagreement. Based on Borchardt’s original date, the Twelfth Dynasty has since been arranged according to the highest known years, and supplemented by data from Manetho and the Turin Papyrus, according to the following approximate form (6):

**TABLE IV**

**TWELFTH DYNASTY RULERS**

<table>
<thead>
<tr>
<th>King</th>
<th>Reign Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amenemhet I</td>
<td>1991-1962 BC</td>
</tr>
<tr>
<td>Sesostris I</td>
<td>1971-1928 BC</td>
</tr>
<tr>
<td>Amenemhet II</td>
<td>1929-1895 BC</td>
</tr>
<tr>
<td>Sesostris II</td>
<td>1897-1877 BC</td>
</tr>
<tr>
<td>Sesostris III</td>
<td>1878-1843 BC</td>
</tr>
<tr>
<td>Amenemhet III</td>
<td>1842-1797 BC</td>
</tr>
<tr>
<td>Amenemhet IV</td>
<td>1798-1790 BC</td>
</tr>
<tr>
<td>Sebeknofru</td>
<td>1789-1786 BC</td>
</tr>
</tbody>
</table>

The **Basis for Borchardt’s Identification**

Of the two Illahûn fragments under consideration, the more
important from the point of view of Meyer's theory is the one containing the date of a Sothic rising. Addressed to a priest named Pepi-hotep, this fragment is dated in the 7th year of an un-named pharaoh. Borchardt has reproduced it hieroglyphically as follows (7):

Long is correct in his interpretation of this statement as being "a suggestion, twenty-one days in advance, that preparations be made for the festival of the rising of Sothis" (8). For the document, dated Year 7, third month of winter (or Phamenoth), on the 25th day of that month (9), anticipates the rising of Sirius on the 16th day of the fourth winter month (ie Pharmuthi) of that same (presumably) seventh year. Apart from the date, it is the latter section of the hieratic record, referring to the rising of Sirius, that is of greatest interest for us here. Translated from Borchardt's original German into English, this portion reads (10):

You ought to know that the rising of Sothis takes place on the 16th of the 8th month. Announce it to the
priests of the town of Sekem-Usertesen and of Anubis on the mountain and of Suchos ... and have this letter filed in the temple record.

Important for Meyer's theory was the fact that the Illahun Papyrus made reference to a rising of Sothis within the context of a hard historical date. Not surprisingly, therefore, Meyer seized upon the information thus provided, so that it became — according to his scheme — a key Sothic citation for establishing a historical basis especially for the dynasties of the Old Kingdom.

The second fragment is also dated to the seventh year of an un-named monarch, but this time on the 17th day of the fourth winter month — presumed to be the day after the heliacal rising of Sirius (11):

It contains a very brief inscription from the temple register recording the offerings of bread and beer made on the day of the Sothic festival.

Borchardt's main concern with regard to these two documents — and the one with which he was immediately confronted — was to determine to which pharaonic reign they ought
to be assigned. That this was indeed a real difficulty is noted by Long who pointed out, not only that both of the Illahûn inscriptions lacked "the all important name of the pharaoh in whose reign the events occurred", but even that "no name of a ruler, not even a partial cartouche, or any other evidence of a pharaoh is to be found in the Illahûn papyrus" (12).

After some deliberation Borchardt - mainly on the basis of palaeography - narrowed down his choice to two pharaohs of the mid-Twelfth Dynasty: viz Sesostri III and Amenemhet III (13). On further palaeographical considerations, Borchardt decided upon Sesostri III (14); for he considered that the handwriting of the Illahûn Papyrus was identical ('von gleicher Hand') to that of certain fragmentary pieces of papyri which are assumed to refer to the death of Sesostri II, predecessor of Sesostri III (15). These latter fragments were discovered in the same Temple at Illahûn.

Some Reactions to Borchardt's Decision

Borchardt's crucial choice has not been entirely free from controversy. Though most scholars perhaps would concur with James's recent view that the Illahûn fragments were "reasonably attributed to Senusret III [ie Sesostri III] on palaeographical grounds" (16), Neugebauer, for one, had been highly critical of the fact that scholars had been drawing conclusions - especially about the identity of the pharaoh - from an incomplete text (17). Thus Neugebauer asked (18):
Is the palaeographical evidence from the (still incompletely published Kahun papyri) sufficient to determine the pharaoh referred to ...?

More than three decades later, Neugebauer's problem with the papyrus apparently had still not been resolved; for Long was able to write as late as 1974 that (19):

Any doubt as to the Sesostris III arrangement or desire to read the hieratic itself is hindered and frustrated by the fact that the papyrii have not as yet been published.

Parker has criticised Long's views (19B).

Difficulties of an Astronomical Nature

Though "technically", as Long has noted, "palaeography, not astronomy, is the foundation of this [Il Mahûn] Sothic date" (20), the documents have nonetheless evoked certain comments from astronomers too. These usually centre around the notion of the heliacal rising of Sirius and the fact that a series of lunar dates in the Il Mahûn documents are used, in conjunction with the Sothic information, to anchor the chronology. Obviously there is good sense in using a combination of lunar and Sothic data; but only if this latter is highly accurate.

Certain astronomers have indicated that, due to possibly contradictory, independent astronomical data, the Il Mahûn documents may be open to other interpretations from a
chronological point of view (21). Thus Neugebauer demonstrated that certain new moon information from Illahûn and the Sothic figures, co-ordinated equally well in chronological schemes for the Twelfth Dynasty whose totals differed, one from the other, by about one century (22).

Van Oosterhout had his own difficulties with the series of lunar dates provided by the Illahûn documents. Various solutions, he said, had been put forward by proponents of the Sothic theory to solve what he described as "the notorious problem of an impossible lunar month of 31 days between No:7 and No:8 [in the lunar series]", arising from the current interpretation. These Illahûn lunar dates constituted, he said, "a most severe test for any chronology because they require a matching of any sequence of 12 successive lunar dates" (23). But van Oosterhout found that such solutions as were offered by the Sothic theorists - eg "the intervals are not lunar months", or "scribal errors", or "overlap of the phyles" - were unconvincing (24).

Heliacal Rising of Sirius

Van Oosterhout further considered that a major factor in the interpretation of the Illahûn Papyrus was the determination of the phrase prt spdt, usually translated as '(heliacal) rising of Sirius' (25). Whereas prt spdt as described in the ancient Egyptian texts was, as he said, clearly a spectacular phenomenon, the heliacal rising of Sirius strictly speaking is
not. Thus, in a discussion of "trieteris" (space of three years), he offered a tentative interpretation of the phrase other than that usually given for the Illahûn phenomenon (26):

After the introduction of a trieteris, eg by decree, the correctness of the rule "one day in four years" will be guaranteed for at least two centuries. Prediction of prt spdt is neither difficult nor necessary. The only Egyptian text where prt spdt is predicted (Illahun archive) possibly is not a prediction but a decree of a trieteris.

From the point of view of establishing an absolute chronology James, with reference to Parker (27), contrasts what he considers to be the valueless single lunar dates (for the New Kingdom) with the far more significant Illahûn lunar references, "giving sufficient data to determine the length of lunar months over an entire year". But his conclusion about this succession of lunar dates, based on Read's research (28), is quite surprising:

John Read calculated that the observations recorded in the papyrus match perfectly with the pattern of lunar conditions in the year 1549 BC. Therefore, in Read's opinion, this placement of the Illahun [el-Lahun] calendar with an apparent 12 for 12 fit has to constitute one of the greatest chronologi-
cal anchor points in ancient recorded history'.

Despite Read's confidence in this absolute date, an immediate problem arose from the fact that it falls - in terms of Meyer's Sothic arrangement - early in the Eighteenth Dynasty. The Illahûn Papyrus on the other hand, as we have just seen, has always been assigned a date in the Middle Kingdom, some two and a half centuries earlier. Consequently Read had to argue for a re-dating of the text (in the relative sense) to the Eighteenth Dynasty. Parker, as James further noted (29), had demonstrated that this was impossible on historical grounds: the papyrus certainly dates to the late Twelfth Dynasty. Parker rejected Read's interpretation in favour of his own, which, even after emending one of the entries on the papyrus, still allows for a match of only ten of the twelve recorded dates with modern retrocalculations for the year 1813-1812 BC (30).

Parker's method had already been resolutely dismissed by Read (31):

This type of chronology, where one claims the historical record is wrong rather than his own analysis, is no chronology at all.

Difficulties Chronological and Stratigraphical

Hall was sceptical of Borchardt's interpretation of the Illahûn data on the grounds that it reinforced what he con-
sidered to be Meyer's unacceptably short span for the duration of the Second Intermediate Period. "It does not seem impossible", he tentatively suggested, "that our interpretation of the date given by the Kahun [Illahûn] temple-book has been in some way faulty" (32). Whilst personally leaning towards a date earlier by in excess of fifty years than that computed by Meyer for the seventh year of Sesostris III (33), Hall well understood what would be the implications of such a choice for the Sothic chronology. Thus he wrote (34):

.... But it must be remembered that, if we do not accept the placing of the Sothic date of the Kahun book so late as 1945 BC or 1882-79 BC, we have no really firm ground for any Egyptian chronology at all before the beginning of the XVIIIth Dynasty.

Almost half a century later, Gardiner stressed what he called the "formidable difficulty" of limiting the Second Intermediate Period to 200 years, since - as he claimed - "there were over 100 kings to be squeezed into that short space" (35). And, having admitted the "hypothetical character" of the Sothic computations, Gardiner echoed the tone of Hall's sentiments when he stated, resignedly (36):

To abandon 1786 BC as the year when Dynasty XII ended, would be to cast adrift from our only firm anchor, a course that would have serious consequences
for the history, not of Egypt alone, but for the entire Middle East.

As regards stratigraphy, some scholars (37) are of the opinion that, within the Sothic framework, the stratigraphical material dated to the time of the Twelfth Dynasty does not correlate properly with Syro-Palestinian archaeology. Ehrich (38) points to what he considers to be an inexact correspondence between the historical and stratigraphical data of the early period, for instance, when he candidly states that:

.... The synchronization of the First Intermediate period with the Middle Bronze I of Syria and Palestine is not established by specific archaeological correlations. These periods fall into place opposite each other merely as the successors of the Old Kingdom and the Early Bronze period.

Ehrich went on to contrast what he saw as the more satisfactory Old Kingdom period correlations, with the far less convincing ones of the Twelfth Dynasty era. Unlike Old Kingdom finds, he said, these Middle Kingdom materials seemed not to provide - except for some notable exceptions - any direct and highly satisfactory Syro-Palestinian connections (39):

In fact, the synchronisms of the Twelfth Dynasty with the Middle Bronze IIA period must be substanti-
ated by discoveries outside of Egypt, such as ... the temple dated by the names of the Twelfth Dynasty Pharaohs Amenemhet III and IV and by the circumstances that the following Middle Bronze IIB period is again directly correlated with Egypt.
NOTES


(2) See eg P. O’Mara’s The Chronology of the Palermo and Turin Canons, (La Canada, 1980), 67.


(4) Ibid.

(5) See footnote (2).

(6) Table IV is based largely on that given by Edgerton, op. cit., 307.


(9) Note that the 3rd month of winter is actually the 7th month of the Egyptian year.

(10) Borchartd, ibid.

(Notes continued)


(21) See eg *ibid.*, 265; also G. van Oosterhout’s "The Heliacal Rising of Sirius", *Studs. in Astronomical Chronology* 1 (Delft, 1989).

(22) See Long, *op. cit.*, 265, where he refers to Neugebauer.


(28) James, *ibid*; with reference to J. Read’s "Early Eighteenth Dynasty Chronology", *JNES* 29 (1970), 6,10.
(Notes continued)


(30) Ibid.


(33) Nicklin, in *Classical Review* XIV (1900), 148.


(36) Ibid., 148-149.

(37) Eg R. Ehrich (ed.), *Chronologies in Old World Archaeology*, (1954), 19; *g.v.* Courville, *op. cit.*, 111.

(38) Ehrich, *ibid*.

(39) Ibid.
CHAPTER SIX: THE EBERS PAPYRUS

INTRODUCTION

After Illahûn, according to Hayes (1), the "next astronomically determinable 'anchor point' in Egyptian history is the ninth year of the reign of King Amenophis [Amenhotep] I, the second ruler of the Eighteenth Dynasty". The 'anchor point' in question is the Sothic date provided by the Ebers Papyrus, which Meyer accepted as belonging to the era 1550/49-1547/46 BC (2). The rough parameters allowed by the two supposedly fixed Sothic points of Illahûn and Ebers have been refined by dates drawn from comparing modern retrocalculations of past lunar cycles with Egyptian records of the moon's phases known from the reigns of some pharaohs.

The importance of the Ebers document is that it - dating as it is generally thought close to the rise of the New Kingdom era and the corresponding beginning of the Late Bronze Age - has enabled the Sothic theorists to fix with precision an important new phase in history. Meyer, working from the fixed date he had settled upon from the Ebers Papyrus, and taking Manetho's reasonable figure of 25-26 years for the reign of Pharaoh Ahmose (Amenhotep I's predecessor), had no trouble thereafter calculating the beginning of the New Kingdom and the simultaneous era for the expulsion of the Hyksos by Ahmose: viz at c.1580 BC (3). Thus Long was not exaggerating when he stated that the "New Kingdom and Late Bronze chronology are largely dependent on the Ebers Sothic date for the ninth year of Amenhotep I" (4).
Since the Ebers Papyrus immediately affects the dating of the Eighteenth Dynasty, a basic chronological outline of that dynasty is provided in Table V below (5):

**TABLE V**

**THE EIGHTEENTH DYNASTY**

<table>
<thead>
<tr>
<th>Pharaoh</th>
<th>Reign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ahmose</td>
<td>1580-1555 BC</td>
</tr>
<tr>
<td>Amenhotep I</td>
<td>1555-1532 BC</td>
</tr>
<tr>
<td>Thutmose I</td>
<td>1532-1515 BC</td>
</tr>
<tr>
<td>Thutmose II</td>
<td>1515-1495 BC</td>
</tr>
<tr>
<td>Hatshepsut</td>
<td>1495-1473 BC</td>
</tr>
<tr>
<td>Thutmose III</td>
<td>1473-1441 BC</td>
</tr>
<tr>
<td>Amenhotep II</td>
<td>1441-1418 BC</td>
</tr>
<tr>
<td>Thutmose IV</td>
<td>1418-1411 BC</td>
</tr>
<tr>
<td>Amenhotep III</td>
<td>1411-1372 BC</td>
</tr>
<tr>
<td>(Akhnaton) Amenhotep IV</td>
<td>1372-1355 BC</td>
</tr>
<tr>
<td>Smenkare</td>
<td>1355-1352 BC</td>
</tr>
<tr>
<td>Tutankhamun</td>
<td>1354-1345 BC</td>
</tr>
<tr>
<td>Ay</td>
<td>1345-1341 BC</td>
</tr>
<tr>
<td>Horemheb</td>
<td>1341-1313 BC</td>
</tr>
</tbody>
</table>

***************

Virtually all scholars were agreed on this date of c. 1580 BC for the beginning of the New Kingdom; even the proponents of the "short" and "long" chronologies, respectively, being agreed
that the start of the New Kingdom must not be 'transferred' to a later date, to prevent any "squeezing" of the Second Intermediate Period. Hall, for example, claimed c.1580 as being "the earliest date of which we can be absolutely certain within the margin of a few years either way" (6). And this same view was shared by Albright (7), by Breasted (8) and by Säve-Söderbergh, who wrote that (9):

The beginning of the XVIIIth Dynasty is dated to one of two alternatives separated by not more than twenty years, [the rest of the reigns] between the 16th and 11th century [having] margins of a few years only.

Even Edgerton (10), who regarded Meyer's "short" chronology as "now no longer tenable", testified that this date of c. 1580 BC was "one of the very few 'astronomically fixed' points in Egyptian history which met with general acceptance".

The Ebers Hieratic Text

The early history of the hieratic document is rather complicated. Brugsch, who was the first to publish an article about what we now refer to as the "Ebers Papyrus" (11), having received a copy of the document from Eisenlohr (12), announced in 1870 that this newly-discovered, fragmentary text contained a Sothic date. But Brugsch withheld publication of the document, and the name of the pharaoh (13), because Eisenlohr (who, in turn, had obtained the papyrus from Edwin Smith at Luxor) wanted to publish the hieratic with his own com-
mentary first. A few months later, in December 1870, Eisenlohr went ahead and published his own article on the papyrus, which he dated to the third year of Pharaoh (14).

Intriguing Web of Confusion

Real confusion about the document began to arise in 1873, when Ebers claimed that Smith had given Eisenlohr a copy of the authentic papyrus which was by then in Ebers’ possession (15). This situation caused Long to comment later that (16):

... Eisenlohr and Brugsch had written about a mere second-hand copy of what soon became known as the genuine Ebers papyrus.

Long described the circumstances surrounding the Ebers Papyrus in those days as "an intriguing web of confusion" (17).

But an even greater controversy would arise regarding the interpretation of the hieratic document. The Ebers Papyrus has, as we are now going to see, turned out to be intrinsically unreadable. Because of its illegibility, Brugsch described the document as (18): "Dieser Text, in hoehst fluechtigen hieratischen ...". The fairly significant amount of "divisive comments and interpretations" (19) to which the Ebers Papyrus has given rise, seems due largely to the problematic reading of the document. Three main areas of difficulty in this regard may be isolated: viz the identification of the ruler; the
regnal year; and the purport of the text. These three points will be considered separately below. And, because Goodwin was a major contributor in discussions centring on these issues, the reader will find his name prominent in what follows.

(i) The Regnal Year

That there was a significant degree of confusion amongst the Egyptologists in those early days when trying to assess the papyrus, is evident from the fact that, within the space of about three years, three or four different estimations of the regnal year were presented. For instance, whereas Brugsch (20) and Eisenlohr (21) had, in 1870, read the regnal year as the third year, Lepsius (22) - also in 1870 - concluded instead that it should be read as the sixth.

Goodwin examined it in more detail. Though he would not claim to give a "decisive solution" to the problem, he hoped that his "speculations" might help to clear the ground for further enquiry into what he called "this perplexing text" (23).

It should be noted here that, according to Long (24), Goodwin was referring to "the Smith version of the papyrus", which Long regarded as being a copy of the 'original' Ebers Papyrus. In Long's opinion, this version was what he called a "confusing ... copy".

Goodwin, having been of the opinion that the estimations three years earlier were the results of a misreading of the document, then proceeded to give his own interpretation of the
regnal year. It should be read, not as year 3 (Brugsch, Eisenlohr), nor as year 6 (Lepsius), nor even as year 30 (as others had claimed), Goodwin suggested, but rather as year 9 (25). Goodwin had arrived at this tentative conclusion with the aid of Smith himself (26).

Of the various, proposed versions of the regnal year in the Ebers Papyrus, Goodwin seemed to treat most seriously the year 3 choice of Eisenlohr and Brugsch. Indeed it was this one against which he argued; saying that one had only to compare the numeral in the facsimile of the papyrus with "the hieratic forms of nine given in M. de Rougé’s Chrestomathie", to discover what he called an "obvious" resemblance between the two (27). But, as Goodwin went on to explain, there occurred an even better comparison in the Boulaq Papyrus, where the figure of nine could be found "to resemble exactly the numeral of Mr Smith’s papyrus" (28).

Goodwin’s tentative conclusion regarding the regnal year of the Ebers Papyrus apparently carried the day, so that now we find his figure of "year 9" has become the universally accepted one. Indeed it was this figure that Meyer absorbed into his Sothic scheme. The next task was to ascertain to which Egyptian monarch this regnal year must be assigned.

(ii) The Ruler

For Goodwin (29), the name of the king to whom the entry referred, as he claimed, "really represents little difficulty". The third character, "open to very slight doubt", he said, "is
clearly the form of some bird". Goodwin believed that it very nearly resembled the usual hieratic form of ba; adding that: "What little difference there is may be put down to the peculiarity of the scribe" (30).

As for the second character, Goodwin insisted that "there ought to be no doubt at all"; for it was what he described as "the ordinary hieratic equivalent of the bird's leg and claw" (31). In regard to this particular point, Goodwin referred the reader to the lists of hieroglyphic signs given, respectively, by Brugsch (32) and Pleyte (33). And Goodwin added, with further reference to Brugsch (34), that the sign undoubtedly stood sometimes for 'remen', the "arm", and was also used as the equivalent of in , "from which it may be inferred to have the value of n, or 'nen', or perhaps 'nu'. From all of this Goodwin concluded that the name of the king would be expressed hieroglyphically as : ie Remen-ba-ra or Nen-ba-ra (35).

Goodwin's immediate problem now was to associate this decipherment of his with any particular pharaoh or known cartouche. He could not believe that the name which he considered to be its nearest resemblance, viz 'Ba-en-ra' (the name of Ramesses II's son, Merneptah), could be a variant of it. As he explained (36):

In the first place the substitution of the very unusual sign for commonly found in the name of Ba-en-ra is not probable; and next in all examples of this cartouche with which I am acquainted
the following, a distinction not to be overlooked in a name of this simple character.

Thus Goodwin found himself obliged to look for the name, 'Remen-ba-ra', as he said, "in the obscurer parts of Egyptian history, either amongst the dynasties which preceded the 12th or amongst those between the 12th and 18th" (37). In Manetho, Goodwin found the name of a king, viz Bichares of the Fourth Dynasty - whose name, he said, was lacking in the Abydos and Saqqara tables - who seemed to be a likely candidate (38). Prior to this, Goodwin had already calculated the Sothic era of the Ebers Papyrus, as he thought, at c 2870-2867 BC; which era he located during the Fourth Dynasty (39). Thus he was delighted to note what he believed to be the following striking coincidence (40):

The name of Bicheres, probably the Βίονθως of Eratosthenes has all the appearance of having contained the element ba; and, what I can only regard as a happy accident, the first year of this king in Lepsius's table is precisely BC 2878.

Thus Goodwin reached his conclusion that the solution to the enigma of the hieratic cartouche was that it belonged to Ba-en-ra, whom he identified with Bicheres of Manetho's Fourth Dynasty (41).

We recall that Brugsch had, in deference to Eisenlohr, re-
frained from publishing any information about the pharaoh of the hieratic papyrus. Eisenlohr thus became the first Egyptologist to attempt an identification of the pharaoh whose name was written in the cartouche. His first estimation of the hieratic writing was that it, being almost demotic in form as he thought, dated perhaps to only a few centuries before Christ. Other aspects of the cartouche, though, reminded him of the era of Queen Hatshepsut and Thutmose II. On further reflection, however, Eisenlohr changed his mind again, suggesting that the cartouche might in fact be associated with a much later person, such as Cleopatra III (of the Hellenistic era) (42).

Ebers

Far less tentative in his opinion as to the pharaoh of the document (initially, at least, for he would later change his mind several times) was Ebers who, apparently unconcerned about what Long would later call "the quite difficult discernment of the hieratic", boldly informed his colleagues in 1873 that the authentic papyrus mentioned a Sothic rising during the reign of ḫsr-k3-R’, whom Ebers identified as Amenhotep I (43). Stung by Goodwin’s implication that the Smith papyrus was the best one available, and also by his identification of the pharaoh as one of the Old Kingdom rulers, Ebers re-asserted the identity of what he claimed to be the correct text.

Nevertheless Goodwin’s reading of the text had had some affect, for later Ebers - though re-affirming his confidence in the interpretation of the first sign in the cartouche as a sun
symbol \(\bigcirc\) was now willing to admit another possibility in regard to that of the second sign; conceding that it might either be read as an arm with a rod of rule \(\underline{\text{\text{}}}\text{\text{}}}\), or just as an arm \(\underline{\text{\text{}}}\text{\text{}}}\) (44). And finally, in what Long would later describe as "an unexpected comment on the third sign" (45), Ebers conceded to Goodwin's thinking that it represented the bird sign, or 'ba' (46).

But in 1890, Ebers again changed his mind and repudiated his most recent reading of the cartouche (47). In language which Long claimed to be "as convincing and filled with conviction as that with which he [Ebers] had previously defended the interpretation of the bird or ba sign" (48), Ebers returned to his original identification of the monarch as Dsr-k3-R' (Amenhotep I), which he had discarded for many years (49).

Eisenlohr, however, in the same year, rejected the renewed defence by Ebers (and his colleague Erman) of the Dsr-k3-R' reading; claiming - in the following words - that Ebers had misread the second hieratic symbol in the cartouche (50):

\[\text{[Ebers]} \ldots \text{continues what I consider an erroneous reading of the royal name \ldots [he] reads \ldots \underline{\underline{\underline{\underline{}}}}, Ka, in order to find the name of Amenophis [Amenhotep] I, while \underline{\underline{\underline{\underline{}}}}, which occurs more than fifty times in the papyrus, has never that form.}\]

Parker (50B) fully accepted the Dsr-k3-R' reading of Erman and Ebers.

Naville

Naville (51) too, in those early years, was undertaking his own, independent investigation of the pharaoh's identity,
with an eye to securing for scholars a fixed date in ancient Egyptian history. Regretting the current uncertainty surrounding the pharaoh's name because of the importance that he attached to the Ebers document, Naville proceeded to inject a new concept into the debate regarding the second sign in the cartouche. Instead of either the bird or arm readings that had been suggested for it, Naville chose to equate this symbol with the hieroglyph for a vessel (French, 'vase'); thus reading the complete cartouche as 'Kerh-ab-Ra' (52). Next Naville (who was at pains to make it known that his view was nothing more than a hypothesis) learned from Lepsius that the pharaonic name to which this reading corresponded most exactly was that of king Kerpheres, believed to have been a contemporary of Cheops during the Fourth Dynasty (53).

Concluding Remark

Though Ebers' choice of Amenhotep I as the pharaoh of the hieratic papyrus is the one that is generally accepted today, we have found that there was a strong tendency amongst Egyptologists in Ebers' day to regard the document as being a product, not of the New, but of the Old Kingdom. Chabas too, according to Long (54), "transliterated the cartouche into a hieroglyphic cartouche which could have belonged to more than one king of the Old Kingdom".

(iii) Document's Astronomical Significance

Again regarding the interpretation of the Ebers Papyrus,
particularly its details of an astronomical nature, a great deal of controversy and uncertainty has arisen. Before Meyer's interpretation of the document had become the accepted one, Goodwin - for instance - had suggested that the Ebers Papyrus was recording an alteration of the Egyptian calendar. Others, since Meyer, have argued over whether the latter's now accepted version of the Sothic date as (55):

Year 9 under King Amenhotep I: Feast of the (astronomical) New Year = ninth day of the eleventh month (of the civil calendar) = heliacal rising of Sothis.

is really the correct one.

Here, starting with Goodwin's difficulty, we shall take in chronological order these two controversies regarding the astronomical data of the Ebers Papyrus.

(a) Calendar Adjustment

Goodwin suggested that the most relevant part of the Ebers "memorandum", as he called it, be interpreted in the following way (56):

... in the 9th year of the king Remen-ba-ra the phenomenon called the (heliacal) rising of Sothis took place on the 9th of Epiphi.
However, Goodwin's difficulty was not with this statement as such, but with the fact that, on looking further down the column listing the eponyms of the months, he had found what he referred to as "some puzzles" (57); for, having already accepted that the 9th day of the eleventh month, Epiphi, had coincided with a New Year's Day feast, Goodwin was surprised to find indications in the text that the same phenomenon had occurred on the 9th day of each month. He explained why he believed this interpretation of the text to be the necessary one in the following words (58):

The dot underneath the eleven lines after the first seems to indicate a repetition of these words in each line, so that we have a rising of Sothis corresponding to each successive 9th of the month.

Apart from this obvious absurdity from an astronomical point of view - presuming his interpretation to be the correct one - Goodwin had found some further "difficulties", as he claimed, inasmuch as he could not ascertain whether this 9th of Epiphi of the Egyptian vague year corresponded with the 1st of Mesore, or with the 1st of Thoth, of the fixed year (59).

In the case of the former, Goodwin estimated that the heliacal rising would have occurred in the era of 1410-1407 BC; whereas, in the case of the latter (his choice here being identical to Meyer's own estimate) it would have occurred in 1550-1547 BC. However, because Goodwin found himself unable to
identify any king of these particular eras with his 'Remen-
ba-ra', he turned back to what he estimated to be the earlier
Sothic cycles in each case - viz 2870-2867 BC and 3018-3015 BC,
respectively - situated, as he believed, during the era of the
Fourth Dynasty.

Since, at this point Goodwin had arrived at his identi-
fication of the pharaoh of the cartouche with Bicheres of the
Fourth Dynasty, he now proceeded to attempt an explanation of
the document's apparent anomalies. The fact recorded in the
papyrus "seems to be", he proposed, "that in the 9\textsuperscript{th} year of a
certain king, the 9\textsuperscript{th} days of the several months of the vague
year, corresponded to the 1\textsuperscript{st} days of the month of the fixed
year" (60). He wondered whether there might be any relation
between this, and the fact mentioned in the Edfu calendar, as
cited by Brugsch (61), that the 9\textsuperscript{th} day of Thoth was a New
Year's Day "according to the ancients".

Goodwin tentatively concluded from all this that the hier-
atic papyrus was actually meant to be taken as a reference to
what he described as "some rectification of the Calendar made
in the 4\textsuperscript{th} dynasty ..." (62).

(b) Astronomically Fixed Date

There erupted a new controversy over the interpretation of
the Ebers Papyrus during the 1930's. Borchardt (63) not only
rejected Meyer's explanation of the key Sothic reference in the
hieratic document, but he also rejected the corresponding
'astronomically fixed' dates for the Eighteenth Dynasty.
Borchardt's own rather unique version of the hieratic signs was as follows (64):

Year 9 under King Amenhotep I: Beginning of the intercalary month ჰb-wpt-rnpt of the (older) lunar year = day of the new moon in the eleventh month (of the civil calendar) = heliacal rising of Sothis.

Essentially, as we can see, Borchardt's new version of the text was based on his substitution of "day of the new moon" for a hieratic group in line 2 of the papyrus which hitherto had been translated as "ninth day of the month" (65). This, when combined with other evidence, led Borchardt to a revised date for the Ebers Papyrus: viz that the thirteenth day of the eleventh month, in the ninth year of Amenhotep I, was 1522 BC (17 July, Julian) - about a quarter of a century later than Meyer's estimate (66).

Edgerton (67), however, was critical of this new equation of Borchardt which, he said, had been put forward "with the same conviction of absolute certainty which characterized the contrary statements of his predecessors". Whereas Borchardt had translated the hieratic group כ"א as "day of the new moon", Edgerton insisted that it was nothing other than the ordinary hieratic numeral 9, which - he said - "has the phonetic value psâ". Edgerton could thus find "no reason to suppose that any Egyptian scribe, in any period" had ever employed psâ alone to represent "day of the new moon".

Borchardt (68), in support of his own claim, had cited an
example from the Twelfth Dynasty of the use of psd. He had also, according to Edgerton (69), cited three unpublished cases, all from the Twelfth Dynasty Illahun papyrii, in which psd apparently was thus written. And Borchardt’s final objection in regard to the proponents of the Sothic theory was that if, as they claimed, the "ninth day of the month" were meant (in lines 2-13 of the Ebers calendar), then the interval between line 3 (or "9.12.W", which is the 9th of the 12th month in the civil year) and line 4 (or "9.1.W") should be five days longer than a month (70).

Edgerton’s Explanation

Regarding the first citation from the Twelfth Dynasty, Edgerton (71) was critical of Borchardt for using an example of psd which he said, because it was followed by a lacuna, did not prove that psd was all that the scribe wrote; and he further criticised him for giving psd as the name of the day of the new moon, as he said, "without qualification". So "certainly inaccurate" did Edgerton consider this interpretation of Borchardt to be, because "the numeral 9 is not ordinarily used to write psd in this word", that he thought it had to be "a mere slip of the pen" on Borchardt’s part; the word for "day of the new moon" in the early Eighteenth Dynasty ordinarily being written as ‘psdntyw’, whereas in the Old Kingdom the ‘n’ was lacking (72).

Thus Edgerton could make the following statement with regard to what he considered to be Borchardt’s flimsy evidence
from the Twelfth Dynasty, as well as the latter's problematical interpretation of the papyrus (73):

[Borchardt] seems to imply by his silence that he knows of no others [ie examples], and certainly I [Edgerton] know of none. If the spelling in the Ebers calendar (without n or tyw) could be paralleled in other respects, we might overlook this difficulty - but that it constitutes a difficulty cannot, I think, be denied.

Contrary to Borchardt, Edgerton insisted that what is usually interpreted in the Ebers Papyrus as the numeral 9, was "exactly what we should expect for 'ninth day of the month' in any manuscript from the reign of Amenhotep I" (74). Ironically, Edgerton referred the reader to Moeller - "the one authority which Borchardt cites", he said - in order that the reader might "assure himself that the form of the figure 9 written here is the only form known to have been used for 'ninth day of the month' between the Sixth Dynasty and the reign of Amenhotep II" (75). About Borchardt's apparent error, Edgerton remarked that (76):

This is such an obvious mistake that I cannot understand how Borchardt came to make it, especially since the interpretation of this hieratic group is fundamental to his whole reconstruction of the early Eighteenth Dynasty chronology.
Edgerton was prepared to concede as "true", at least, Borchardt's objection against "the ninth day of the month" on the strength of an inappropriate interval of days between lines 3 and 4 of the Ebers Papyrus; admitting this to be "a surprising inaccuracy on the part of the ancient scribe" (77). "But", he went on to say:

... the inaccuracy is one of the given facts in our document, and instead of trying to interpret it out of existence by philologically improbable translations, it is our duty to face the fact and try to account for it.

Turning to Lepsius (78) for a possible key to the correct meaning of the document, Edgerton came to the conclusion that one might at least start from the purpose which led the ancient scribe to write out this calendar in "a prominent and readily accessible place (the first page) on the back of a medical treatise". According to what Lepsius had suggested, the purpose of this had been "to give the physician an easy means of knowing at what seasons in the year certain prescriptions were to be used"; no prescription in the entire document being restricted to a period shorter than two months (79).

While Edgerton's next statement about the Ebers calendar, that (80):

In calculating the calendric equivalent of a sea-
son of the year which was two months long, an inaccuracy of five days would probably not seem very serious to the Egyptian medical practitioner.

may have been an attempt to minimise the problem that Borchardt had raised, he does not appear to be fully at peace with this explanation of his. For again he admitted that he still did not understand how the scribe could be "so thoughtless as to write '9.1.W', etc., where '5.1.W' would have been just as easy, and obviously more precise ..." (81).

Finally, he contented himself with the following conclusion about the apparent discrepancy in the Ebers document (82):

... but I think I have seen more deplorable examples of thoughtlessness in modern works whose reputation for accuracy stands deservedly higher than that of the Papyrus Ebers.

Concluding Remark

In Chapter 12, critical conclusions will be drawn about the Ebers Papyrus, as they will be with regard to the other five Sothic documents. It is there in Chapter 12 that the reader will find further comments, for instance, about the value of Borchardt's challenge to the standard translation of the crucial Ebers text, or about the most likely candidate for the pharaoh alluded to in the Ebers cartouche.
NOTES

(1) Hayes, W., "Egypt - To End of Twentieth Dynasty", CAH I, (1962), vi.


(3) Ibid., 34-35.


(5) Data for Table V taken mainly from W. Edgerton's, "On the Chronology of the Early Eighteenth Dynasty", AJSL, LIII (1936-1937).

(6) See H. Hall's chapter, "Chronology", in CAH I (1928), 170.

(7) Albright, W., From the Stone Age to Christianity, 166.


(9) Säve-Söderbergh, C-14 Dating and Egyptian Chronology, (Stockholm, 1970), 38.

(10) Edgerton, op. cit., 190.

(11) Brugsch, H., "Ein neues Sothis-Datum", ZAS 8 (1870), 108-111. In Brugsch's own words, the text was described as: "... fraglich Text ... der Regierung eines Koenigs beginnt, dessen Namensschild ich leider zu verschweigen genoeg- thigt bin".

(12) See Long, op. cit., 14, regarding Eisenlohr.

(13) See Long, ibid.
(Notes continued)


(15) Ebers, G., _Papyrus Ebers_, _ZAS_ 11 (1873), 41 nn.3 & 4. Ebers described the document as "einen medicinischen Papyrus".

(16) Long, _ibid._

(17) _Ibid._

(18) Brugsch, _ibid._

(19) Long, _ibid._

(20) E.g. Brugsch, _ibid._

Brugsch wrote: "Jahre 3 der Regierung".

(21) Eisenlohr, _op. cit._, 166.

Eisenlohr wrote: "... in dessen 3. Regierungsjahr ...".

(22) Lepsius, R., "Einige Bemerkungen ueber denselben Papyrus Smith", _ZAS_ 8 (1870), 167.

Lepsius´ words were: "Dieser fuehrt vielmehr auf 6 ...".

(23) Goodwin, C., "Notes on the calendar in Mr. Smith´s papyrus", _ZAS_ 11 (1873), 107.

(24) Long, _op. cit._, 267.

(25) Goodwin, _ibid._

(26) According to Goodwin, _ibid._, Smith had given him the advice in 1864.

(27) _Ibid._, with reference to Eisenlohr´s Kalender, 166.

(28) _Boulaq Papyrus_, Nr.17, page 5, line 2 (Tom.II, Pl.12).

(29) Goodwin, C., "Notes on the calendar in Mr. Smith´s papyrus", _ZAS_ 11 (1873), 107.
(Notes continued)

(30) Goodwin, _ibid_.
(31) _Ibid_; with reference to the _Boulaq Papyrus_.
(32) _Ibid_; with reference to Brugsch’s _Worterbuch_ (List of Hieroglyphical Signs), Nr 259.
(33) _Ibid_; with reference to Pleyte’s _Catalogue of Hieratic Signs_, Nr 77. Pleyte himself described this hieroglyphic sign as "bras avec la main baissée".
(34) _Ibid_; with reference to Brugsch’s _Worterbuch_, 780 & 858.
(35) Goodwin, "Notes", _ibid_.
(36) _Ibid_.
(37) _Ibid_.
(38) _Ibid_., 109.
(39) _Ibid_.
(40) _Ibid_.
(41) _Ibid_.
(42) Eisenlohr, _ibid_. He wrote: "Er ist zu transcribirei Cleopatra III ...".
(43) Ebers, "Papyrus", 41. Ebers wrote: "Koenigsschild mit dem Vornamen Amenhotep I ... Rä so ka ...".
(44) Ebers, G., "Nochmals der Calender auf der Rueckseite des Leipziger Papyros Ebers", _ZAS_ 12 (1874), 4. Ebers’ words were: "Das erste Zeichen ist Θ und kein anderes".
(45) Long, _op. cit_.., 267.
(46) Ebers, "Nochmals", _ibid_. Thus Ebers wrote: "... daß Goodwins Lesung die einzig richtige ist und man es trotz
(Notes continued)

seiner Schmalheit fuer den Vogel ... halten muss”.

(47) Ebers, G., "Die Maerchen des Papyrus Westcar II", Mit-
teilungen aus den Orientalischen Sammlungen, 5 (1890),
56-57.

(48) See Long, ibid., where he refers to F. Chabas’ Mémoires
présentés a l’Academie d’inscriptions par divers savants.
1st series (1878), Vol.I, 111.

(49) Ebers, "Maerchen", ibid.

(50) Eisenlohr, A., "Letter from Dr A Eisenlohr of Heidelberg"
PSBA 13 (1890), 597. Eisenlohr, as support for his criti-
cism of Ebers’ interpretation, made further reference
here to a Dr Joachim, whom he described as "a medical man
of Berlin". (50B) Parker, R., "Studies in Honour of George R. Hughes",

(51) Naville, E., "Le cartouche du papyrus Ebers", ZAS 14
(1876), 111. I have translated from Naville’s original
French, where he said: "L’incertitude de ce nom est ...
regrettable".

(52) Ibid., where Naville wrote: "Je considère donc le second
signe du papyrus comme représentant le vase ...".

(53) Ibid., with reference to Lepsius.

(54) See Long, ibid., where he refers to F. Chabas’ Mémoires
présentés à l’Academie d’inscriptions par divers savants.
1st series (1878), Vol.I, 111.

(55) See eg E. Meyer’s Nachträge, 8; q.v., his Aegyptische,
46ff. Meyer called it: "Im 9. Jahre Amenophis I ...
u.s.w".
(Notes continued)

(57) Ibid., 108-109.
(58) Ibid., 166.
(59) Ibid., 109.
(60) Ibid.
(61) Ibid; with reference to Brugsch's Matériaux, Pl X, col 1a.
(63) Borchardt, L., Quellen und Forschungen zur Zeitbestimmung der ägyptischen Geschichte, Band II, (Cairo, 1935), 19ff.
(64) Ibid. Translation supplied by Edgerton, op. cit., 190.
(65) See eg Edgerton, ibid.
(66) Borchardt, Quellen, ibid.
(67) Edgerton, ibid.
(68) Borchardt, Quellen, 20, n.1.
(69) Edgerton, op. cit., 191.
(70) Ibid.
(71) Ibid., 190; with reference to Borchardt's Quellen, 37.
(72) Edgerton, ibid., 190.
(73) Ibid., 191.
(74) Ibid.
(75) Ibid.
(76) Ibid.
(77) Ibid.
(78) Lepsius, R., in ZAS XIII (1875), 150; as cited by Edgerton, ibid.
(79) Ibid.
(Notes continued)

(80) Edgerton, op. cit., 191-192.
(81) Ibid., 192.
(82) Ibid.
CHAPTER SEVEN: THE ELEPHANTINE STELE

INTRODUCTION

The Elephantine Stele inscription was the second of the two New Kingdom texts (Ebers being the first), recording a rising of Sirius, that Meyer believed he could use, in conjunction with the "Era of Menophres" data, to fix the dating of the Eighteenth Dynasty. The Elephantine Stele, presumed to have been produced under Thutmose III — though it does not actually state the name of the king, nor provide the year of his reign — is interpreted as recording that a Sothic rising took place on the 28th day of Epiphi. From this information, coupled with new moon data from the reign of Thutmose III, Meyer thought himself able to calculate the precise era of this long-reigning pharaoh. As a result, Breasted was later able to pinpoint the 19th of April 1479 BC as being the very day that Thutmose III left Egypt for his first campaign into Palestine. Olmstead, using the same premises, pin-pointed the event with equal 'precision' at 19th of April, 1483 BC (1).

Considering the scant information provided by this document, however, it seems that assessments such as the above may be overly optimistic; especially if made in dogmatic fashion. As we are going to see the Elephantine Stele, like the two other documents that we have already discussed in this section, is far from being unequivocal as to its interpretation. Once again the question can legitimately be asked: To which pharaoh does this particular text really belong? It is this question
that we are first going to consider below (number 1), followed by a brief discussion on that other familiar topic, the regnal year of the document (number 2). Finally, we shall touch on certain difficulties of an astronomical nature in regard to the correct interpretation of the Elephantine Stele (number 3).

A Description of the Document

Mahler reproduced as follows the hieroglyphic record of what he named the Elephantine calendrical inscription ('Kalenderstein von Elephantine') - so called because it was discovered in stone on the island of Elephantine (2):

Mahler subsequently translated this hieroglyphic text into German. Long later rendered it in English as (3):

Epiphi, day 28, the day of the festival of the rising of Sirius.

It is due to Mahler that the Elephantine Stele has, from the very beginning, been explained in terms of being an inscription of the Eighteenth Dynasty king, Thutmose III. For
Mahler had related the document specifically to the time of that pharaoh when speaking about what he considered to be its pre-eminence as a means for establishing a precise chronology of that particular period of Egyptian history (4).

Mahler was supported in his general view of the document by Kurt Sethe, who several decades later published the documents of the Eighteenth Dynasty of Egypt (5). Sethe included amongst them this by now celebrated hieroglyphic inscription from Elephantine under the heading, "Opfer-und Feststiftungen von Elephantine" (6). He then went on to describe that brief part of the inscription relevant to our present study as being an offering for the day of the rising of Sirius; and he reproduced it in linear form as follows (7):

Following Mahler in particular, it has become the custom amongst modern commentators to attribute the Elephantine inscription to Thutmose III.

1. To Which Pharaoh Does the Stele Belong?

Whereas, in the case of the Ebers Papyrus, a cartouche containing a pharaoh’s name was included, the Elephantine Stele resembles rather the Illahûn document inasmuch as it has preserved neither cartouche nor pharaonic name. Not surprisingly, then, Mahler’s assertion that the Elephantine calendar
belonged to Thutmose III met with some strong opposition. Ginzel for one, in those early days when Mahler first produced his translation - along with the publication - of the inscription, had cast a doubt about Mahler's choice; regarding as uncertain that this particular inscription belonged to the era of Thutmose III (8).

Long, when later commenting on Ginzel's reaction to Mahler's choice, considered it to be highly significant that Ginzel, whom he regarded as having been "the foremost Egyptologist" in the first decade of this century, did not even date Thutmose III then within the period of the conventional Sothic date (9). A good deal of trial and error, he said, went into making Thutmose III a part of the Sothic scheme of things. In support of this claim, Long referred to adjustments being made by later Egyptologists "to accommodate all the evidence" in order to fit Thutmose III into the Sothic framework (10).

On what basis, then, was the identification of the pharaoh of the Stele attributed to Thutmose III? According to Courville this document, which "does not state the name of the king nor the year of his reign", came to be assigned to Thutmose III (11):

... on the basis of the appearance of this name [ie Thutmose III's] on another fragment presumed to be from the same inscription, but found at some distance from it.
The astronomer, Torr, was one who was by no means impressed with this particular means of identifying a historical document. He absolutely rejected this method in relation to the Elephantine Stele, and even went so far as to speak of what he called "the worthlessness of this inscription to prove anything, since ... it may have been produced by any one of the successors of Thutmose III" (12).

Long, too, expressed certain doubts about the traditional interpretation of the Elephantine data. Whilst he was prepared to concede that the Elephantine Sothic date, revised since Ginzel's time to c 1464 BC (13), co-ordinated as he believed "with the era of Menophres and the Medinet Habu calendar (of the Nineteenth or Twentieth Dynasty)", he nonetheless was not fully convinced that the Stele itself belonged to the time of Thutmose III. And so he added the cautionary note that (14):

... we cannot be 100% positive that the inscription belongs to Thutmose III.

2. An Unknown Year

Whereas the Illahûn fragments clearly indicated a seventh year - presumed to be pharaonic - and the Ebers Papyrus too provided a date, albeit a much controverted one, in the Elephantine inscription none is given. Thus Winlock (15), who had described the Stele as a "Festival Calendar of Thutmose III", also noted that this calendar was "for an unrecorded year" of its king (16). Long referred to the Sothic date of
Elephantine originating likewise "in an unknown year" (17). The only data in the inscription of any possible chronological value is that which provides the month and the day (ie the 28th day of Epiphi) when the rising of the Sothis star occurred.

Hall, in an attempt to get around the problem and to make the most of the meagre information available, thought that by combining the date of Sothic rising with information from Censorinus, as well as that of the Decree of Canopus, he might be able to establish the date of the Elephantine calendar's star-rising (which he presumed to be heliacal) with great accuracy. Hall's subsequent argument may be summarised in the following approximate fashion (18):

Censorinus, he said, had supplied the information that the rising of Sirius coincided with the 1st of Thoth in 139 AD, "so that a new Sothic cycle of 1460 years began in that year". The Decree of Canopus (238 BC) supplied the information that the rising of Sirius occurred on the 1st of Epiphi (for Hall, "the tenth month"). This latter information would lead to a date of 143 AD, rather than Censorinus' 139 AD, he noted, adding "but in any case we see that this event must have taken place about 140 AD".

Whilst conceding that the Egyptians may never even have used the Sothic cycle "as an era", to assist them in their computations, Hall was of the opinion nevertheless that the risings of Sirius in themselves could "be of considerable use to us in reconstructing Egyptian chronology"; and thus (19):
... were it unknown that the Decree of Canopus was inscribed in 238 BC, we should have been able, taking Censorinus' date for the end of the [Sothic] cycle to have arrived very near the correct date by calculating where the star rose heliacally on the last day of Epi-
phi.

(In making this calculation, Hall had chosen to disregard one major Sothic datum used by Meyer, viz the date of Menophres - "since, though he is probably Men-pei-ra, we do not certainly know this") (20).

Hall had based his own calculations on the date of 140 AD in relation to his own interpretation of the Elephantine evidence. Thus he wrote (21):

... that in a certain year of the reign of Thotmes [Thutmose] III the New-Year feast fell upon the 28th day [of the month Epiphi. And he concluded from this that the Sothic rising of Elephantine could] only have been between the years 1474 and 1470, which must there-
fore have fallen in his [Thutmose III's] reign.

3. Problems of an Astronomical Nature

Hall, basing himself on the Sothic theory of Meyer, had arrived at "a period of eighty years" for the interval between the 9th year of Amenhotep I and the era of Thutmose III; a
period which was, as he said, "very much what we should have expected from our knowledge of the history of the time". From Meyer (22) again he had discovered that the approximate conventional date for the era of Thutmose III was "confirmed" astronomically by what Hall himself describes as (23):

... the identification of two New-Moon festivals in [Thutmose III's] twenty-third and twenty-fourth years (on 21st Pachon and 30th Mekheir) with those of May 15, 1479 and Feb 23, 1477.

Now Edgerton has tabulated these two new moons, in relation to Thutmose III's year of coronation, as follows (24):

<table>
<thead>
<tr>
<th>Coronation,</th>
<th>[year 1] of Thutmose III, 4.9.W.</th>
</tr>
</thead>
<tbody>
<tr>
<td>New moon &quot;exactly&quot;, year 23,</td>
<td>21.9.W.</td>
</tr>
<tr>
<td>New moon, year 24,</td>
<td>30.6.W.</td>
</tr>
</tbody>
</table>

Edgerton, who deduced from this information that "the 4.9.W. in [Thutmose III's] first year must have fallen on or near the date of a full moon", also advised of the need for precision regarding the use of the term, "new moon", which - as he wrote - "has two quite distinct astronomical meanings"; a distinction needing to be made between the precise, astronomical phrase, "new moon", and the more common notion of it which is called "neomenia" (25). But, in addition to what he called "these two astronomical concepts", Edgerton also advised
that one would need to take into account "a purely calendric" consideration, viz that (26):

... the first day of the calendar month in an arbitrarily adjusted lunar calendar may or may not be identical with the date of neomenia.

Having clarified the astronomical terms, Edgerton next sought to shed light on the significance of the two lunar dates of Thutmose III; dates upon which, he said, scholars had been attempting for decades to build the chronology of the Eighteenth Dynasty pharaoh (27). For the second and seemingly less problematical of these lunar dates (ie year 24), Edgerton appeared to be content with Sethe's explanation, that it "refers to the calendric new moon" (28).

Somewhat more cautiously in regard to the first (ie year 23), Edgerton - again with reference to Sethe (29) - thought that there might be "a good chance" of this lunar date's being an occasion where Thutmose III, as he said, "may be trying to tell us that the calendric new moon coincided with neomenia on that occasion ...". But Edgerton added to this the note of caution that "it would be unwise to place too much reliance on this view in the present state of knowledge" (30).

Undoubtedly, the practice of combining independent, astronomical cycles such as that of Sothis and that of the moon may be extremely useful for the purpose of establishing an accurate
chronological scheme. For quite obviously, if an event can be pinned down in two, independent cycles, then the chronological conclusions rest on a more secure foundation than when a single cycle is used. It is such a combination of astronomical data that the Egyptologists have tried to achieve in regard to securing the era of Thutmose III. However, as Courville has noted, such astronomical information needs to be extremely well understood and properly used, for (31):

... it must be apparent that the use of a very short cycle, such as that of the moon, to confirm dates derived by use of a much longer cycle, such as the Sothic cycle, has some very large inherent weaknesses. The cycle of the moon will repeat itself so many times in the course of one Sothic cycle that any given lunar data can be made to fit satisfactorily into the Sothic period at a considerable number of points. Hence, unless the date for the incident involved is known approximately and with certainty from independent data, it is very possible that any proposed confirmation may be only wishful thinking.
NOTES

(1) Breasted, J. A History of Egypt, 2nd rev. ed. (London, 1941), 285, 288; and
Olmstead, A. A History of Palestine and Syria, (1931), 132

(2) Mahler, E., "Koenig Thutmosis III", ZAS 27 (1899), 98.

Mahler had translated the hieroglyphs as: "Monat Epiphi, Tag 28, der Tag der Feier des Aufganges der Sothis".

(4) Mahler, ibid. Emphasis added.
Mahler's words were: "Der erste Anhaltspunkt zur Ergruendung der Regierungszeit des Koenigs Thutmosis III. befindet sich auf dem der Regierung dieses Koenigs angehoerenden Kalenderstein von Elephantine".


(6) See ibid., IV 827, 107.

(7) Ibid.
Sethe referred to the day as: "Opfer fuer den Tag Siriusfruehaufgangs".

Ginzel's words were: "Es ist einigermassen zweifelhaft, ob der Stein zu einer festliche mit Angabe aus der Zeit Thutmosis III gehoert".

(9) Long, op. cit., 269.
(10) Long ibid.


(12) Ibid; where he refers to C. Torr.

(13) Long, op. cit. See his Table I, 263.

(14) Ibid., 269.


(16) Ibid.


(19) Ibid. 20.

(20) Ibid.

(21) Ibid.

(22) Ibid; where Hall makes reference to E. Meyer, but without providing any bibliographical details.

(23) Hall, op. cit., 20.


(25) Ibid; where he makes reference to Borchardt and Neugebauer in Orientalistische Literaturzeitung, XXX (1927), 80-82.

(26) Edgerton, ibid.

(27) Ibid.

(28) Ibid; where he refers to K. Sethe's Urkunden, 835-836.
(Notes continued)


(30) Edgerton, ibid.

PART THREE B:

POST-MENOPHRES ERA CITATIONS

(i.e. Post-1320 BC)

CONTENTS:

CHAPTER EIGHT: The 'Era of Menophres'...................... 132-160
CHAPTER NINE: Decree of Canopus ......................... 161-175
CHAPTER TEN: The Statement of Censorinus ............ 176-192
CHAPTER EIGHT: THE 'ERA OF MENOPHRES'

THEON'S STATEMENT

Turning now to the classical authors who were of great importance for Meyer in the development of his Sothic framework, we commence with Theon, the Alexandrian astronomer of the late fourth century AD. Theon has left a statement which refers to the Dog Star ('Ku vos' in Greek), i.e. Sirius, and which provides information of a chronological nature (1). For our purposes, the most relevant part of Theon's original statement is the following extract provided by Lepsius (2):

'Επι τοῦ Ἡ ἑτερικδιαμονδὶ περὶ τῆς τοῦ Ἀκών ἐπιτολῆς ὑποδείγματος ξυνεχεῖ λαμβανομέν (ὑπὸ ἀπὸ Μενοφρέως 3) ἐκεῖ τῆς λέξεως λόγους οὕτω τὰ ἑπισυναρμόμενα 4 ἔτη ἅχε. οἷς περιτοιδούμεν 7) τὰ ἀπὸ τῆς ἀρχῆς Διοκλητιανωὸ δέτη ἢπ, τίμονται ὑμᾶ δὲ τῇ ἤρετε 4 τοῦ ἅραν λαμβάνομεν τὸ τέταρτον μέρος, δ ἐστί υπὲρ τοῦ ἄραν προσθεῖτε συ, τίμονται ἡθο ἀπὸ τοῦ ἀφειλοντες τὰς τὰς τετραετηρίδας, ὡς τῆς ὲδο [κοινον ἡκά], τὰ λατοντα, ἡμέρας τῷ, ταύτας ἄπειρον ἀπὸ θώδη, διδόμετε ἑκάστῳ ὑπὲρ ἡμέρας ἱ, ὡς κακοπεψάθαι τῇ ἐπιτολῆν ἐπὶ τὸ Διοκλητιανῶ ἐπειδ. ἡ. Ομολογήσαντες εἶπον ὑποδήματος χρόνου.

Theon here informs us that there were 1605 years since the "Era of Menophres" until the end of the Era of Augustus, or the beginning of the Era of Diocletian. Now, since the termination of the Augustan era and the beginning of that of the emperor Diocletian are known to have converged at c 284/5 AD, it is not difficult to determine when this supposed "Era of Menophres" occurred. Thus Long has written (3):

From the quotation [i.e. Theon's] we gather that the era of Menophres (apo Menophreos) lasted from
circa 1321-1316 BC to AD 285 or the duration of 1605 years, ie from Emperor Diocletian back to someone or something designated "Menophreōs".

Meyer belonged to the school of thought which identified Theon's "Menophres" as "someone" rather than "something"; and he was also firmly convinced that the new era inaugurated by Menophres was a new Sothic era. Regarding the latter point, Meyer wrote (4):

The era ἀπὸ ἕκθεσις ... can only be the Sothic period. We do not have to occupy ourselves here with the particular difficulties which arise, and which so far have not all been resolved .... It suffices to know that Theon counts 1605 years from Menophris [ie Menophres] to the end of the era of Augustus. The era of Diocletian began on the 29th of August 284 [AD]: the last year of the era of Augustus and the 1605th ἀπὸ ἕκθεσις is consequently 283/284 [AD] .... The first year of Menophris thus runs from the 19th of July 1321 to the 18th of July 1320 BC, which corresponds exactly to the first year of a Sothic period.

And, regarding the identification of "Menophres" whom Meyer presumed to be a person, a monarch, Meyer wrote (5):

Why, then, did Theon call this period as he did?
We do not know. The name of Menophris, or Menophreus, could be Merenre in Egyptian, with the article (p) intercalated before the name of the god. It is common to see Me(r)neptah, the son of Ramses II; but it is quite impossible to place him in the year 1321 .... [Menophres] ... may well be Menpehtire, the surname of Ramses I ....

Today the majority of scholars, following Meyer, tend to regard Theon's statement as being an extraordinary verification for a Sothic cycle of 1460 years, commencing in 1322/21 BC and ending in 139/140 AD (6). The fact that Theon also referred in this text to the Dog Star seemed like a bonus; and it was taken by many as a further indication that the Alexandrian was recording here a Sothic cycle. According to the usual view, Theon was supposed to have known the initiation year of that cycle, whilst Censorinus (see Chapter Ten) was thought to have provided the termination date of 139 AD. Long for example, distinguishing between Theon's 1605 years and the "Great Year" of Censorinus, called it "uncanny and surely not mere coincidence" that the data from Theon to Censorinus "suggest a year around 1322/21 BC, "not through Censorinus or 139 AD, but by Diocletian [whose era began in 284/5 AD]" (7).

Long, however, aware of the controversial side of the Menophres debate, tempered his enthusiasm with the comment that (8): "Even the specialists, however, cannot be certain whether Menophreos was Memphis or a pharaoh of Dynasty XIX".
In this chapter we are going to discuss two major problems in relation to the "Era of Menophres". The first problem, of course, is going to be that of identifying Theon's "Menophres". Obviously a lot of history is dependent on the right choice being made. But an equally major problem, as pointed out by Rowton (9) on the subject, is that of co-ordinating the standard Middle Assyrian Chronology - which Rowton and others consider to be highly accurate - with that of the early New Kingdom of Egypt, as based on the Menophres theory in particular and the Sothic theory in general.

We shall discuss in some detail below these two problems pertaining to the "Era of Menophres". Section 1 will be occupied with seeking an identification for "Menophres"; whilst in Section 2 we shall discuss Rowton's problem of the need for harmonising the Mesopotamian with the Egyptian data.

(A third apparent difficulty with Theon arises from an independent statement of his, which is said to contradict Censorinus. However, we shall reserve our discussion of this particular document for Chapter Ten).

1. WHO, OR WHAT, WAS 'MENOPHRES'?

Since there are two main schools of thought regarding the identity of Theon's "Menophres", viz (a) that "Menophres" is the city of Memphis, and (b) that Menophres is a particular Pharaoh (usually thought of as having belonged to the Nineteenth Dynasty), this Section will fall naturally into two parts.
(a) Menophres = Memphis

Rowton (10) - who, according to Long "has produced the finest investigation in to the era of Menophres" (11) - was actually rather brief on this part of the subject, admitting that he was quite satisfied that Biot's argument, "about 100 years ago", was "a perfectly plausible explanation ..." (12). Thus Rowton supported Biot's thesis that the term "Menophres" represented the city of Memphis in its ancient pronunciation (13); but added to it his own refinement, following Olympiodorus, that the Sothic cycle was based upon observations made at Memphis. According to Rowton, Olympiodorus had said that:

... the Alexandrians reckon the rise of Sirius not from the moment it rises for them, but from the moment when it rises for the inhabitants of Memphis.

For Rowton this statement by Olympiodorus, whether it "may or may not be wrong", at least indicated to him "how strong the Memphis tradition was in the time of Olympiodorus" (14).

Proponents of the Menophres = Memphis view are quick to point out as well, with reference for example to Gauthier's Dictionnaire (15), that the old name for Memphis was 'Men-nofir'. Hall, for one, found no technical difficulty with regard to the transition from Men-nofir to Menophres, since it "was not hindered", he said, "by any linguistic problems" (16). And, according to Rowton, Montet (17) took the linguistic comparison a stage further when he compared On-nophris (the
Greek form of Un-nofir) with the equation Menophres = Men-nofir.

So determined in fact was Rowton to hold to the equation Menophres = Memphis - probably because, as we shall see in section 2, it suited his interpretation of the Mesopotamian evidence - that he was actually prepared to contradict blatantly what he considered as being Theon's own view on the matter. Thus, for the sake of retaining what he called "this obvious solution" to the interpretation of "Menophres", Rowton had no qualms about putting aside the "objection", as he said, arising from Theon's own clear statement (18):

The objection [being] ... that the manner in which Theon expressed himself shows, beyond any possible doubt, that he thought Menophres was a king.

Hoping further to augment his case, Rowton seized upon Hall's earlier view that, by the time of Theon, the name for Memphis had changed from "Men-nofir" to what Rowton described as being "something like 'Memfi'" (19). Men-nofir, the old name of Memphis - Rowton argued - had "passed out of the common language over 1000 years before the time of Theon", and so he said it was "most unlikely that Theon would have seen any connexion between the term 'Menophres' and the ancient capital of Egypt" (20). Rowton continued on in this unconvincing fashion, 'excusing' Theon on the grounds that he was a mathematician rather than a historian. For Theon, therefore, it would be
"only normal" to think in terms of a particular era being named after a king.

It should be noted that Rowton’s main problem with the traditional interpretation of the "Era of Menophres" in regard to Mesopotamia concerned only precise dates and particular pharaohs. He had no difficulty with the theory, broadly interpreted, that the era indicated by Theon fell approximately during the period of the early Nineteenth Dynasty.

But Rowton denied the validity of the important identification, for Sothic theorists, between Ramses I and "Menophres". In this he followed Struve's opinion that Menophres could not be identified with Ramses I, because it could be shown from the Greek transcription that Ramses' throne name, Mn-pḥtj-R', was quite different from the name "Menophres" (21). Indeed Rowton went so far as to suggest that "Menophres cannot be identified with Seti I or with any other king of this period" (22).

For, in the mind of Rowton and others who had proposed that Menophres" was not a ruler, the "Era of Menophres" was related to the city of Memphis because this was where each year the sighting for the appearance of the Dog Star was presumed to have been made. When Sirius rose and was observed in Memphis, then the cycle or festival was presumably recognised.

(b) Menophres = (A particular) Pharaoh

Lepsius and Struve had taken the contrary view that Menophreos could not possibly be a reference to Memphis, but that it must refer to a pharaoh. Lepsius, for example, according to
Long (23), was "so committed to the logic of this theory", that he had no qualms, ethically, about emending the Greek name, Μενόφρης: a "Q" replaced Theon's "P", thus creating Μενόφρος. Lepsius then searched Manetho’s list for a name which matched this emendation of his, and thought that he had found it when he came across the variant, "Μενοφίς", or "Ἄμενοφίς": the latter being names usually attributed to pharaoh Merneptah of the Nineteenth Dynasty. But since Lepsius regarded Merneptah as being firmly set in the era c 1224-1214 BC, he was thus not prepared to accept an equation with a king whom he believed to have ruled a century too late (24). Meyer, in his Aegyptische Chronologie (25), repeated Lepsius’ pattern of reasoning with regard to this very same point.

Lepsius had reduced what he believed to be the possible choices for the identification of Menophres to the following three candidates: Harmhab; Ramses I; or Seti I (26). We shall now consider the merits of each of these pharaohs in turn:

(a) Harmhab

Actually Harmhab is the least likely candidate for "Menophres" of these three pharaohs. Indeed it soon became apparent that Harmhab’s throne-name, ḫsr-ḥprw-rˁ, could by no stretch of the imagination be transliterated to Menophreś.  

The Sothically-arranged dating of Harmhab’s death is still very close to the date of 1310 BC as set down by Meyer in 1928 (27). Now Rowton has made a very interesting comment from the
point of view of the Sothic scheme on this estimate of Meyer. Rowton suggested that since Meyer's date necessitated moving well forward, in relation to the Sothic date of the "Era of Menophres", the usual Nineteenth Dynasty candidates for that era, "it was obvious that Meyer had by then completely discarded the Menophres theory" (28).

(b) Ramses I

Hall followed Petrie in claiming a certain likeness between the name "Menophres" and the throne-name, Men-페라, of Ramses I; as well as the latter's suitability from a chronological point of view, being placed conventionally very near to the date of c 1321 BC (29). On a later occasion, Hall gave the following confident explanation of how he thought the date for the beginning of Ramses I's reign could be calculated (30):

His [ie Ramses I's] date is known because his predecessor [ie Harmhab] dated the years of his reign from the death of Amenhotep III, the father of Ikhnaton (whose reign is ignored on account of his religious heresy), and 'reigned' at least 59 years, 1380-1321 BC. Thus 1321 BC was the first year of a Sothic cycle, and the evidence fits well.

Cerny also spoke in favour of this now generally accepted identification of Menophres with Ramses I, whose prenomen - he said - was often written simply as (31). If this
premen were read Mn-ϕty-r', instead of the correct Mn-ϕty-r', which includes group ον - as Cerny explained - then the correspondence of consonants, M-n-ṛ-ḥ-r and M-v-ḥ-r (ḥ not being expressed in Greek transcriptions), is complete.

For those who could not accept either Harmhab or Ramses I as their choice for "Menophres", only one realistic choice remained: viz Seti I. But as we shall see from the next section, Seti I's candidature was based on rather more than what Long had merely called "process of elimination" (32). Inscriptional evidence seemed to indicate that a new era had begun under Seti.

(c) Seti I

Seethe (33) for one, following the statement of Censorinus, sought evidence for the renewal of a Sothic period not very far from the beginning of the Nineteenth Dynasty; for he was of the opinion that Seti I was the likeliest candidate for Menophres. He came across two cases of dating from Seti I's reign in which the regnal years 1 and 2 were separated from the name of the king by the expression, ḫḥm mswt, or repeating of birth (34):

Sethe believed this expression to be like the first part of the nbty-name of Seti I, viz ḫḥm mswt or repeater of birth (35), recalling for Sethe what he considered to be an identical expression that occurred in certain datings towards the end of the Twentieth Dynasty.

Kitchen also discussed this latter phrase, attributing to
it the literal meaning of "the repeating of birth" (36). However he preferred to use the term "Renaissance Era", believing this to signify a new dating line which had been inaugurated in Egypt during the reign of Ramses XI.

Sethe knew that this latter era could by no means realistically be connected with a Sothic period. Nevertheless he was of the opinion that under Seti I the expression "Repeating of birth", which marked an era of a special kind, might well refer to the tetraëteris (or first four years during which the heliacal rising of Sirius fell on the first day of the Egyptian civil year, the 1st of Thoth) of a Sothic period (37).

As a corroboration of this view Sethe thought himself able to adduce two more dates from the early years of Seti: viz from the Speos Artemidos decree and the Nauri inscription. He referred to these two documents as being "equally unparalleled in form and very curious in meaning" (38). Let us then briefly examine in turn these two inscriptions, whose hieroglyphs in each case we reproduce from Sethe (39):

Speos Artemidos

Cerny later translated Sethe's German version of this inscription into the following English (40):
... (names of Sethos [ie Seti I] follow), 'Year 1, beginning of perpetuity, receiving eternity, celebration of millions of jubilees and of hundreds of thousands of years of peace, a lifetime of Re' [in heaven (?)], the kingship [of Atum on earth (?) under the Majesty of] Horus', etc.

According to Sethe's interpretation of this inscription, the expression which followed the date of Seti I, commencing with the 'beginning of perpetuity', marked this as the start of a new era, and as a renewal of the Sothic period (41). This presumed Sothic renewal was, in Sethe's opinion, connected to another term, "Recurrence of the Rebirth", which he said was known already from other inscriptions belonging to Seti I (42).

Nauri Inscription

Cerny's translation of this inscription followed that of Griffith, as he said, but "with minor modifications" (43). For one, Cerny chose a date different from that given by Griffith. Whereas Cerny gives "[Year] 1" - incorrectly as it appears from the hieroglyphs - both Sethe ('Jahr 4') and Griffith gave it as Year 4 (44). The following version is taken from Griffith's
translation of the inscription (45):

[Year] 4, first month of winter, day 1, beginning of perpetuity in receiving happiness, hundreds of thousands of years of peace, millions of jubilees upon the throne of the Horizon-god, an eternity of the reign of Atum, ....

The above two inscriptions, combined with Censorinus’ statement and other documentary evidence from Seti I’s rule, led Sethe to the conclusion that some sort of era – probably Sothic – certainly did commence with the accession of Seti I (46). A similar view was expressed by Poole who, showing great confidence in the veracity of the Seti I = Menophres equation, explained that (47):

This [identification] is confirmed by our finding that the earliest astronomical ceiling which has been discovered is that of the great chamber of his [Seti’s] tomb, in which Sothis occupies a conspicuous position.

Poole, who even went so far as to suggest that Theon was not merely referring to the renewal of some continuous astronomical cycle (eg Sothic), but rather of a completely new start in calendrical dating, veered right away from Sethe in his conclusion that (48):
The evidence of ancient writers ... is also strongly against the opinion that there were Sothic Cycles before the Era of Menophres. No ancient writer of the least authority ... speak[s] of Sothic Cycles before the year 1322 BC and the very name Era of Menophres seems to point to a new institution, and not to the renewal of a cycle.

More Recent Evaluations of Seti I and His Era

Rowton, who was critical of Sethe's explanation of whm msbw, believing it to be an era associated as he said with the "Recurrence of Rebirth" and "of a religious and a semi-political nature [having] nothing to do with the Sothic cycle", thought nevertheless that the accession of Seti I may well have marked the beginning of some particular era (49). His reason for proposing this was that all of Akhnaton's successors prior to Seti I were, to a greater or lesser degree, affected by Akhnaton's "heresy"; whereas Seti he said - following Albright (50) - was probably born after the death of Akhnaton, and "was the first king since the accession of Akhenaten ... whose legitimacy could not be queried on the grounds, either that he was connected with the Aten heresy, or that he was not of royal descent" (51).

Rowton, whilst stating his reason for believing that the conditions were present at the accession of Seti for the proclamation of a new era of prosperity and divine favour "similar to the era which was proclaimed at the end of the Twentieth
Dynasty", gave also the following interesting reason as to why he thought that Seti I's accession should not be connected with the inauguration of a Sothic era (52):

If we are to assume that Seti’s ‘era’ represents the new Sothic cycle, we must explain the astonishing fact that Sirius is not mentioned in either of the two inscriptions. Such an omission is not found in other Sothic dates and, of all events in the Sothic calendar, this surely was the most important one.

But by no means did Rowton’s problems with the proposed Seti I = Menophres equation end there. He found what he described as "even greater difficulties" with attempts made, mainly by Sethe and Struve, to identify the name of Seti "Merneptah" with "Menophres" (53). To begin with, he argued, "we have to assume that 'Menophres' is a corrupt form of 'Mernoph-tes'"; a corruption which he said was not improbable, "but the necessity to assume it, in the absence of any supporting evidence, does not strengthen this theory".

Rowton's next, and for him "far greater difficulty", was that only the second part of the name Seti Merneptah was supposedly rendered in "Menophres". Rowton admitted that Struve had suggested that the first part of the king's name had been dropped because of the opprobrium attached in late times to the god Seth, the shrewd murderer of Osiris (54); but he also ridiculed Struve's explanation because the latter - as he said
- "by emending the Greek and adding a little theoretical magic" had made the problem vanish (55).

Struve's explanation was also rejected by Sethe, who substituted a different one: viz that later Egyptian scholars were no longer able to read the names in a royal cartouche in the correct order (56). As Sethe explained, in the cartouche of an inscription the throne-name - in this case "Mr-n-pth" - would appear above the proper name, "Stjj", as in the following fashion: 

But in the hieratic documents, the proper sequence, or right reading ("Die richtige Lesung"), viz Stjj Mr-n-pth could be found (57).

Rowton was no more impressed by Sethe's reasoning, however, than he had been by Struve's; for he claimed that there was "not a scrap of evidence" to support what he called Sethe's "assumption" (58). In this regard he cited the case of Manetho, whom he called "our principal witness in Greek times" and who "certainly had no difficulty in reading the names in the correct order (eg Ramesses Miammou)"; a fact which only served to confirm Rowton in his choice of Menophres = Memphis.

Cerny (59), too, flatly denied the logic of Struve's argument; coming to light in turn with what he called "further evidence" for rejecting Sethe's interpretation of 'whm mswt'. According to Cerny, one example of the use of this phrase which "must invalidate Sethe's interpretation" was that on the statue known as the 'scribe in the Place of Truth, Ra'mose', which bore the following hieroglyphic inscriptions:
In these Cerny noted, with reference to Bruyère (60), there were found the expressions, "... the beginning of perpetuity, receiving eternity and celebration of millions of jubilees"; these being in fact the same expressions found in an inscription (also from Speos Artemidos) pertaining to year 9 of Ramses II, inserted between the date and the king's name. Cerny's comment was that (61):

It is clear that they are a cliché in this instance, no special significance should be attributed to them in the dates of year 1 of Sethos [Seti I].

Thus Cerny was confident about calling these examples an "invalidation of Sethe's interpretation"; though he added that they in no way proved that the beginning of the Sothic period did not fall in the reign of Seti I. They only implied, he said, "that there is no inscriptive evidence for such an assumption" (62).

In line with Sethe, Cerny was of the opinion that the Sothic period had "probably rightly", as he said, been identified with Theon's ἀπὸ Μενοφρέδ's; and he further regarded it as "natural to see in Ἐμώρης the name of an Egyptian king ..." (63). But he was less happy about Struve's identification of Menophres with the epithet Ἱμ-κτ-Ρτ (ie "beloved of Ptah"): 
which Seti I bore in his cartouche after his personal name, "Sty (or Stḥy?)": $\text{𓊰𓀆𓎄𓏏}$; saying that it was (64):

... hard to believe that posterity in this case replaced the real name of the king, then known as $\text{Σεφως}$, by a mere epithet.

But despite his conceding that Rowton "justly opposed this explanation" of Struve, Cerny could not go so far as to accept Rowton's view that Menophres stood for Memphis. Thus Cerny concluded with the following query regarding Rowton's view (65):

For who could believe that in this case, and in this case only, the Egyptians of the Graeco-Roman period reverted to the old pronunciation of some 2000 years before their time, though the general practice was to pronounce the old names in accordance with the changes which the language had undergone?

But, as we said earlier, Rowton may have had a special reason for wanting to identify Menophres with the city of Memphis - even apparently against ancient testimony. For, as will become more evident in the following section, Rowton really had to reject the conventional Sothic interpretation of the "Era of Menophres" inasmuch as it did not harmonise with the results of his research into Mesopotamian chronology.
2. **The 'Era of Menophres' and Mesopotamian Chronology**

Rowton (66) set out to test whether the standard theory of "Menophres" could be upheld in the light of the Mesopotamian evidence and the known syncretisms between Mesopotamia and Egypt. Showing great faith in the Mesopotamian chronology, at least that which corresponded with the early-Nineteenth Dynasty era of Egypt, Rowton confidently suggested that (67):

> We may, I think, conclude that for the eponym years of Assyrian kings the margin of error does not exceed 1 year.

In his challenging article Rowton drew mainly from the Assyrian king-list (KKL), on the one hand, for his examination of the eponym periods and for other facets of Mesopotamian history, and he used the Mesa inscription as primary evidence for his Egyptian material, on the other. He appeared to be just as confident about the latter as he was with the Assyrian data, saying that: "No quarrel is possible with the Mesa inscription".

In brief, the Mesopotamian evidence indicated to Rowton that 1356 BC was the accession date of a certain Assyrian king, viz Ashur-uballit, who - as we know from the el-Amarna correspondence - wrote to pharaoh Akhnaton of the Eighteenth Dynasty. The problem for Rowton however was that, according to his research, such a syncretism would be impossible; for thus he explained (68):
Mesopotamian chronology does not co-ordinate with the Eighteenth Dynasty chronology .... Ashur-uballit I and Akhnaton were contemporaries; yet if the era’s dating is maintained, their contemporaneity is non-existent ....

Consequently Rowton (bearing in mind his own date of 1356 BC for Ashur-uballit’s accession) went on to claim in relation to the normal opinion of the Egyptologists that 1358 BC was the lowest possible date for the death of Akhnaton, that (69):

We are dealing here with a comparatively remote period, and a discrepancy of only 2 years may not seem very significant. But closer examination reveals that the discrepancy is considerably greater. Several years must be allowed for the overlap between the reigns of Akhenaten and Ashur-uballit; moreover, if the Menophres theory is accepted - that a Sothic cycle began in the first year of Seti I - the date 1358 for the death of Akhenaten does not allow for a sufficient interval between Akhenaten and Seti.

It was at this point that Rowton introduced into his argument what he considered to be the indisputable Mesa evidence (70):
The Mesa inscription proves that 59 years elapsed between the accession of Akhenaten and an unknown year in the reign of Horemhab. It has hitherto generally been assumed that the year in question was the last of Horemhab’s long reign, but in the absence of any evidence to this effect such an assumption is absolutely inadmissible if we intend to abide by probabilities. Consequently, the discrepancy we are confronted with here must be increased by the number of years between this unknown regnal year of Horemhab and his death.

And thus Rowton reached the emphatic conclusion that (71):

... if this discrepancy is a matter of 10 years or more we are no longer entitled to regard it as insignificant. We shall see that the Mesopotamian material is of such high quality that an error of more than 1 or 2 years in the date for the accession of Ashur-uballit is extremely improbable. No quarrel is possible with the Mesa inscription. Consequently, if the Mesopotamian material has been correctly interpreted in this article, the conclusion becomes unavoidable that the Menophres theory is wrong.

The Arcus Visionis

Though Rowton had arrived at a possible date of 1356 BC for the accession of Ashur-uballit, he regarded it as "probable" - basing himself on Weidner and Smith’s view that,
before Tigrath-pileser I (c 1100 BC), the Assyrians used a lunar-year of 354 days (72) - that it was even as late as 1349 BC. Whilst unable to deal with the Egyptian material to the same degree of depth, Rowton nonetheless suspected that it did not appear to favour a date as low as 1349 BC for Akhnaton's death (73).

The next thing for Rowton to determine was whether or not the astronomical data, in relation to Egypto-Mesopotamian chronology, substantiated his claims. Examining calculations made by Neugebauer/Borchardt, Sewell and Edgerton, Rowton learned that whilst the former dated the beginning of the Sothic cycle - based on an 'arcus visionis' of 9° - at 1318 BC, Sewell - using the same 'arcus visionis' - arrived at the date of 1314 BC for the new cycle (74). Edgerton, however, suggested that an 'arcus visionis' of 9° was probably too high, and that its correct value would better be estimated at 8.5° (75). Thus, as the matter stood, Rowton considered that the lowest possible date for the beginning of the Sothic cycle was 1312 BC; and for the death of Akhnaton, 1353 BC, "if the Menophres theory be accepted" (76).

Now since, as can be seen in the Astronomical Appendix, the most recent observations seem to have confirmed Edgerton's view, then a lowering of the date for the Sothic cycle is required; for, to retain the lowest possible date of 1358 BC, approximately, would - according to Rowton's assessment of the situation - leave a noticeable discrepancy between the estimate of the Egyptologists and the modern calculations for the "Era
of Menophres".

Rowton's Summary

Conveniently, Rowton has summarised as follows the position at which he had arrived regarding the "Era of Menophres" in its presumed relation to his Mesopotamian data (77):

(a) the Mesopotamian evidence is opposed to the Menophres theory;
(b) the latter theory requires a number of risky assumptions;
(c) there exists an alternative explanation of the term "Menophres" (= Memphis) which requires only one plausible assumption.
(d) the basic premise upon which the theory rests - viz Theon's opinion that Menophres was a king - is seen to be an extremely uncertain quantity.
NOTES

(1) Theon of Alexandria, Schol. ad Arati Phaenomena.

(2) Lepsius, R., *Koenigsbuch der Alten Aegypten*, (Berlin, 1858), 123.


My translation taken from the French version of it in F. Crombette's *Chronologie*, 225.


(6) It should be noted that between the first of Thoth of the first year AD, and the first of Thoth of the first year BC, there are not two years, but actually only one. Between a certain date (or day) in the year 139 AD and the corresponding date of the year 1322 BC, there are 1460 and not 1461 years. Therefore the year 1322 BC is but -1321 in astronomical computations. The difference between the "historical" and the "astronomical" dates is that the latter assumes that there was not any year 0.


(9) See M. Rowton's "Mesopotamian Chronology and the 'Era of Menophres'", *IRAQ* VIII (1946), 94-110.


(14) Rowton, op. cit., n.1; with reference to Olympiodorus
     (Aristot. Meteor, 25, 1).


(18) Rowton, ibid., emphasis added.

(19) Ibid; following Hall, op. cit., 281.

(20) Rowton, ibid.

     Struve wrote: "... die Identifikation des Thronnamens Ram-     ses I ... Ἱῳ-ῥτή-Ῥ ... mit ... Μενόφρεως ... dass Mn-     ῶρτή-Ῥ, in griechischer Transkription etwa Μεν-     ναθηρῆς, in verstandlicher Weise wohl kaum palaeographisch zu Μεν-     ῳφρεως werden kann".

(22) Rowton, op. cit., 109.

(23) Long, op. cit., 269; with reference to Lepsius, op. cit.,     127.
(Notes continued)

(24) Lepsius, op. cit., 127.

He wrote: "Es begegnet uns aber in den Manethonischen 
Listen der Name ΜΕΝΕΡΕΘΟΣ oder ΜΕΝΟΡΕΘΟΣ ...".


(26) Lepsius, ibid.


(29) Hall, H., The Ancient History of the Near East, (Methuen, 
1913), 19.

(30) Hall, H., CAH I, 168.

(31) Cerny, op. cit., 152.


(33) Sethe, K., "Sethos I. und die Erneuerung der Hundsstern-
periode", ZAS 66, 1f.

(34) Ref. LD III, 128a, and Cairo ostracon Cat 25704; as noted 
by Sethe, ibid., 4.

Sethe’s phrase is: "Wiederholung der Geburt".

It should also be noted that, according to A. Gardiner in 
Egypt of the Pharaohs, (p.127), Ammenemes I of the Twelfth 
Dynasty had the "epithet Weḥam-meswe 'Repeater of Births’" 
as his Horus name.

(35) Sethe, ibid. See also his footnote 2 on the same page.

Sethe wrote: "Dass dieses Datum Sethos I. gehoert und 
nicht dem letzten Ramessiden der 20. Dyn. ...".
(Notes continued)


He reads: "Beginn einer neuen Sothisperiode". Sethe also used the phrase, "Regierungsbeginns".

(38) See Sethe, *ibid.*, 2.

(39) *Ibid*.

(40) See Cerny, "Note", 150.

(41) Sethe, *op. cit.*, 2-3.
He translated these parts of the hieroglyphs as follows: "Anfang der Ewigkeit (nḥḥ), Beginn ..."; and "... als Anfang einer langen Zeitfolge oder geradezu gesagt als eine Epoche".

Sethe used the phrase, "renascens oder renatus".


(44) See Cerny, *ibid*.

(45) Griffith, *ibid*.

(46) Sethe, *ibid*.


(49) Rowton, "Mesopotamian Chronology", 108.


(51) Rowton, *ibid*.
(Notes continued)

(52) Rowton, "Mesopotamian", 108.

(53) Ibid.

(54) See Struve, "Aera", 47.

Struve wrote: "Er hatte ja die grauenvolle Tat des Osiris-mordes auf sich geladen ... das Bild des Seth und seinem Namen auszumeissein, wo man ihn fand".

(55) Rowton, ibid.


(57) Ibid., 2.

(58) Rowton, ibid.

(59) Cerny, "Note", 151.

(60) Ibid. The statue was found by Bruyère (see his Rapport sur les fouilles de Deir el Médineh, (1935-1940), II, 56-57; pls. xii and xxxv. Now in Cairo J 72000).

(61) Cerny, ibid. His emphasis.

(62) Ibid.


(64) Ibid; with reference to Struve, op. cit., 45ff.

(65) Cerny, ibid., 152.

(66) Rowton, op. cit.

(67) Ibid., 103.

(68) Ibid.

(69) Ibid.
(Notes continued)

(70) Rowton, "Mesopotamian", 103.

(71) Ibid. Emphasis added.

(72) Ibid; with reference to Weidner's AFO, V, 184f.; and also to S Smith's AJA XLIX, 19.

(73) Rowton, ibid., 104.

(74) Ibid., 107; with reference to Borchardt and Neugebauer, (also Sewell).

(75) Edgerton, W., AJSL LIII, 192; and also JNES I, 309.

(76) Rowton, ibid.

(77) Ibid., 109.
CHAPTER NINE: DECREES OF CANOPUS

INTRODUCTION

More than sixty years after the discovery of the Rosetta Stone, a second three-script text (i.e. Greek; hieroglyphic; and demotic Egyptian) was found, in 1866, at Tanis. This was the Decree of Canopus. Engraved as it was on a slab of stone, this decree had been promulgated by a synod of Egyptian priests representing all Egypt and meeting at the temple of the "gods Euergetai" at Canopus (on the western, or 'Canopic' mouth of the Nile Delta). Hence its name.

Basically Meyer (1) interpreted the Decree of Canopus as recording that the festival day of the rising of the star of Isis (which Meyer rendered in the Greek form of Icioc) had occurred on Payni 1, in the ninth year of pharaoh Ptolemy III "Euergetes" I (247-221 BC). Meyer dated Ptolemy's ninth year to the era, 22nd October 239 BC to 21st October 238 BC, and he dated the specific event of the star's rising — according to this decree — to the 19th July, 238 BC. As to the identification of this star, represented hieroglyphically in the tri-lingual decree as ΣΘΗΣ, Meyer believed it to be Sothis.

Description of the Canopus Text

The complete text is 75 lines long in the Greek version. Structurally, it is not entirely straightforward. Van Oosterhout, with reference to Spiegelberg's Greek version (2), has explained how one might break down the text into its natural
parts, to assist with the reading and interpretation of it. Each integral section of the text, he suggests, is connected by "and" (Gk: kai). Firstly the author(s) provide the raison d'ètre of each section, introduced by one or other of the following: "as", "because", "in order to", "if", and so on. Then follows a description of what has to be done, beginning with "to".

From the text we learn how the priests had decreed that a festival should be celebrated every year on Payni 1 - festival day of the star's rising - in honour of Ptolemy and his wife, Berenice. Now, because of the inherent deficiency of the Egyptian civil year, the synod had ordained at Canopus that, every four years, a special day (we call it a 'Leap Year') should be added to the calendar and celebrated as a feast in honour of the "Theoi Euergetai" (line 34).

If, as the text goes on to read (line 36), the rising of the star of Isis moved to another day in the course of the four years, then the festival in honour of the royal "Benefactor Gods" should nevertheless still be celebrated on Payni 1, with a sixth epagomenal day (see also lines 44-46) to be added to the year. The Canopus Decree further recorded that the month Mesore of Ptolemy's ninth regnal year was after the promulgation of the decree on Tybi 17 of the same year.

Finally it is noted that there had been a katastasis, or a change in the state of things, not long before the decree was promulgated; this alteration being one of the reasons for the
decree's being issued.

Below are reproduced some fragments of the Greek version of the Canopus document (3):

FRAGMENT OF THE CANOPUS DECREET.

The second fragment (see next page) is kept separate because it includes the all-important lines 44-46, regarding the continuation of the festival on Payni 1, and the insertion of a sixth epagomenal day (a method to be known later as a "Julian reform"): 
Consistent, however, with Meyer's theory of an unaltered calendar throughout Egyptian history, the Egyptian people absolutely rejected the proposed reform so that it failed to become established.

The Decree and the Question of Calendrical Reform

Probably the most significant aspect of the Decree of Canopus from the point of view of Meyer's Sothic theory is its raising of the vital question of calendrical reform in Egypt. We recall that, indispensable to Meyer's hypothesis was the presumption that no alteration or modification of the Egyptian calendar had been enacted during the course of Egyptian history. Now commentators have been divided as to whether, within the context of what happened at Canopus, Meyer was right or wrong in clinging to such a view.

Below we are going to look at some of the representative
arguments that commentators have offered either in support of, or against, this fundamental Sothic hypothesis.

Anti-Reform

Winlock (4) was one of those who supported Meyer in his view that the Egyptian calendar was never reformed; even going so far as to say that the Decree of Canopus constituted "definite proof that a fixed calendar was unknown to the Egyptians in the IIIrd century BC". And, as Winlock further observed, in this decree (5):

... no reference is made to the idea being native to Egypt, and in fact it appears to have been regarded by the Egyptian people as an abhorrent foreign innovation with which they would have absolutely nothing to do, in spite of the fact that it was said to have the sanction of their own priesthood.

Whether it be for religious reasons or otherwise, the Egyptian people at this point in time positively resisted an attempt to make their wandering year equal to the astronomical year. Probably to a pragmatic Greek like Ptolemy III this insistence on their part of retaining so technically inadequate a civil calendar must have been incomprehensible. Ptolemy was also a dictator, and he would have had no qualms about attempting to adjust the Egyptian calendar unalterably to the
seasons as they stood in 238 BC, inconvenient though that would seem to be. According to the Decree of Canopus, Ptolemy had determined that an intercalary day be added, in every fourth year, to the five epagomenal festivals of the gods (6):

... in order that it may not occur that some of the national feasts kept in winter may come in time to be kept in summer ... as has formerly happened.

The resistance of the Egyptian people to Ptolemy's plan must have been tremendously unified for it to end up as a 'dead letter'. On this score, Long has wondered if perhaps the Egyptian people rejected the Ptolemaic reform (7):

... because they had strong feelings about the inclusion of a usurping, mortal, foreigner into a body of quite ancient and special beings ... [or was it] a distaste for calendar reform itself?

Winlock (8), seeking to strengthen further his argument anti-reform, reminded the reader that the native Egyptians did not make use of the Julian Year as their main calendar "until they had given up their own religion and had adopted Christianity"; an argument which seems to favour the contention that religious motives were behind the Egyptians' tenacity in clinging to the traditional calendar. Winlock went on to observe that the whole history of a year with intercalations, as we see it
in Classical times, it is a history of an innovation obnoxiously foreign to the native Egyptian, and that (9):

There is no hint in the whole four centuries and a half covered by the classical literature that the Egyptians had any memory of ever having used a fixed year or ever having recognized its desirability.

Basically Parker (10) concurred with these views, noting with regard to the Decree of Canopus - that "the one time an attempt [at reform] was made ... it failed completely". (We have already discussed Parker's complete rejection of the possibility that the Egyptians ever reformed their calendar).

Pro-Reform

Others however, considering the situation at Canopus, spoke of the likelihood of calendrical reform in Egypt. Crombette (11), for instance, believed that the significance of the Ptolemaic reform lay in the fact - as he thought - that a Sothic cycle of 1460 years had been completed since the presumed Hyksos reform. Crombette also held that the reason why the Egyptians doggedly resisted calendrical reform was because their calendar was based on astrology or magic. He attributed the Ptolemaic initiative of introducing a sixth epagomenal day every four years to "Greek realism" (12).

Similarly, Long (13) reasoned that the rejection of Ptolemy's plan for reform was not sufficient proof alone that "the
Egyptians never adjusted their calendar to align it with the seasons and proper festive occasions". And he added in regard to a distinction between two possible types of calendar reform:

Adjustment of a calendar and increasing the length of the year are two completely separate forms in calendation. Correction of the seasons with the proper months could be effected without the addition to or subtraction from the total length of the civil year.

According to Long's estimation, Payni 1 fell near the rising of Sirius (which event he placed at July 19-22) in 238 BC, and Thoth 1 (170 days away) occurred on October 22 of the same year. This data, he claimed, co-ordinated "perfectly with Censorinus, making the existence of a continuous Sothic cycle in the first millennium BC a firm proposition" (14).

Van Oosterhout (15), for his part, noted with regard to Canopus that the customary denial of reform was generally accompanied by a reference to a particular text of Nigidius Figulus, which text van Oosterhout translated as follows (16):

... before being invested with the regalia the king [of Egypt] was led by the priest of Isis to the inner sanctuary of the Apis temple at Memphis where he had to swear solemnly that he would not intercalate months or days and that he would hold to the year of 365 days, instituted of old ....
According to van Oosterhout's interpretation, whilst this text gave proof that a calendar reform was viewed by the Egyptians as a grave offence, it did "not guarantee the absence of such reforms [but very likely proved] the exact opposite .... Preventative actions generally are taken after trespassing" (17). It was "understandable", he said, that Egyptologists should deny the occurrence of any calendrical reform in Egypt:

... because unexplained reforms would rob Egyptian absolute chronology of its foundation [whereas a] well-defined reform will lead to other results but does not harm the method.

Courville, in a discussion of the limitations of certain dating methods, has devoted a section (18) to calendrical reform in ancient Egypt. Even after the abandonment of Meyer's theory relative to the introduction of a Sothic calendar in 4240 BC, he writes, the use of the method must still presume:

that no alterations in the calendar occurred between the XIIith Dynasty and the time of Censorinus which involved the length of the calendar year or the position of the months in the year. A single such alteration in this interim would invalidate all calculations and conclusions from this dating method for periods prior to such change.
Courville found what he called "a number of evidences" indicating to him that there had been changes in the Egyptian calendar after the Twelfth Dynasty era. Not surprisingly, the first two of these he mentions pertain to the Hyksos. Courville begins by citing what he calls a "note appended to the name of King Aseth, one of the late Hyksos kings, whose name appears in the Sothis king list", in which it is stated that (19):

This king added the 5 intercalary days to the year: in his reign, they say, the Egyptian year became a year of 365 days, being previously reckoned as 360 days only.

Another version of Manetho (20), Courville added, credits the same calendar alteration to the Hyksos king, Saites, at an earlier date. Of the two difficulties to which Courville points in regard to Manetho's testimony here, viz the apparent contradiction between these two notes and the "reliability" of the first, or appended note, it is the latter about which he shows the more concern. For, as he suggests in regard to the former possible difficulty (21):

These two records are not necessarily contradictory, since the two kings may have introduced the change in different parts of Egypt in the two cases.

Against any suggestion that the first note has no signifi-
cance because, as he says, "it is otherwise known that the 365 day year was in use as far back as the 5th Dynasty", Courville explains that it is possible for the calendar to have been altered from 365 days to 360 days when the Hyksos invaded Egypt and then returned to the 365 day year at the time of Aseth. He thought it "not illogical" to suggest that the Hyksos brought their own calendar with them when they came to Egypt (22).

Courville's second line of argument pro-reform is what he refers to as the "considerable evidence to indicate that the first month of the Egyptian calendar did not remain unaltered during this period", from 2000 BC to 140 AD (23). By the year 721 BC, at least, he says with reference to MacNaughton (24), the month Thoth was the first month of the Egyptian calendar. From inscriptions dealing with New Year ceremonies of an earlier era, Brugsch - he added - deduced that the month Hathor was then the first month of the year (25). Again, the "Ebers papyrus definitely gives the month Menkhut as the first month of the year" (26). Finally he writes that in the Twentieth Dynasty, "Hathor is the 4th month and Mesorii is the first" (27).

A Closer Examination of the Canopus Document

(a) Which is the correct version?

As we discovered at the beginning of this chapter, the Decree of Canopus has survived in its three-script form. Now whilst, as Spiegelberg (28) has said, it is generally accepted that the Greek text is the original (the two Egyptian versions
being translations), not all are agreed. Perhaps the best known amongst those who disagree is Mahaffy (29), who has presented his case for the demotic script's being the original. Mahaffy's argument may be summarised along the following lines:

It was almost "certain", he suggested, that the Synod of Egyptian priests, meeting at Canopus for the transaction of their own business, "with no foreigner present discussed this business in the native tongue, and had their resolutions taken down by their secretaries in demotic script". Then, he said, they would have "had recourse to interpreters on the one hand, with whom they concocted a Greek version for the Ptolemaic court; on the other, to the department of their own body that understood hieroglyphs ... to compose the version which would give a sacred and dignified character to their proclamation".

(b) The Date of the Decree

It must also be said that there is further controversy regarding the correct dating-method used in the decree. We do not intend to go into the matter in any detail, however, but simply wish to make the point that there is some disagreement here as to right interpretation of the Canopus text.

Basically the problem is this: Did Ptolemy III "Euergetes" reckon his regnal years according to Macedonian, or to Egyptian, dating, or both? Parker (30) and Wheeler (31) both believed that Ptolemy used Macedonian and Egyptian reckoning. Parker's basic line of argument was that, wherever double dates occurred in the text, the Macedonian date came
first. "This shows that the regnal years are Macedonian", he said. Wheeler, for his part, pointed out what he called a "difficulty" with the Canopus date of Payni 1, since — as he thought — the month Payni, in the 9th Macedonian year, was not the same as the month Payni in the 9th Egyptian year.

Van Oosterhout (32) however was not entirely satisfied with either of these two arguments. He referred to that of Parker as "weak"; rejecting the latter's opinion because he himself believed that the only double date had occurred at the beginning of the Decree of Canopus, "where it is part of a very complete description of the date of this official document".

Regarding the view of Wheeler and Parker that Ptolemy may have reckoned according to both systems of dating, van Oosterhout (whilst conceding that both systems may possibly have been used in the decree) considered it as highly unlikely that the document would use "both types of regnal year without distinguishing between them" (33). And he added that, whereas the dates of the Macedonian pharaoh's accession to the throne were given in the Macedonian calendar alone, all the rest of the dates were given in the Egyptian calendar alone (34).

Alternative Identifications of the 'Spd-t' Star

We conclude this chapter with some brief remarks about a subject which will be properly dealt with in Appendix B — viz the identification of the star, Sothis. Amongst those who have proposed identifications other than Sirius for the star, some at least have asked, with the Decree of Canopus in mind: Could
'spdt' possibly refer to the star Canopus? After Sirius, which is the most brilliant amongst the fixed stars, comes Canopus. Astronomers, in fact, generally tend to regard Canopus as being much larger and more brilliant than Sirius, considering that it is supposed to be much further from the earth than the latter.

Given that the decree fixing the New Year on the annual rising of 'spd-t' was proclaimed by the conclave of priests assembled at the town of Canopus (the Greek name of 'Per-gute' in Egyptian), the suggestion was probably at least worth making.

Yet others have based their case for re-identifying the star upon the fact that the Decree of Canopus refers, not to one, but to two, stars. According to these, the usual practice of assuming that the decree is referring in both instances to the same star, needs serious reconsideration. This interesting viewpoint also will be suitably addressed in Appendix B.

Concluding Remark

Amongst the various points raised in this chapter, two major issues stand out. These are: the all-important question of calendrical reform and the identification of Sothis. Both are of crucial importance to the Sothic theory inasmuch as, if Meyer has erred in denying that the Egyptian calendar was ever reformed, on the one hand, and in his identifying Sothis with Sirius, on the other, his whole edifice collapses.

We shall continue to discuss the question of calendrical reform in the following chapters. As said above, the matter of identifying Sothis will be confined to the second Appendix.
NOTES

(1) Meyer. E., Aegyptische Chronologie, 23.
(3) Fragments of Greek text (pp 170 & 171), taken from Spiegelberg, Die demotischen und hieroglyphischen. See footnote 1.
(6) Quotation taken from Winlock, ibid., 451, n 16.
(8) Winlock, ibid., 452. (9) Ibid. Emphasis added.
(10) Parker, R., "Sothic Dates and Calendar 'Adjustment'", RdE 9 (1952), 211. Q.v. his 'Calendars ...'. #268.
(11) Crombette, F., Chronologie de l'Egypte, (Tournai, Belgium) 243. (12) Ibid.
(13) Long, ibid. (14) Ibid.
(Notes continued)

(17) Oosterhout, Solar. His emphasis.


(19) Ibid., 60; with reference to Manetho’s Aegyptica, trans. by Waddel (1956), 241. See note after name, Aseth, in the Sothis list.

(20) Manetho, op. cit., 99.

(21) Courville, op cit., 60-61. (22) Ibid., 61. (23) Ibid.

(24) MacNaughton, D., A Scheme of Egyptian Chronology (1932), 249. (25) Ibid.

(26) The writer has not been able to pick up this information in the lengthy Ebers document.

(27) Courville, ibid; with reference to MacNaughton, ibid.


(33) Ibid., 20. (34) Ibid., 16.
CHAPTER TEN: THE STATEMENT OF CENSORINUS

INTRODUCTION

Early in the third century AD Censorinus, a Roman author, wrote a treatise entitled De Die Natali Liber (ad Q Caerellium) - ie "The Book about the Birthday, for Q Caerellius" - in whose later chapters we discover detailed information about the calendars of several nations and the relations between them. For reasons such as these, Censorinus' treatise has come to be considered generally as being one of the most important and precious documents from antiquity on chronology. It was Censorinus who, looking back at the Egyptian calendar from the point of view of the Julian calendar of $365\frac{1}{4}$ days, had estimated that the Egyptian New Year would wander backward through the seasons to the extent that, in the fifth year, New Year's Day of the civil calendar would be a whole day ahead of whatever event marked the commencement of the astronomical year (1).

Censorinus also recorded the information that what he called the "Great Year" of the Egyptians began at the rising of the Dog Star on the first day of the month Thoth (2). Since, therefore, the span of four Egyptian years was shorter than that of four Julian years by approximately one day, correspondence between the two years would be re-established on the 1461st year.

Now, according to Meyer's interpretation of the data given by Censorinus, a coincidence between the rising of Sothis and New Year's Day had occurred in the 100th year before the Roman
author wrote his book De Die Natali Liber; thus in 139/140 AD (3). Meyer was further assisted by the statement made by the Greek scientist Claudius Ptolemy in his Almagest (4), that in the era 132-135 AD the 1st of Thoth fell on the 21st of July. He was thus able to deduce from the combination of this data, using astronomical tables of progressive changes of the heliacal rising of Sirius (5), that New Year's Day must therefore have fallen on the 19th of July during the era of 140-143 AD, and again on the same day for the presumed Sothic period commencements in 1320 BC; 2780 BC and 4240 BC.

A third classical author (apart from Censorinus and Ptolemy) whom Meyer believed to be useful in connection with the data of Censorinus, was Theon of Alexandria. Whilst it is generally believed that Theon's statement regarding a 1460-year period supports Censorinus, there are some scholars who consider that what the Alexandrian had to say actually contradicts him. Later, we shall briefly discuss the usefulness or otherwise, from a chronological point of view, of Theon's statement.

A Description of the Statement of Censorinus

Since our way of expressing dates had not yet been introduced, of course, in the time of Censorinus, the Roman author had to devise his own scheme for calculating in retrograde fashion the periods of elapsed time to the various historical events - or historical eras - that he wanted to record. He therefore calculated back from his own year of writing De Die
Natali Liber, which as he informs us was the year when V C Pius and Pontianus were consuls. This year is now calculated at 238 AD.

Now, according to Censorinus’ list of dates, his year of writing was also the 100th year of what he called the “Great Year”. This Great Year of Censorinus the Sothic theorists have presumed to be none other than the 1460-year cycle of Sirius, whose beginning must then have occurred one hundred years prior to 238 AD, i.e. c. 139 AD. Such indeed was Meyer’s reasoning.

Complete translations of Censorinus’ treatise appear to be extremely rare (6). Fortunately, however, the passages with which we are concerned in this chapter are only short and they have been translated into English. These, which belong to chapters 18 and 21 respectively of Censorinus’ treatise, are given separately below, followed by their respective translations (7):

DE DIE NATALI CAP. XVIII.

[Contrary to the case of the other Great Years in the preceding part of the Censorinus text]

“The moon has nothing to do with the Great Year of the Egyptians which we call in Greek kuvikov and in Latin canicu-
laris because its beginning is taken when on the first day of the month which they call Θυθος [Egyptian month of Thoth] the Dog Star rises. Their civil year has 365 days only, without being intercalated not even by a single day. Hence with them the quadriennium [= a cycle of 4 civil years] is approximately one day less than the natural quadriennium. Consequently it happens that in the 1461st [year] it has turned around to the same beginning. This year is called by some heliacos [= 'related to the sun'] and by others Θεος ἐνιαυτος [= 'the year of God']

We follow with the excerpt from chapter 21. Here Censorinus, having referred to the years which he described as being "of Nabonassar", went on to explain that:

"... of those, however, the beginning is always from the first day of the month which the Egyptians call Thouth [Thoth] which occurred this year on the seventh day before the calends of July whereas 100 years from the present [in the year] when imperator Antoninus Pius for the second time and Bruttius Praesens were consuls of Rome this same day occurred on the
13th day before the calends of August at which time the Dog Star habitually rises in Egypt. Hence we may know that of this Great Year - which, like said above, is named year of the Sun and year of the Dog Star and year of God - the present year is the hundredth”.

In these two excerpts we discover various elements which have since become an integral part of the modern-day Sothic theory. For one, there is a reference to the rising of the Dog Star, or Sirius. Then there is mention of a cycle of 1461 years. And, finally, there occurs the word "heliacal". As generally explained by the Sothic theorists, Censorinus is taken as meaning that the "Great year" begins with the year when the heliacal rising of Sirius is on the first of the month Thoth. After 1461 years of the civil calendar, or 1460 years of the solar year, Sirius would rise again, heliacally, on the first of Thoth. Such an interpretation by the Sothic theorists is of course dependent on their belief that the Egyptians computed calendrically according to this vast period which they called "Sothic".

Censorinus wrote that in the 100th year before he compiled his treatise, a new Great Year-period had begun. Now the Sothic theorists assume accordingly that this reference to a Great Year is meant to be taken also as being a reference to a new Sothic period. Their method of calculating from the data supplied by Censorinus is summarised in the following calculation made by van Oosterhout (8):
Counting backwards 100 years and taking as usual (the Romans count inclusively) 238 AD-1 (9) leads to 139 AD. According to Censorinus in 139 on July 20 the Dog Star rose heliacally in the morning. The Egyptian date was then 1 Thoth. This has been confirmed by many calculations, including my own.

Meyer who, as we saw, had used modern astronomical tables in combination with the chronological data as supplied by Censorinus to determine the progressive heliacal risings of Sirius, also used those same astronomical tables to correct part of Censorinus' statement. Thus Meyer explained that (10):

Censorinus says rightly that in the year 238 AD, when he wrote, the 1st of Thoth fell on the 25th of June; but the following datum that it fell on the 21st of July in the year 139 AD is false; it fell this year on the 20th of July.

Weill, a one-time colleague of Meyer, also examined the data of Censorinus in the light of the added evidence from Ptolemy (11). Having endeavoured to show just how precisely Censorinus had defined the date of his "Great Year", which incidentally Weill placed at 139 AD, the latter then pointed out what he believed to be the presumed confirmation of this in Ptolemy's Canon of Kings. Apparently, however, he also picked
up a point of inconsistency in Censorinus (see following quote). The dating of the Sothic year of 139 was confirmed by a note of Ptolemy in which were dated, he wrote (12):

... the 1st of Thoth Egyptian of two given years of the era of Nabonassar, which are 132 and 135 AD. On these two occasions the 1st of Thoth fell on the 21st of July Julian. From this it may be concluded that 139 AD would not be the same apokatastasis, the first of four years when the 1st of Thoth falls on the 19th of July (rising of Sothis), as Censorinus says, but only the fourth of this tetraeteris.

The Statement of Theon

Theon of Alexandria has recorded when a certain apokatastasis of the Egyptian year came to its close. His statement on the matter, usually considered by the Egyptologists in relation to the statement made by Censorinus, runs as follows (11):

... But said period of 1460 years, begun since some instant, came to an end [Greek apokatastasis] in the fifth year of the emperor Augustus and, from this last epoch, the Egyptians begin all over again to find themselves every year one quarter of a day in advance.

Now "the fifth year of the emperor Augustus" occurred in
26 BC; the same year in which, according to some authorities (12), the calendar reform was enforced in Alexandria. Going by the statement of Censorinus however, as we have already learned, the beginning of a new "Great Year" is to be placed at 139 AD.

On a manuscript of Theon there was discovered that by now celebrated annotation, written in what Martin (13) has described as "barbarian Greek", which tells of 1605 years having elapsed since "Menophres" and until the end of the era of Augustus, or the beginning of the era of Diocletian.

Do these two classical authors contradict one another? The answer is of the utmost importance when we consider that the established chronological system depends so heavily upon the accuracy of the statements of Censorinus and Theon and upon the correctness of the interpretation of these statements. Learning from Theon, presumably, the name of the king who inaugurated a major era, and placing this king in the time indicated by Censorinus at the beginning of a Sothic period, the historians have been able to obtain for themselves a fixed point around which to build Egyptian chronology and the history of the ancient world.

Whilst many scholars are prepared to accept fully the combined data of these two, classical authors as currently interpreted, there are some who have pointed to flaws and inconsistencies in Theon's statement, especially when taken in conjunction with Censorinus. Some have gone even further and spoken of what they regard as being a downright contradiction
between Theon's evidence and that of Censorinus.

Van Oosterhout (14) typifies the first group of scholars. Because, as he believed, Theon had failed to connect the 1460-year period to any specific astronomical event, he described Theon's statement as "the cryptic remark of Theon of Alexandria". Van Oosterhout was apparently convinced, however, that Theon was in fact referring to the same astronomical event as the one Censorinus had recorded, and thus he presumed to make the requisite connection on Theon's behalf:

It should be stressed that the period of 1460 years mentioned here is the result of the relation of the natural year and the Egyptian year like in the Censorinus text.

Of special interest, in the light of our present subject, is Van Oosterhout's final comment on the comparison between the data of Theon and Censorinus, however, for we find him admitting that (15): "Neither Theon nor Censorinus connect this period with Sirius!"

Long (16) typifies the second group of scholars, who are far more critical in regard to the reliability of Theon and Censorinus, especially when combined. Because Theon had referred to the conclusion of a 1460-year period as having occurred in the 5th year of Augustus, or 26 BC, as opposed to Censorinus' testimony that a Great Year of the same duration
had commenced in 139 AD, Long went so far as to say that Theon’s statement "contradicts Censorinus". (And because he thought in terms of Theon’s 1460 years as being necessarily Sothic, Long even imagined that Theon had contradicted himself with regard to his Era of Menophres). Not surprisingly, then, Long opted for what he called "the greater precision of Censorinus" over the reliability of Theon with regard to the rising of Sirius.

Albiruni’s Contribution

Albiruni (17), an Arabian chronologist of a later era (viz AD 973-1048), had spoken about five years still wanting until the end of a kabisa, in the days of Augustus. Ironically, in this case, Long (18) seized upon Albiruni’s statement, claiming that it "supported Theon, not Censorinus" when Theon had "recorded that Augustus delayed his reform of the Egyptian calendar for five years until the completion of a Sothic cycle in 26 BC". To begin with, as we have just noted, Theon had not mentioned the phrase "Sothic cycle", or anything unequivocally like it. To make matters worse, nor did Albiruni!

Van Oosterhout (19) was critical of Long for making such assumptions, and especially for equating Albiruni’s "kabisa erroneously", as he said, "by Sothic period". He insisted instead that the Arabic word ought to be translated as "great intercalation period". It seems that van Oosterhout is quite right about this (20).
Claudius Ptolemy

Some historians (21) have observed, in relation to the data of Censorinus, that if one Great Year really had ended and another had begun - in c 139 AD, why is there no mention of this in the writings of Claudius Ptolemy? As currently explained, this astronomical event must have occurred in the mid-period (ie c 127-151 AD) of Ptolemy's prolific writing. Ptolemy, of course, was the best known astronomer of antiquity, and was resident in Alexandria. But nowhere in his writings does he mention what would seem to be so highly significant an event.

But then there is Ptolemy's silence also as regards the presumed Sothic computation of the Egyptian calendar. Ptolemy dealt in great detail with matters astronomical and calendrical of his own age and of the preceding centuries; even studying the Babylonian records of the eclipses eight hundred years before his time. Yet he appears to have been totally oblivious to any form of Sothic computation by the Egyptians, as well as to the advent of the Great Year - supposed to have occurred at about the peak of his floruit.

Van Oosterhout (22), however, is not particularly perturbed by Ptolemy's apparent failure to mention the transition to another Great Year. According to him, it was hardly worth mentioning: "... from the astronomical point of view this event is of no importance at all".
Numismatic Evidence

From the statement of Censorinus we learn that, in the consular year of Antoninus Pius (for the second time) and Bruttius Praesens, the (heliacal) rising of Sirius occurred on Thoth 1, then coinciding with July 20. On that day a Great Year began. Now van Oosterhout (23) has claimed that there was, in fact, numismatic evidence for the beginning of a Great Year about this time; that, from the reigns of Hadrian and Antoninus Pius, there were several emissions of coins which he believed to be relevant to the subject.

The beginning of the Great Year in the second consular year of Antoninus Pius as mentioned by Censorinus, van Oosterhout said, was commemorated in Alexandria by the striking of a coin having, on its obverse, Antoninus Pius year 2, and, on its reverse, the legend ΑΙΩΝ written around a bird which - according to Geiszen (24) - is a phoenix.

More enigmatic, perhaps, were coins struck about 20 years earlier (c. 117 AD), which - surprisingly, according to van Oosterhout (25) - closely resembled the preceding one. The first has an obverse bust of Trajan with the legend 'DIVO TRAIANO PARTH. AUG. PATRI', and, on the reverse, a phoenix. Van Oosterhout thought that the appellation 'DIVO' here implied that this coin must have been struck after the death of Trajan (August 6/7 of 117 AD).

From the same, or next, year there was a coin having, as its obverse: 'IMP CAESAR TRAIAN. HADRIANUS AUG', and as its
reverse, Hadrian, holding a globe with a phoenix on top of it, and with the legend: 'SAEC. AUR' [Saeculum Aureum = 'Golden Age'] (26). In connecting these sets of coins from the different eras, van Oosterhout drew the conclusion that:

The latter two coins, both having a phenix [phoenix] and one of them having SAEC. AUR ... strongly remind of the phenix and the AINN of the coins of Antoninus Pius.

But even more significant in the light of this numismatic data, van Oosterhout thought, was what he presumed to be the connection of the Great Year of Censorinus, in its advent, with the heliacal rising of Sirius. "The coin of Antoninus Pius", he argued, "refers to the beginning of the Great Year when the rising of Sirius occurred in Egypt on civil Thoth 1". And so he asked in relation to this, and reflecting back on the coins of the earlier era: "What could have been the reason to refer to it [i.e. the beginning of the Great year] already 20 years earlier"? Then, providing his own answer from an astronomer's point of view, van Oosterhout claimed that (27):

Twenty years before the beginning of the Great Year on Thoth 1 in 139 CE the heliacal rising occurred in Heliopolis 5 days before Thoth 1 i.e on epagomena 1.

But despite van Oosterhout's apparent confidence in cer-
tain aspects of the Censorinus text, and about the connection - as he saw it - between the Great Year and the coincident rising of Sirius, he was prepared to admit that, in relation to the crucial Great Year date of Censorinus, the Roman author's text "is slightly ambiguous and at one point even inconsistent" (28). And so he explained this "textual problem", as he called it, in these words:

The ambiguity consists in the term cum abhinc annos centum (= "whereas 100 years from the present"). The expression is too loose to give a date with certainty, due to the possibility of taking first and last years into account.

Concluding Remark

In Chapter 12 we shall return to the statement of Censorinus in order to arrive at some firm conclusions regarding the usefulness or otherwise of this frequently quoted document. In particular, we shall be assessing the statement of Censorinus in its relation to other chronological documents, such as the statement of Theon.
NOTES


(2) See Meyer's *Aegyptische*, 23ff, on Censorinus' theories.


(4) C. Ptolemy's *Almagest*; as referred to by Meyer in *ibid.*, 24.

(5) In his *Aegyptische*, 26-27, Meyer refers to tables from Boeckh and Usener.

(6) Oosterhout, van G., "The Heliacal Rising of Sirius", *Studs. in Astronomical Chronology*, 1 (Delft, 1989), 12, claims to know of "none in English". He refers to the French version by D. Nisard, *Celse, Vitruve, Censorin et Frontin*, (Paris, 1846) as being the "only one complete translation".

(7) Censorinus, *ibid*; as translated by van Oosterhout, *ibid*.


(9) Van Oosterhout has "=1", which I presume he meant to write as "-1". Apparently he has added this slight mathematical adjustment to cover the fact that, as he has also noted in the quotation, "(the Romans count inclusively)".

(Notes continued)


(15) Ibid., 26.

(16) Long, *ibid*.

(17) Ibid; with reference to Albiruni.

(18) Ibid.

(19) Oosterhout, "Heliacal", 27.

(20) Professor Y. Ebied. of Dept. of Semitic Studies (University of Sydney) told the writer, in a telephone conversation of 15 September, 1993, that the Arabic word kabisa stood for 'Leap Year'.


(22) Oosterhout, "Heliacal", 16.

(23) Ibid., 28-30.
(Notes continued)

(24) Ibid., 28; with reference to A. Geiszen’s Katalog Alek-
andrinischer Kaisermonzen der Sammlung des Instituts fuer
Alterrumpskunde der Universitaet zu Koeln, Bd. 2.


(26) Ibid.; with reference to H. Mattingly & E. Sydenham’s
The Roman Imperial Coinage, (London, 1926). They make the
identification.

(27) Oosterhout, "Heliacal", 29

(28) Ibid., 13.
PART FOUR

A CRITIQUE OF MEYER´S SOTHIC THEORY

CONTENTS:

CHAPTER ELEVEN  Assessment of Meyer´s Theory in General --------------------- 193-207

CHAPTER TWELVE  Some Conclusions About Meyer´s Theory ----------------------- 208-229
CHAPTER ELEVEN: ASSESSMENT OF MEYER’S THEORY IN GENERAL

INTRODUCTION

In our earlier presentation of Meyer’s Sothic theory and its basic implications for Egyptian chronology (in Part Two) we looked at some of the initial reactions to it by noted Egyptologists who were roughly contemporary with Meyer. Some of these supported Meyer and his "short" chronology; others, to a greater or lesser extent, did not. Now, in this chapter, we are going to update our critical analysis of the Sothic theory by viewing it from a clearer perspective; that of the more recent critics and/or supporters of Meyer’s views. In some cases, this will lead to a certain amount of repetition of what has gone before.

Eduard Meyer and those who helped him to pioneer the Sothic theory showed that they were willing to go beyond a scheme which relied too uncritically upon Manetho and the impossibly high regnal years that he had assigned to the various pharaohs, and to construct an entirely new scheme of chronology based upon astronomical data. In this way the Sothic theorists had hoped to add some mathematical precision to Egyptian chronology. Subsequently, Meyer and his colleagues came to believe that the Egyptians had used a long-range calendar based on the Sothic period of 1460 years.

The tremendous respect that Meyer and his colleagues had for what they considered to be the scientific ability of the
Egyptian astronomers was not shared by Neugebauer. Critical of both Meyer and Lepsius, Neugebauer labelled as absurd the hypothesis of a sudden introduction into Egypt of a 365-day calendar, without long-term observations. We find, too, that Meyer never bothered to attempt an explanation of the rationale behind the defective Egyptian calendar. Why for instance, if the Egyptians really were the competent astronomers that Meyer and company claimed them to be, did they persevere so long with an extremely inaccurate calendar? Why didn’t they adjust it?

The question might also be asked: Why did the Egyptians call "Sothic" a year which, according even to ardent Sothic theorists like Parker, was not tied to Sirius and differed quite appreciably from the astronomical year of Sirius? It seems that Meyer never really allowed this question to arise. He had simply presumed that the institution of the civil year must have occurred at the moment when the beginning of this year coincided with the rising of Sirius, as this had been the case in 140-143 AD. But, as his critics were quick to point out, such a suggestion was "pure supposition"; there being not a shred of documentary evidence to back it up. Parker, moreover, has since brought forward a compelling case in support of the view that the civil calendar was independent of Sothis at its introduction.

Basically, as we have already seen, Meyer’s "short" chronology, set within the framework of Manetho’s dynasties, was spaced according to the presumed, major Sothic cycle date sequence of: 140 AD; 1320 BC; 2780 BC; 4240 BC (approximately). Sub-spacing was determined by astronomical
calculations based upon various "Sothic" texts of either Egyptian, or Classical origin, combined with the monumental data. Clearly, Meyer's historical structure was dependent upon various assumptions. Courville (1) has listed eight such assumptions upon which he believed Meyer's Sothic star theory to have been built. These, which I list below, will serve as reference points for us in our task of assessing the value of Meyer's Sothic theory.

Courville had proposed that for the Sothic theory to be valid:

1. "The date for the beginning of some Sothic period must be known with certainty".
2. "The identity of the star, Sothis, which the ancients used to mark the Sothic period must be known with certainty".
3. "The calculations involved must be valid".
4. "It must be clear that the Egyptians used the Sothic cycle in the manner presumed by the theory".
5. "It must be known that the calendar of Egypt remained unchanged".
6. "The references from the ancient records, used to support the theory, and conclusions based upon this theory, must be sufficiently clear as to permit but a single interpretation".
7. "The application of the theory to the problems of historical dating must not lead us into anomalous situations".
8. "All of the data available relating events to the Sothic period should fit satisfactorily into the theory".
This list of assumptions, and others relating to the Sothic period, will be useful to us throughout this chapter, as we attempt to evaluate Meyer's Sothic star theory. To assist the reader, we shall arrange the subject matter of this chapter according to the following divisions: (a) Meyer's Major Dates; (b) Meyer's "Short" Chronology; and (c) Reforming the Calendar.

(a) Meyer's Major Dates

(i) Meyer's Earliest Fixed Date

Following the reasoning of Lepsius, Meyer and Mahler, as discussed in the foregoing chapters, it is obvious that the Egyptians could not have acquired their presumed knowledge of the Sothic period by direct observations over almost one and a half millennia. The duration of Egyptian history during the Old Kingdom period was far too short for that. Thus it seems most likely that Neugebauer erred in criticising this aspect of Meyer's theory. The latter's view of a relatively sudden introduction of the calendar, without long-term observations, seems most reasonable. Moreover, it is right in line with the testimony of the ancient Greeks and their story of Thoth.

Not so reasonable, as it turns out, was Meyer's estimation of c. 4240 as the date for that sudden introduction of the calendar; or what O'Mara (2) has designated "Year 1" of the great Sothic cycle. Today, in the light of modifications which have led to an accepted date of approximately 3100 BC for the very
beginning of Egyptian dynastic history - the unification of Egypt under Menes - no one would take seriously any more Meyer's estimate (nor indeed that of c.4200 BC as proposed by Neugebauer).

But it is not so generally appreciated that there are considerable difficulties associated too with Meyer's next in sequence, major Sothic date of c 2780 BC; now considered to be the most likely candidate for "Year 1". For, as O'Mara (3) has correctly stated, this figure of 2780 BC has been re-worked frequently because of what he has called "numerous technical complexities, with varying results ranging from 2781 BC to 2772 BC". Another point which may not have been given sufficient consideration, but which is often just taken for granted, is that "Year 1" of the presumed Sothic cycle may not necessarily have coincided with the year in which the Egyptian calendar was established (4).

Of far greater concern to Sothic theorists than the apparent problem of refining Meyer's date of c 2780 BC, however, must be the fact that by no means have some of the most renowned Egyptologists been able to agree on how to integrate this early, third millennium BC date into their respective chronological assessments. O'Mara has described the ensuing lack of agreement on behalf of several well-known Egyptologists in the following words (5):

There has never been established a consensus concerning the historical milieu associated with this date [c. 2770 BC]. Breasted and Petrie would have set it in
the Fourth Dynasty .... Parker placed it .... midway through the Second Dynasty and Gardiner located it a few generations later .... Winlock linked it to the reign of King Zoser .... Third Dynasty.

(ii) Meyer's Later Era of c.1320 BC

Coming down the time-scale now to Meyer's third in sequence, major Sothic date of c.1320 BC, which is customarily designated as the "Era of Menophres", we find that it too is heavily based on assumptions and is not lacking in its share of difficulties. First of all let us consider some of these assumptions, arising from Theon's "Era of Menophres" data, combined with the information from Censorinus. From this collective data Meyer and his colleagues from the Berlin School had assumed: (a) that there had been an "Era of Menophres" (though no reference to such an era has apparently been found in Egyptian sources); (b) that this era coincided with a Sothic period; (c) that this Sothic period had begun in c.1320 BC; (d) that "Menophres" was a king who lived at the beginning of this period.

In relation to the above assumptions we recall that Lepsius had concluded, from his comparison of Theon's statement with Manetho, that the most likely candidate for "Menophres" in the dynastic list was pharaoh Merneptah. But since Lepsius regarded Merneptah as being firmly established in the era c. 1224-1214 BC, he was not prepared to accept the validity of his own equation. This was clearly a case of circular reasoning. Unfortunately Meyer would repeat Lepsius' technique of petitio
principii in his own *Aegyptische Chronologie* (6), regarding this exact point.

Circular thinking to some degree again crops up in Long's assessment of Theon's statement. According to Long, Theon has provided an extraordinary verification of the Sothic cycle. What Long has apparently failed to appreciate, however, is that Meyer and his colleagues, who pioneered the Sothic theory, had used this information of Theon initially to establish their Sothic chronology of Egypt, and that is how they first came to regard the era of c. 1320 BC as being a most important one in Egyptian history. Naturally, then, Theon verifies a conclusion of which his data was an important premise!

The view of Cerny and others, in support of Meyer, that Theon's "Menophres" is meant to be taken as the name of a king, and does not refer to a city as Rowton had insisted, seems to be more in keeping with the facts. Theon, for instance, was quite definite that "Menophres" was a ruler. Moreover, it was customary in ancient times to name eras after monarchs. Theon would have known about the various well-known eras named after kings: e.g. the eras of, Nabonassar; Alexander; Seleucus; Arsaces; Augustus and Diocletian. Eras were definitely not named after cities.

But we encounter a further, and very major difficulty with Meyer's theory in regard to his own identification of "Menophres". Meyer had eventually chosen Ramses I of the Nineteenth Dynasty as his candidate for "Menophres", because the more plausible Merneptah could not be made to fit according to the
structure of his Sothic scheme. But as Struve had already shown, and as Rowton had been quick to confirm (7), Ramses I could not plausibly be identified as "Menophres" because it could be shown from the Greek transcription, so Struve insisted, that Ramses' throne name (Mn-pḫtj-R') was quite different from the name "Menophres".

In the light of the above it is interesting to note that, whilst Meyer may never have actually lost faith in the importance of this era of c. 1320 BC, based upon the Sothic data, he did eventually drift away from his original Menophres theory. According to Rowton (8), Meyer finally abandoned this theory entirely. Thus Rowton was led to remark that we: "... are justified in retaining a theory which involves a number of assumptions only so long as it is in keeping with the known facts of history".

(b) Meyer's "Short" Chronology

With his dates for the conclusion of the Twelfth Dynasty and the commencement of the New Kingdom set "sothically" at c. 1790 BC and c. 1580 BC, respectively, Meyer was stuck with a Second Intermediate Period of approximately two centuries' duration. This "short" period of time for the intermediary period between Egypt's Classical and New Kingdom eras was unacceptable to certain highly respected Egyptologists. Their acute difficulties with so restricted a period not doubt go a long way towards explaining why scholars like Maspero, von Bissing, Brugsch and Jéquier rejected Meyer's system outright.
as a legitimate means of astronomical computation.

Petrie, as we saw, tried to resolve the dilemma by adding an additional Sothic period of 1460 years to the Second Intermediate Period. Nowhere was the apparent squeeze of the Second Intermediate Period dynasties more evident, he had argued, than in the case of the Hyksos. Two dynasties, consisting of at least ten important reigns, constituted - according to Meyer's theory - the Hyksos era. Some of these reigns, according to Petrie, were neither short nor concurrent with others.

Petrie estimated that 280 years bare minimum must be allowed for the reigns of prominent kings of the Second Intermediate Period already known in his day. And he wisely suggested that more would come to light in the future. He considered that the changes in art were sufficient to suggest that more than two centuries should be assigned to this interim period.

Whilst Hall, assessing the "short" chronology largely from an art-historical perspective, could not fully agree with Petrie's view that the art before and after the Second Intermediate Period was so vastly different, neither could he be persuaded that the Second Intermediate period had spanned a mere two centuries, approximately. Having agreed that Meyer's "short" chronology had a point insofar as there was little difference between the art of the early Eighteenth Dynasty and that of the Thirteenth, Hall nonetheless fully concurred with Petrie in his opinion that it was impossible to force all the kings of the Thirteenth to Seventeenth Dynasties into so small
a period of time as that proposed by Meyer.

As far as Hall was concerned, at least three and a half centuries would be needed to fit in all of these intermediate dynasties. Had Meyer's scheme allowed for this length of time - Hall's minimum figure - then the latter probably would have had no qualms about accepting the entire Sothic chronology.

However, we can appreciate that such a concession on Meyer's part would have been impossible within the strictures of the Sothic scheme. To concede an extra one and a half centuries for the Second Intermediate Period would have thrown into chaos the precise Sothic computations, thereby ruining the fine fabric of Meyer's Sothic scheme. However, the problem kept re-emerging. Even certain supporters of Meyer could not disguise their own discomfort with the tight-jacket of the "sothically" arranged Second Intermediate Period. Weigall, for one, resignedly spoke of the fact that, within the context of this "astronomically fixed" period, several dynasties "have got to be fitted into" a very small period. It had become a case of mathematical necessity.

(c) Reforming the Calendar

Again Parker, on the question of calendrical reform, had argued strongly in favour of Meyer's view that the Egyptian civil calendar did not undergo any reform during Egypt's dynastic history. He was especially critical of writers like Alliot whose arguments pro-reform appeared to be based on the premise that, since the Egyptian civil calendar was defective,
the Egyptians must have reformed it. Parker's own argument against reform was summed up by his saying, with reference to the Canopus Decree, that the only time during eighteen centuries (which includes more than a whole Sothic period) that an attempt was made to reform the calendar, it was a complete failure.

Like Meyer, however, Parker did not seem willing to pay close attention to the various indications that scholars claim to have found in support of calendrical changes in Egypt. Those who argue pro-reform have pointed to the fact that two versions of Manetho specifically refer to calendrical reform during the Hyksos period. First of all there is the annotation Manetho gives beside the name of pharaoh Aseth, one of the late Hyksos kings, according to which this king added 5 intercalary days to the 360-day year. Then, according to another version of Manetho, the same calendrical reform is accredited to the Hyksos king, Saïtes. These two records may not necessarily be contradictory, for, as Courville (9) has pointed out, "the two kings may have introduced the change in different parts of Egypt in the two cases".

The foreign rule over Egypt of the Hyksos kings is a more likely period for calendrical reform to have been attempted than any eras consisting of native rule; especially given the reaction of the Egyptian people at Canopus to the attempted imposition of calendrical reform by a Macedonian pharaoh. Weigall was another who argued for a calendrical reform close to, and during, the Hyksos era; claiming to have found a change in calendar from the Mesore year to the Thoth year during that
period. In particular, Weigall had referred to the Rhind Mathematical Papyrus to support his view.

Finally Courville, as we saw, had found what he regarded as being "considerable evidence" of possible calendrical reform in Egypt; evidence which indicated to him that, between 2000 BC and 140 AD, the first month of the Egyptian calendar did not remain unaltered.

But the Sothic theorists appeared to be unmoved by any such suggestions that the calendar may have been tampered with. Parker for instance, who had stated emphatically that the cyclical progress of the civil year continued throughout Egyptian history, and was not interfered with, seemed quite content to add that this belief had been a "cornerstone of Egyptian chronology since it was formulated by Meyer in 1904". Given the importance of this assumption for the entire history of the ancient world, however, it seems unfortunate that the Sothic theorists were not prepared to give a more positive consideration to the possibility of any calendrical changes during the period of the civil calendar.

The Emergence of a New Chronology

Once again, as at its inception, the Sothic system of Meyer is being challenged by those who cannot accept the validity of its assumptions. In the last few decades there has arisen, throughout many countries of the world, a revised chronology of the ancient world that is not at all based on Sothic computations (10). Whilst this revised approach may vary from
school to school - in some cases quite considerably - it nonetheless has some common elements right across the board in regard to how it views the conventional, Sothic scheme. For instance, some of the most controversial aspects of Meyer’s scheme (which we have already addressed, or will be looking at, in this PART FOUR), are also those same ones which bind together the new revisionists in their common disagreement with Meyer’s approach to chronology. Basically, all the revisionist scholars would hold that, for example:

(1) The astronomical basis of Meyer’s Sothic scheme is a modern invention, imposed upon Egyptian chronology. The Egyptians, they say, knew nothing of a 1460-year Sothic period, and certainly did not compute by one. (Some revisionists have even devised their own astronomical foundation for Egyptian chronology. We shall critically examine this in Appendix B).

(2) That, despite the general impression given by Manetho, the monumental evidence indicates that dynasties often ruled simultaneously, in different parts of the country, rather than in single file. The revision accepts a significantly greater degree of dynastic parallelism - even for the Third Intermediate Period - than does the standard, Sothic system.

(3) That two centuries is an impossibly short period for the Second Intermediate Period, and that the correct figure is nearer to the figure of five hundred and eleven years, as recorded for the Hyksos period by Josephus (11).
(4) That an overstretched Egyptian chronology has led historians into the necessity of inserting so-called "Dark Ages" in Greek and Hittite history; these latter being entirely devoid of artefacts and, once again, quite an artificial modern device. Peter James' recent book, Centuries of Darkness, is a systematic attempt to expose this apparent weakness in the Sothic theory.

(6) That the conventional chronology fails to produce a consistent sequence of solid and unassailable synchronisms between Egypt and Mesopotamia (and also Palestine) for the earlier eras of history.

And, whilst the revisionists may not all agree as to how exactly the re-vamped history of Egypt is to be achieved, they are unanimous in their agreement on the necessity for such a task to be undertaken.

Having explained Meyer's theory now in some detail, and having critically assessed it in a general fashion, we now - in the next chapter - are going to re-consider the particular ancient documents upon which the Sothic theory is primarily built.
NOTES


(3) Ibid. O’Mara himself opts for 2774/3 BC for 'Year 1'.

(4) See O’Mara, *ibid*.

(5) Ibid.


(8) Rowton, "Mesopotamian", 110, n.1

(9) Courville, *op. cit.*, 60-61.

(10) Apart from the many individuals involved, the books and articles written, there are the journals: *Pensée*; *Kronos*; *Catastrophism & Ancient History* (USA); *SIS Review*; *SIS Workshop* (UK); *Kataklysmos* (Canada); *Diggings* (Australia).

(11) Josephus, Flavius, *Against Apion*, I, 84; where he cites Manetho.
CHAPTER TWELVE: SOME CONCLUSIONS ABOUT MEYER'S THEORY

INTRODUCTION

Eduard Meyer, seeking to devise a more accurate system than the one provided by Manetho, for organising Egyptian chronology, found that his purposes were best served with the aid of astronomy. Building on the basic notion of Lepsius, for instance, that Egyptian history might best be arranged around 1460-year cycles, or great Sothic periods - presumably alluded to by Classical authors such as Censorinus and Theon - Meyer was thus able to develop his brilliant Sothic scheme of Egyptian chronology. Originally consisting of four major Sothic beginnings, 4240 BC; 2780 BC; 1320 BC and 140 AD, this scheme, even in Meyer's day, underwent some radical alteration, with Meyer eventually abandoning the earliest of these dates. However, he never abandoned the Sothic system itself; the system which still today prevails as the standard one.

The Sothic scheme thus conceived by Meyer has not lacked its fair share of critics. Some of these were those who bitterly contested the astronomically-based scheme at its very inception. Some of Meyer's older contemporaries, particularly, could never accept his methodology as being a valid one. But, whereas few of Meyer's critics happened to be chronology conscious, Meyer himself - as we saw - had the support of several well-known chronologists.

Petrie was a special case. Whilst he could accept a methodology according to which Egyptian history was to be
organised into 1460-year cycles, he actually wanted to add an extra Sothic cycle to Meyer's scheme, in order to allow a greater breathing space for the Second Intermediate Period. For probably above all else, it was Meyer's conclusion that this interim period must be squeezed into a space of not much more than two centuries, that was deterring scholars from wholeheartedly embracing Meyer's overall scheme.

Given the lack of evidence from Egypt, the question asked by some in regard to the validity of Meyer's scheme, as to whether the Egyptian astronomers really did compute by 1460 year cycles, to the extent of establishing long-range calendars to accord with those cycles, is possibly a futile one. The very concept may have been entirely a product of Classical era thinking (eg Censorinus); later taken up and systematised by the modern Sothic theorists. On the next page we shall suggest, in regard to calendrical reform, what might possibly be a more pertinent consideration in relation to this subject.

The great Sothic year may well be an artificial device, conceived - and imposed upon Egyptian dating - by modern historians. There are more and more scholars today who believe this in fact to be the case; that the Sothic scheme thus devised is an artificial one, however ingenious. This scheme, they say, has created so many inaccuracies and anomalies in ancient history that much of it, especially the earlier ages, must now be seriously re-assessed if a workable chronology is to be achieved. Ironically, just as Meyer and his colleagues
felt constrained to escape from the tyranny of Manetho's system, so today there are those scholars who feel the same about that of Eduard Meyer. This is not to suggest, however, that critics such as these want to reject all of Meyer's painstaking research. On the contrary; it is only the system itself, the methodology, that they believe to be creating the problems.

Meyer may well have been correct in his belief that the Egyptians were extremely astute in scientific matters; and even in his emphasising the importance of the star Sirius in its role in the Egyptian calendar. Without a doubt, as this thesis has indicated especially through its references to the Egyptian Astronomical Texts, Sirius was important to the Egyptians.

But perhaps Hall was correct, too, in his belief that the Egyptians may never have used the Sothic cycle "as an era" (1). Certainly, as yet, no specific reference to such usage has been discovered in the Egyptian texts. Were this to be the case, in fact, it would mean that the Egyptians might not have had any pressure upon themselves - at least from an astronomical point of view - to maintain their civil calendar.

Meyer placed great reliance for his scheme on Egyptian texts which referred to the rising of Sothis. The question now to be asked, in the context of the first part of this chapter, is: Was the astronomical and historical data supplied by these documents sufficient to lead to the conclusions that Meyer and his colleagues drew from them, or were the Sothic theorists drawing a latius hos (too broad) conclusion?

In the first part of this chapter, then, we intend to
return briefly to the three major, Egyptian Sothic documents used by Meyer (with the added assistance of information from certain Classical authors) to develop his chronological scheme. We refer, of course, to the Illahun, Ebers and Elephantine documents. From conclusions drawn from the information supplied by these Egyptian documents, Egyptologists have been able to establish the significant date of c.1580 BC as that which is supposed to divide New Kingdom history from what went before. Now we are primarily interested here in trying to ascertain the quality of the information provided by these Egyptian documents.

After that, in the second part of this chapter, we shall refresh our memory in regard to the Classical documents ("Era of Menophres" citation, Canopus and Censorinus), for the same purpose. From a combination of the first and second of these documents particularly, the Sothic theorists have been able to establish their most important date of all: viz. c.1320 BC.

The conclusions reached in this chapter will serve as a final conclusion for the entire thesis.

PART ONE: THE EGYPTIAN TEXTS (C.1580 BC)

Introduction

Judging by what certain scholars that we have looked at have said about the extent to which the present reconstructions of major historical eras, and the Archaeological Ages, are dependent for their dating upon one or another of these Sothic
texts, one apparently cannot over-estimate the importance attributed to these latter by the Sothic theorists. To recapitulate, the Illahûn document for instance is "sothically" crucial, not only as the key Sothic date for the Middle Kingdom, but also, from this, as constituting a foundation for the period prior to the New Kingdom (that of the Old Kingdom and First Intermediate Period), as well as for the Early and Middle Bronze Ages in Palestine, Greece and Mesopotamia.

It is the document's combination of a hard, historical date with a rising of Sothis, that has apparently made it so attractive to the Sothic theorists.

The Ebers document is just as crucial, if not more so, for anchoring the next major phase of history: the important New Kingdom period and the expulsion from Egypt of the Hyksos. Late Bronze Age dating is likewise heavily dependent on the conclusions drawn from the Ebers Papyrus. The all-important date of c. 1580 BC, which divides the more obscure, early history of the the ancient world from the much more verifiable later history, is primarily a product of calculations based on this text.

The Ebers Papyrus, now regarded as being an early Eighteenth Dynasty text, is supported by another Sothic text from the middle part of that same dynasty, viz the Elephantine Stele. This latter document is less important in the absolute sense; being mainly of relative value in helping, with Ebers, to fix the Eighteenth Dynasty. Being dated as it now is to the time of Thutmose III, the Elephantine Stele enables for events
in the reign of this king to be fixed supposedly with pin-point accuracy.

With all this in mind, one could be excused for expecting these three documents to contain information of the most precise and unequivocal kind; clear facts, assisting both astronomer and historian alike. But is that what we find to be the case on close examination? We are now once again going to run quickly through the most relevant pieces of information contained in these documents, to determine if these really are precise and unequivocal. A lot of history depends on it!

CRITICAL ASSESSMENT OF THE EGYPTIAN TEXTS

(i) Readability and Information Supplied

The first problem of interpretation common to all three of these Egyptian documents concerns the identity of the current pharaoh in each case. In the case of the Illahûn Papyrus, no pharaoh is mentioned, nor has there been preserved even a partial cartouche. The Ebers document does provide a cartouche with a pharaonic name enclosed, and Ebers is probably correct in his identification of this pharaoh as Amenhotep I. Since, however, the Ebers document is inherently illegible, as many have testified, the matter must always be open to some doubt. We recall that, because of this problem, there was a great deal of controversy in the early days over the pharaoh's identity. The Elephantine Stele, for its part, also lacks both a car-
touche and a pharaonic reference, thus leading Torr to speak of "the worthlessness of this inscription to prove anything, since ... it may have been produced by any one of the successors of Thutmose III" (2).

Concerning the all-important date of the Sothic star's rising in each document, there is further uncertainty; particularly in the case of Ebers and Elephantine. The latter, for example, supplies no regnal year date at all; only the day of the month of the star's rising. The Ebers document does supply the regnal year; but once again, because of the document's illegibility, a variety of opinions as to which year is meant have been expressed by notable Egyptologists - with Brugsch and Eisenlohr favouring year 3, Lepsius year 6, and Goodwin and Ebers, year 9. The latter, which is probably the correct one, is now also the widely accepted one.

It appears that Borchardt's radical re-interpretation of the Sothic data in the Ebers Papyrus (which we touched on in Chapter 6), leading him to date Amenhotep I's ninth year about a quarter of a century later than Meyer's estimate, cannot be sustained. Edgerton has shown up quite satisfactorily the flaws in Borchardt's argument. Nevertheless Edgerton had to admit a scribal error in the process; thus perhaps conceding slightly in Borchardt's favour, at least inasmuch as the document was shown to lack perfect clarity.
(ii) Subsequent Chronology

The fixed dates for the Twelfth and Eighteenth dynasties, achieved by the current interpretation of the Illahûn Papyrus, on the one hand, and the Ebers and Elephantine texts on the other, have led to an interim period of approximately two centuries which many have claimed to be unrealistic. But it is a conclusion to which all those who accept Meyer's Sothic framework are inescapably bound. Petrie had tried to break out from this tightly-knit scheme whilst retaining the basic Sothic concept. The result was disastrous!

Even the more critical supporters of the Sothic theory realise that, in the final analysis, they must conform to the fixed Sothic dates established by Meyer. Thus Hall who, more than any other, had had great difficulty in accepting two centuries for the Second Intermediate Period, admitted that not to accept the Illahûn date would mean that (3): "... we have no really firm ground at all before the beginning of the XVIIIth Dynasty".

Gardiner echoed these sentiments when, after speaking of the "formidable difficulty" of limiting the Second Intermediate Period to two centuries, he concluded that (4):

To abandon 1786 BC as the year when Dynasty XII ended, would be to cast adrift from our only firm anchor, a course that would have serious consequences for the history, not of Egypt alone, but for the en-
tire Middle East.

In order to maintain this chronological "anchor", it seems, Egyptologists must engage in a fair amount of historical compressing. It is not uncommon to read, therefore, where Egyptologists talk about so many dynasties "having to be squeezed" into a small period of time. Gardiner (5) commented, with regard to the Second Intermediate Period, that "there were over 100 kings to be squeezed into that short space". And Long (6), speaking of the great amount of trial and error needed on the part of "later Egyptologists" to make Thutmose III a part of the Sothic scheme of things, claimed that adjustments had to be made "to accommodate all the evidence" in order to fit this particular pharaoh into the Sothic framework.

(iii) Methodology

Borchardt, of course, was quite entitled to attempt an identification of the pharaoh to whose seventh regnal year the Illahun Papyrus had referred. Such is the historian's prerogative. But were the Sothic theorists then entitled to take his identification that step further, by making it the anchor point for their Middle Kingdom chronology? We recall that it was only after some deliberation, and mainly on the basis of palaeography, that Borchardt had narrowed down his choice to two pharaohs of the mid-Twelfth Dynasty: viz Sesostris III and Amenemhet III; and that, on further palaeographical consider-
ations, he decided upon Sesostris III. What apparently had swung Borchardt in this case was his belief that the handwriting in the Illahën Papyrus was identical to that of certain fragmentary pieces of papyrii which are assumed to refer to the death of pharaoh Sesostris II, the predecessor of Sesostris III.

Again, despite the extremely flimsy evidence (even complete lack of it) in regard to the pharaoh of the Elephantine Stele, the Sothic theorists - as we saw in the example of Breasted - have had no qualms about claiming so precise a reconstruction of the major dates in Thutmose III's reign as to be able even to pin-point, in the fifteenth century BC, two actual days highlighted in that pharaoh's annals as being of significance during his Palestinian campaign.

An example as striking as this latter one seems to reflect what appears to be a definite tendency amongst the Sothic theorists boldly to erect significant portions of history, or even to insist upon "astronomically fixed" dates, on the basis of highly dubious or inadequate bits and pieces of chronological information. Obviously this is not good methodology.

PART TWO: THE CLASSICAL TEXTS (C.1320 BC)

Introduction

In regard to absolute, Sothic dating, the Era of Menophres citation provided by Theon, and the chronological statement of Censorinus, would obviously be regarded as having
far more importance than the Decree of Canopus. For the former two have enabled Meyer to bind together both the beginning of the Nineteenth Egyptian Dynasty, and the beginning of a new Sothic era, at the important historical anchor-point of c.1320 BC. The Decree of Canopus provides no such major service to the Sothic chronology. Nonetheless, Canopus is not without its own relative value in the Sothic scheme of things; and the investigation of it, as we have found, leads to the raising of some quite important points in regard to the validity of the Sothic system. These we must again touch on briefly in this section.

Similarly, therefore, to what we attempted to do in part one, in relation to the Egyptian texts, our task here in part two also will be to test the chronological value of the three Classical documents pertaining to Sothis.

CRITICAL ASSESSMENT OF THE CLASSICAL TEXTS

In the case of the three Classical texts under consideration, these - when taken together - seem to provide us with more substantial information of a chronological nature than do the Egyptian documents. Here, for instance, we do not encounter to the same degree the problems of illegibility, or lack of reference to rulers and dates of rule that characterised for the most part the Egyptian texts. Nevertheless, difficulties of these kinds are not entirely lacking.
In the case of Theon's statement, for example, there is the rather major problem of correctly identifying "Menophres". Without this name being properly identified, of course, the whole statement becomes useless from a historical point of view. A different type of problem, however, is associated with the Decree of Canopus. It is that of the apparent doubt over which of the three versions of the document is the original one. However, as we have already found, this does not seem to lead to any real difficulties from the point of view of interpreting the Canopus text. Finally, in the case of the statement of Censorinus, commentators have pointed out what they regard as being a certain degree of ambiguity or contradiction in the document's meaning.

With this preamble in mind, we shall now commence our final assessment of these Classical texts, beginning with the matter of:

(i) Correct Interpretation

According to Meyer's interpretation of the data given by Censorinus, there had been a coincidence between the rising of Sothis and the Egyptian New Year's Day in c.140 AD. Meyer had assumed that the "Great Year" referred to by Censorinus was none other than the 1460-year cycle of Sothis/Sirius. It was further argued by the Sothic theorists that the testimonies of other Classical scholars, such as Theon and Ptolemy, provided
confirmation of Censorinus. Weill (7), in a somewhat vague example, in which he also picked up a point of inconsistency in Censorinus, claimed to have discovered in Ptolemy's _Canon of Kings_ a confirmation of Censorinus. In this he was following up information of a similar kind that Meyer had gleaned from Ptolemy's _Almagest._

But of far greater importance than Ptolemy in conjunction with Censorinus, is Theon. Today the majority of scholars, following Meyer, regard Theon's statement - separating the "Era of Menophres" from the end of the Era of Augustus by 1605 years - as being an extraordinary verification of a Sothic cycle of 1460 years (commencing in c.1320 BC and ending in c.140 AD). That Theon actually referred to the Dog Star in the same text, seemed to make the connection virtually unassailable.

However, there are some rather important comments to be made in regard to all this. Long summed it up when he said that even the specialists were uncertain as to whether this "Menophres" was a city or a pharaoh of the Nineteenth Dynasty. We recall that the identifying of "Menophres" with Ramses I was settled upon, not primarily on linguistic grounds, but on a consideration which is a petitio principii. Thus Merneptah, whose name apparently transliterated quite well into "Menophres", had to be rejected as the best choice because - according to the Sothic scheme of things - his reign could not be fitted into the pre-established era of c.1320 BC. Instead, Ramses I was chosen as "Menophres"; and this despite the insistence of some scholars (eg Struve and Rowton) that his
name could not be thus transliterated.

On the other hand it is hardly likely that the interpretation of "Menophres" provided by Rowton - following Biot - that the name represented the city of Memphis, is the correct one. It was customary for the ancients to name eras after kings, not cities. Rowton probably pursued his unusual line of argument in order to set up a theory which fitted in with his own chronological scheme. It is therefore still really a question of who, rather than what, Menophres is.

There is no doubt that the matter of interpreting Theon's "Menophres" has become one of great controversy, evoking some lively debate. This is because Theon provided insufficient data regarding "Menophres"; thereby making it impossible for the name to be identified unequivocally. Moreover, the Egyptian records are silent about any "Era of Menophres".

But possibly the most significant testimony of all regarding the extremely controversial nature of Theon's statement, if Rowton is correct in what he had to say, is the example of Meyer himself. For, according to Rowton's interpretation of Meyer's final Nineteenth Dynasty arrangement, Meyer must eventually have abandoned completely his original theory about "Menophres".

Again, as far as the statement of Censorinus is concerned, it is a case of evidence provided by a Classical author which finds no reflection in any Egyptian documents. Thus, even were the Sothic theorists right in their assumption that Censorinus'
"Great Year" is also Sothic, the fact is that there is no evidence of the Egyptians ever having used, or even having referred to, a Sothic duration of 1460 years. Added to this is the significant difficulty, so tellingly summed up by van Oosterhout, that - as far as the key Classical texts alone are concerned in regard to their allusion to the 1460-year period: "Neither Theon nor Censorinus connect this period with Sirius!"

There may be some numismatic evidence from around the time of the consulate of Antoninus Pius, however, that lends support to the view that the heliacal rising of Sirius had occurred on the 1st of Thoth in that era, just as Censorinus has been interpreted as saying it had. Van Oosterhout, as we recall, drew attention to a number of emissions of coins from that era that he thought might indicate this. One particular coin, struck twenty years before 139 AD, actually referred, he said, to the beginning of the Great Year on civil Thoth 1.

The twenty year gap, however, would seem to pose a difficulty; for what could be the reason for referring to the Great Year so far in advance? Perhaps a bit strained is Van Oosterhout's explanation of the possible significance of this twenty years' anticipation of the commencement of the Great Year: viz. that then "the heliacal rising occurred in Heliopolis 5 days before Thoth 1 ie on epagomena 1".

There appear to be still further difficulties of a contradictory nature between the statements of Theon and
Censorinus. We recall that the information provided by Censorinus had led scholars to conclude that the "Great Year" of 1460 years had commenced around 139 AD. Now this information seems to be clearly contradicted by Theon's own statement that the period of 1460 years "came to an end in the fifth year of the emperor Augustus", i.e. in 26 BC.

Seti I's Candidature

We recall that certain scholars had opted for Seti I as a likely candidate for "Menophres"; mainly on the grounds that a new era was supposed to have commenced early in his reign. In chapter 8, for instance, we discussed the Speos Artemidos and Nauri inscriptions of that pharaoh, which had led Sethe to the conclusion that some sort of era - probably Sothic - had begun with the accession of Seti I. Poole also thought that the new era inaugurated during the reign of Seti I might be Sothic. Furthermore he suggested, with reference to Theon's statement, that this new era went beyond being merely the renewal of some continuous cycle (e.g. Sothic), even indicating perhaps a completely new start in calendrical dating.

Poole, too, was emphatically of the opinion that the "Era of Menophres", as spoken of by Theon, was the first of the Sothic cycles. He had drawn this conclusion from what he called the "evidence of ancient writers", which he said was "strongly against the opinion that there were Sothic Cycles before the Era of Menophres".

However, whilst many scholars are quite prepared to admit
that some sort of new era had in fact commenced early in the
reign of Seti I, it is generally agreed that this pharaoh ruled
too late to be a likely candidate for "Menophres". Further
confirming this conclusion is the "astonishing fact", as
pointed out by Rowton against those who would assume that
Seti's "era" does represent the new Sothic cycle, "that Sirius
is not mentioned" in either the Speos Artemidos or Nauri
inscriptions.

So, this being the case, what sort of new era was
inaugurated during Seti I's reign? Rowton, who claimed that
the whm mswt era of Seti I was "of a religious and a
semi-political nature [having] nothing to do with the Sothic
cycle", may have come up with the best explanation. Akhnaton's
successors prior to Seti I, he said, were all - to a greater or
lesser degree - tainted with the "heresy" of Akhnaton. Seti
however, probably being born after the reign of Akhnaton, was
really - as Albright (8) had already proposed - the first king
since the accession of the "heretic" pharaoh whose legitimacy
could not be queried on the grounds, either of having being
connected with the Aton heresy, or of not having been of royal
descent.

Claudius Ptolemy

Some scholars have puzzled over the fact, in relation to
the data of Censorinus, that if one Great Year really had
ended, and another had begun, in c 139 AD, why did the astro-
nomer Claudius Ptolemy fail to mention it? As currently ex-
plained, this astronomical event must have occurred in the mid-period (ie c. 127-151 AD) of Ptolemy’s prolific writing career. Ptolemy was of course the best known astronomer of antiquity. Moreover, he was resident at Alexandria, in northern Egypt. Yet nowhere in his writings does he make mention of this renewal of a Great Year. Ptolemy dealt in great detail with matters of a calendrical and an astronomical nature, not only of his own era, but of the preceding centuries as well. In fact Ptolemy was so thorough and wide-ranging in his research that he actually studied the Babylonian records of the eclipses which had occurred eight hundred years before his time.

How, then, does one explain his apparent silence about the advent of the Great Year? Van Oosterhout, as we recall, did not think that the matter needed much explanation. From the astronomical point of view, he claimed, the event would be of no importance at all. However, as we have just noted, Ptolemy was also vitally interested in calendrical matters. Surely van Oosterhout therefore, having been prepared to believe that the detail on a coin (struck during the Roman Empire period) was anticipating, twenty years in advance, the beginning of a Great Year’s commencement, should have had no difficulty also in accepting that Ptolemy might be interested in the commencement of such a new era, especially when it was supposed to have occurred right at the middle point of his scientific investigations!
(ii) Calendrical reform

Since we have already covered the subject of calendrical reform in detail in other parts of this thesis, especially in chapter 9 dealing with the Decree of Canopus, we are simply going to make some brief concluding remarks here.

Essential to the Sothic theory is the belief that the Egyptians did not reform their civil calendar at any point in their history, i.e., from the time of the calendar's inception in Old Kingdom times, right down until the time when Christianity became established in Egypt. The Sothic theorists insist that there is absolutely no reliable evidence to suggest that the contrary was the case. These, moreover, point to the determined resistance of the Egyptian people to the proposed reform of Ptolemy "Euergetes" at Canopus as a clear example of what the Egyptians thought about the matter.

The suggestion that Sirius, or the "divine Sothis", had a special role in Egyptian religion - being often identified with the pharaoh - and that consequently the Egyptians were averse to calendrical reform because of reasons of astrology, or superstition, may be a plausible explanation as to why a nation so well versed in scientific matters would for so long retain an inadequate calendar. Ptolemy "Euergetes" backed down in the face of the unified opposition by the Egyptian people.

However, it must be remembered that the Ptolemaic era was not the only time during this long period of Egyptian history when the country was ruled by foreign kings. The Hyksos era is
a classic case in point; parts of Egypt, at least, being for a long time under foreign rulership. And there is the possibility that this rulership was even more dictatorial than that of the Greeks. Now, we have seen that there are some indications of possible calendrical change during the Hyksos era especially. Admittedly the evidence for such is scant and, as in the case of the Aseth note appended to Manetho, possibly unreliable. But, considering how crucial the matter is to the authenticity of the Sothic theory, there appear to be sufficient indications to warrant further investigation. This the Sothic theorists have generally seemed reluctant to do.

(iii) The Problem of Synchronisms

Though proponents of the standard chronology might believe themselves to be in possession of solid synchronisms, say between Egypt and Mesopotamia, down through the centuries, more and more scholars are looking to expose the inadequacies of such a view. Rowton, for instance, had concluded that a well-documented era of known synchronisms, viz the el-Amarna period of pharaoh Akhnaton, did not harmonise chronologically with the Sothic dating. It is possible however that Rowton, being a specialist in Mesopotamian history only, and not in Egyptian, may have erred in his representation of the latter.

In more recent times, however, many scholars (9) have begun to conclude that, because of the Sothic system, the duration of Egyptian history has been grossly overextended
(except for the Second Intermediate Period which, they say, has been vastly understated). The effects of this drastic stretching of real Egyptian chronology, the revisionists argue, is that — for the earlier periods of history — many genuine synchronisms between Egypt and the rest of the ancient world must inevitably be lost. Moreover, to restore some sort of balance, these add, it has become necessary for the Sothic theorists to interpose, in the history of those nations whose chronology is tied to that of Egypt (e.g. the Hittites and the Greeks), so-called "Dark Ages" of several centuries' duration.

In his most recent book on this very subject, Centuries of Darkness, Peter James has systematically examined the broad history and archaeology of all the major nations of the ancient world, with special regard to Egypt and its chronology, to demonstrate what he believes to be the anomalous nature of a historical construction based upon the Sothic methodology.

Maspero, von Bissing, Brugsch, and other early Egyptologists may have been prudent in reacting most cautiously towards the Sothic scheme, considering what they thought to be its manifold assumptions and failure to provide any solid basis for a reliable dating system, especially as far back as the Twelfth Dynasty. If they are right, then not only is caution required, but perhaps eventually a radical re-assessment of the whole Sothic theory.

In this thesis the writer has attempted to make a positive contribution towards a sound re-evaluation of ancient history.
NOTES

(1) Hall, H., The Ancient History of the Near East (Methuen, 1913), 19.


(3) Hall, op. cit., 25.


(5) Ibid., 66.


(7) Weill, R., Bases, Méthodes et Résultats de la Chronologie Égyptienne (Paris, 1926), 9; q.v. his Compléments (1928). Weill makes reference to C. Ptolemy's Canon of Kings, Bk. IV, ch 5.


ADDENDA

ASTRONOMICAL APPENDICES
AND
BIBLIOGRAPHY

APPENDICES:

Appendix A: A Further Explanation of Astronomical Terms -------------------------------- A1-A22
Appendix B: Correctly Identifying the Sothic Star ----- B1-B25

Bibliography (four pages)
APPENDIX A:

A Further Explanation of Astronomical Terms

Introduction

Although, as we have stressed, the supposition of an unchanged civil calendar in Egypt is the most fundamental hypothesis of Sothic dating, discussions of Sothic theory often tend to become bogged down with various aspects of the heliacal rising of Sirius; especially those pertaining to the arcus visionis. What needs to be determined here is just how relevant to the overall discussion such fine points of astronomy really are. To achieve this, and since we have regularly advised the reader to consult this Appendix for clarification of these and other technical terms - such as the precession of the equinoxes - we shall introduce below a basic astronomy of the Celestial Sphere which will incorporate all of these terms. We hope that from this explanation the reader will learn to distinguish between what is essential, and what is superfluous, to the subject at hand.

For the double reason, that heliacal phenomena played an important role in Egyptian astronomy, and because the absolute chronology (1) of ancient Egypt is largely based on those few dates in Egyptian and Classical texts believed to be referring to the first visible rising, or heliacal rising, of Sirius, shortly before sunrise, it is necessary that we first grasp clearly the factors that govern the so-called 'heliacal rising'
of a star. The following explanation of the Celestial Sphere, illustrated by Figures A-C (2), is meant to assist the reader towards understanding the mechanics behind this phenomenon. Due to the absence of a theoretical astronomy in ancient Egypt, a relatively small number of concepts from elementary spherical astronomy are required for the discussion of this issue.

A Basic Astronomy of the Celestial Sphere

In Figure A (see next page) we have the earth shown at the centre of a (hypothetical) much larger sphere, upon which we may assume are located all the stars and planets without regard to their actual distances from the earth. This is commonly known as the celestial sphere. We seem to be at the centre of such a sphere. It appears to us as if the heavens rotate, but this phenomenon is due to the fact that the earth is rotating about an axis. Because of this rotation of the earth, there is a corresponding seeming rotation of the celestial sphere about a point called the North Celestial Pole (and, correspondingly, there is a South Celestial Pole).

Figure A gives the celestial sphere for an observer in north latitude $\Theta^\circ$. ATB is the path of a star from rising (A), to transit (T) and setting (B). The great circle NPS is called "meridian". A star is said to "culminate" when it is located in the meridian (3); at this moment occurs its "transit", or crossing of the meridian from east to west.
Now, if we look at the eastern horizon, we find that stars appear to rise there. E.g. at A a star rises; it climbs above the eastern horizon and transits as T, then comes down again to set on the western horizon at B. And this happens night after night: the same star will rise at the same point, will climb up in the sky, and will set at the corresponding compass point. If we look at the celestial sphere again, then of course everything appears to rotate in this manner. According to Roy's description (4): "Stars rotate as if they are blobs of paint on a sphere".

We can now draw on the sphere a special circle which we call the Ecliptic, or plane of the earth's orbit (see Figure B on next page). Precession, the term given to the conical motion of the earth's axis of rotation around a direction perpendicular to the Ecliptic, causes the equinoxes (or intersections between the celestial equator and the ecliptic) to move along the Ecliptic. The earth's axis takes about
26,000 years to swing around once; this is called a cycle of precession. It was the Greek astronomer Hipparchus who discovered this effect approximately 2,000 years ago.

Figure B

In this figure the reader will find an illustration of the celestial sphere showing the ecliptic, the yearly path of the sun against the stellar background with dates when the sun reaches Aries (♈), Cancer (♋), Libra (♎) and Capricornus (♑).

We have to remember that as the hypothetical sphere appears to rotate, so the ecliptic - being, as it were painted on the sphere - will rotate with it. This particular line is the path of the sun against the background of stars. It takes one year to make one revolution of this circle; and this is a movement independent from that of the rotation of the earth on its axis. The sun appears to move round the earth, and it takes one year to do so.

Now let us consider the situation with respect to a star
which is right in the same direction as the sun. Obviously
that star will not be seen, because of its direction. For when
the sun comes into the neighbourhood of a star on its yearly
path, then the star rises and sets about the same time as the
sun, that is to say that the star is together with the sun
above and below the horizon. If the star and sun are together
above the horizon, the star is invisible because of the
sun's glare. The sun is so much brighter than any star that it
simply swallows up the star's light. If the star is below the
horizon, it is also invisible. Thus in such a situation the
star is equally invisible at daytime and at night.

But we have seen that the sun moves along the ecliptic at
one degree per day. Thus very gradually, at about this rate,
the sun will move away from the star; eventually far enough
away so that the star rises before the sun does. Figure C il-
lectures this situation, with the star being above the horizon
while the sun is still below the horizon. (In this Figure, the
big arrow indicates the daily rotation, whilst the small arrow
near the sun shows the direction of its motion in the
ecliptic).

Figure C
In this situation the rising of the star is just visible before dawn. This phenomenon is called the heliacal rising of a star. It is seen in the early morning light just above the horizon in the eastern hemisphere just before it gets light enough, with the sun rising, to blot it out. This will occur once a year, because it takes the sun one year to move round the ecliptic, and so the heliacal rising of a star will take place once a year - but it will not be the calendar year; it will be the seasonal year.

Arcus Visionis

The depression of the sun below the horizon, as shown in Figure C, is called arcus visionis, that is, the negative altitude of the sun which is required so that a star becomes visible again after a certain interval of time during which the star was not to be seen. Rightly, therefore, has Parker (5) stated that the factors that govern the heliacal rising "are the arcus visionis (β), that is, the height of the star above the horizon which is necessary for visibility, and the latitude of the observer (θ')".

Disagreements over 'Arcus Visionis'

According to van Oosterhout (6), ever since the beginning of discussions on the heliacal rising of Sirius, "there has been confusion about the 'arcus visionis'". This, he
explains, is mainly due to the use of one expression for two different concepts. Whereas Borchardt/Neugebauer and van der Waerden, he says, define a quantity describing an actual situation: viz the depth of the sun below the true horizon on the day of the first and last visibility, Baehr and Ingham, on the other hand, do not describe an actual situation, but state a necessary (though not sufficient) condition for the visibility: viz the maximum depth of the sun when the star is at the horizon, necessary for the star to be visible on that day.

Van Oosterhout (7), however, insists that the "arcus visionis is not an observed but a calculated quantity and only defined for the days of the first and last visibility". Complicated expressions such as "lower (or upper) bound of the arcus visionis" as used by van der Waerden (8) to describe the quantity of the "arcus visionis", he says, serve only to hamper discussion of the subject. Van Oosterhout's own preference was for the phrase, critical depth, about which he explained (9):

In most writing, no distinction is made between the critical depth and the arcus visionis. This has led to much confusion. The critical depth depends on the difference: azimuth [ie angular distance extending from the zenith to the horizon] of the star minus azimuth of the sun - at the instant of the star's rising - which slowly changes over the centuries and with geographic latitude. For instance: for Sirius the azimuth
distance changes from 58 degr. ... to 45 degr. ... for Heliopolis as the place of observation. For Thebes these figures are: 55 and 43.

Apart from this variation "the critical depth", according to van Oosterhout (10), "can be treated as a constant, even for different places of observations, under constant atmospheric conditions"; a problem being, however, that most probably the quality of the atmosphere today is different from that of antiquity. The value of the critical depth can be obtained only from observations. The 'arcus visionis' on the other hand, he added, is not a constant; it being affected by various things, eg by a change of geographic latitude.

Some Modern Estimates of 'Arcus Visionis'

Although the heliacal rising of Sirius has been discussed at least since the seventeenth century (11), it was not before 1925 that actual observations were made in Egypt, by Borchardt (12). For these observations, P. Neugebauer calculated an 'arcus visionis' of 9.4°. Afterwards Neugebauer, using the same observations again, but averaging the 'arcus visionis' of the individual observations, then settled on the new value of 9.0°. However the authors of the "Beobachtungen" go on to state - just a few few lines after having given their account of the averaging procedure - that this figure of 9.0° was probably still too high (13).