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Painted by Sir Tho Laverace. P R.A.
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THOMAS YOITNG, M.D.-F.R.S._F.L.S. \&e. \&c
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## MEMOIR

OF THE

## LIFE

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## THOMAS YOUNG, M.D. F.R.S.

## Foreign assochate of the royal institute of france,

 ETC. ETC.W1TH

> A CATALOGUE

OF IIIS

WORKS AND ESSAYS.

> LONDON:
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> MDCCCXXXI.

## ME MO I R,

\&c. \&c.

The following slight Memoir of the Life of the late Dr. Young was drawn up, from some short memoranda of his own writing in the possession of a near connexion, by one who had the advantage of long and intimate acquaintance with that distinguished scholar and philosopher; but who, never having been engaged in the pursuits of accurate science, feels himself incompetent to give more than an imperfect sketch, which he trusts to see filled up hereafter by an abler hand.

Dr. Thomas Young, a man eminently distinguished in more departments of literature and science than any other individual of his age and country, was born at Milverton in Somersetshire, the 13th of June, 1773. He was the eldest of ten children of Mr. Thomas Young of that place, and his mother was a niece of Doctor Richard Brocklesby, a physician of eminence in the metro-
polis, who was well known both from his connexion with the first literary societies, and with the highest political circles of the times in which he lived.

His parents were both of them of the society of Quakers, and of the strictest of a sect, whose fundamental principle it is, that the perception of what is right or wrong, to its minutest ramifications, is to be looked for in the immediate influence of a Supreme intelligence, and that therefore the individual is to act upon this, lead where it may, and compromise nothing. To the bent of these early impressions he was accustomed in afterlife to attribute, in some degree, the power he so eminently possessed of an imperturbable resolution to effect any object on which he was engaged, which he brought to bear on every thing he undertook, and by which he was enabled to work out his own education almost from infancy, with little comparative assistance or direction from others.

From a very early period Dr. Young was chiefly an inmate in the family of his maternal grand-father, Mr. Robert Davies, of Minehead; a gentleman who amidst mercantile avocations, though no very deep or accurate scholar, had culti-
vated a taste for classical literature, which it was his earnest endeavour to impress upon the mind of his grandson. It is stated that whilst domesticated with him, he had learnt to read with fluency when he was two years old, and that soon after this, in the intervals of his attendance on a village schoolmistress, he was made to commit to memory a number of English poems, and even some Latin ones, the words of which he retained without difficulty, although at the time unacquainted with their meaning.

Before he was six years old, he attended the seminary of a dissenting minister, and went afterwards to a school at Bristol, where he remained about a year and a half, and where the deficiency of the instructor appears to have advanced the studies of the pupil, as he here first became his own teacher, and had by himself studied the last pages of the books used, before he had reached the middle under the eye of the master.

His father had a neighbour, a man of great ingenuity, by profession a land surveyor and land steward; and in his office, during his holidays, he was indulged with the use of mathematical and philosophical instruments, together with the perusal of three volumes of a Dictionary
of Arts and Sciences, which he also found there. These were to him sources of instruction and delight of which he seemed never to weary, and which, thus accidentally thrown in his way, had probably no small influence on the issues of his future life.

In 1782, he was sent to the school of a Mr. Thompson, at Compton, in Dorsetshire, of whom he was always accustomed to speak with great respect, as a person of an enlarged and liberal mind ; and who, possessed of a moderate and miscellaneous library, permitted and encouraged his scholars to turn it to their profit; the principle which he adopted in the course of his instructions, being to allow them a certain degree of discretion in the employment of their time.

Here Young went through the ordinary course of Greek and Latin Classics, together with the elementary parts of the Mathematics; and by rising earlier and sitting up later than his companions, with the assistance of a schoolfellow who had some French and Italian books, he rendered himself tolerably familiar with those languages. He had acquired, in his visits to his father's neighbour, the art of land surveying, and the amusement of his walks was to measure heights with a quadrant.

The next study he undertook was Botany, and for the sake of examining the plants which he gathered, he attempted the construction of a microscope from the descriptions of Benjamin Martin. This led him to Optics; but in order to make his microscope, he found it necessary to procure a lathe. Every thing then gave way to a passion for turning, and science was forgotten for the acquirement of manual dexterity; until falling upon a demonstration in Martin which exhibited some fluxional symbols, he was never-satisfied till he had read and mastered a short introduction to the doctrine of Fluxions.

Mr. Thompson had left in his way a Hebrew Bible. He began by enabling himself to read a few chapters, and was soon absorbed in the study of the principal Oriental languages. At the age of fourteen, when he quitted Mr. Thompson's school, he was thus more or less versed in Greek, Latin, French, Italian, Hebrew, Persic, and Arabic; and in forming the characters of those languages, he had already acquired much of the beauty and accuracy of penmanship which was afterwards so remarkable in his copies of Greek compositions, as well as of those subjects connected with the literature of ancient Egypt.

In 1787, the friends of Dr. Young were beginning to think seriously of the line in life which might be most advantageously taken by a youth of such extraordinary promise. When at the house of one of his relations he accidentally met a connexion of Mr. David Barclay, of Youngsbury, in Hertfordshire, who was then wishing to form an arrangement for the education of his grandson, and through the intervention of Sir William Watson, it was agreed that Dr. Young and the grandson of Mr. Barclay should pursue their studies together, under a private tutor, in Mr. Barclay's house. The tutor who was engaged, found a situation of greater permanence, and never came; so that two boys being left together, whose ages differed only about a year and a half, Young, then little more than fourteen, took upon himself, provisionally, the office of preceptor. They were afterwards joined by a gentleman who was then in progress of perfecting himself in the higher branches of classical attainment, of somewhat maturer years, and who has since been known to the world as the author of the "Calligraphia Græca." But Dr. Young did not relinquish the task which he had previously undertaken, and already far advanced beyond the limits of ordi-
nary scholastic attainment, was the principal director of the studies of the whole party.

When about the age of fourteen, he was attacked by symptoms of what was feared to be incipient consumption. But under the attendance of his uncle Dr. Brocklesby, and Baron Dimsdale, he recovered his health, without suffering any ultimate inconvenience, and was enabled for the most part, to pursue his labours through the whole duration of his indisposition, merely relieving his attention by what, to him, stood in the place of repose-a course of Greek reading in such authors as amused the weariness of his confine. ment.

In the five years between 1787 and 1792, residing during the summers in Hertfordshire, and for some months of the winter in London, with no other assistance than that of a few occasional masters in the latter place, he had rendered himself singularly familiar with the great poets and philosophers of antiquity, keeping ample notes of his daily studies. Of the various and conflicting opinions of the ancient philosophers he had drawn up a most admirable analysis; and as his reading was not merely the gaining words and phrases, and the minuter distinctions of dialects,
but was invariably also directed to what was the end and object of the works he laboured through, it is probable that the train of thought into which he was led in this analysis, was not without its effect, in somewhat mitigating his attachment to the peculiar views of the sect amongst whom he had been born.

He had acquired a great facility in writing Latin. He composed Greek verses which stood the test of the criticism of the first scholars of the day, and read a good deal of the higher mathematics. His amusements were the studies of botany and zoology, and to entomology in particular he at that time gave great attention.

In the winters of 1790 and 1791, having prepared himself by previous reading, he attended the lectures of Dr. Higgins in chemistry, and began to make some simple experiments of his own on a small scale. But he was afterwards accustomed to say, that at no period of his life was he particularly fond of repeating experiments, or even of very frequently attempting to originate new ones; considering that, however necessary to the advancement of science, they demanded a great sacrifice of time, and that when the fact was once established, that time was better employed
in considering the purposes to which it might be applied, or the principles which it might tend to elucidate.

His uncle Dr. Brocklesby had at this time desired to receive from him a regular report of his literary and scientific pursuits, intending to take upon himself the supervision of his further education for the practice of physic, which was the line he recommended him to adopt ; and having communicated some of his Greek translations to $\mathbf{M r}$. Burke and Mr. Windham, with both of whom Dr. Brocklesby had lived in intimacy, an acquaintance with these two distinguished persons ensued; in the course of which, Mr. Burke was so greatly struck with the reach of his talents and the extent of his acquirements, more particularly by his great and accurate knowledge of the Greek language, that Dr. Young may be considered as in no small degree indebted to the good offices of that eminent statesman, for the extent of interest which his uncle took from this period in his future settlement in life.

It may probably be considered that it was in these years that his character received its developement. He was never known to relax in any object which he had once undertaken. During the
whole term of these five years, he never was seen by any one, on any occasion, to be ruffled in his temper. Whatever he determined on, he did. He had little faith in any peculiar aptitude being implanted by nature for any given pursuits. His favourite maxim was, that whatever one man had done, another might do ; that the original difference between human intellects was much less than it was generally supposed to be; that strenuous and persevering attention would accomplish almost any thing; and at this season, in the confidence of youth and consciousness of his own powers, he considered nothing which had been compassed by others beyond his reach to achieve, nor was there any thing which he thought worthy to be attempted, which he was not resolved to master.

This self-conducted education, in the privacy of a singularly regular family, was not however without its disadvantages. The acquisitions he was thus making in seclusion were great, but he was not in the way of gaining that which is acquired insensibly in the conflict of equals in the commerce of the world-the facility of communicating knowledge in the form that shall be most immediately comprehended by others, and the tact in putting it
forth, that shall render its value immediately appreciated.

It was in 1791 that he made his first communications to the press, through the Monthly Review and the Gentleman's Magaziṇe, being Greek criticism, chemical theories, and remarks on botany and entomology.

Towards the end of 1792, Dr. Young established himself in lodgings in Westminster, in which he resided about two years, for the purpose of pursuing his medical studies, attending the lectures of Baillie and Cruickshank in the Hunterian school of anatomy ; and he was during that period amongst the most diligent of the pupils of St. Bartholomew's Hospital.

In 1793, he made a tour in the west of England, principally with a view of studying the mineralogy of Cornwall; and about this time having been introduced to the acquaintance of Charles Duke of Richmond, who had long been a friend of his uncle's, and was then Master-General of the Ordnance, he was offered by his Grace the situation of assistant-secretary in his house. He felt that this was an opportunity for entering into public life which might lead to advantage and distinction. Mr. Burke and Mr. Windham recommended him
rather to proceed to Cambridge and study the law ; but after some consideration of these conflicting proposals, he determined to adhere to the pursuits of science, and to proceed to the practice of physic, as most congenial both to his predilections and his habits, and to which the position occupied by his uncle appeared to offer a natural introduction.

In this year he gave to the Royal Society his Observations on Vision, and his Theory of the Muscularity of the Crystalline Lens of the Eye, which became the subject of much discussion, and John Hunter immediately laid claim to having previously made the discovery. Dr. Young was soon afterwards elected a Fellow of the Royal Society, when he had just completed his twenty-first year.

In the autumn of 1794 he went to Edinburgh, and there attended the lectures of Doctors Black, Munro, and Gregory. He pursued every branch of study in that university with his accustomed intensity, but made the physical sciences more peculiarly the objects of his research. He now separated himself from the Society of Quakers, and amidst his medical, scientific, and classical labours, he determined on cultivating some of those arts in which he considered that his early education
had left him deficient. But every thing, be its nature what it might, was with him a science; whatever he followed, he followed scientifically. He was extremely fond of music, and of the science of music he rendered himself a master. He had at all times great personal activity, and in youth he delighted in its exercise. But perhaps it may provoke a smile, though too characteristic an anecdote to omit, that in instructing himself in the figure of a minuet, he made it the subject of a mathematical diagram.

Towards the close of 1795 he went to the university of Gottingen, where he took his doctor's degree. His extraordinary attainments, and the almost incredible industry with which he pursued his studies in all their variety, excited the wonder of the laborious school in which he had now placed himself. He found their academical library peculiarly rich in works of reference; and in composing his inaugural dissertation, " De Corporis Humani Viribus Conservatricibus," he left few volumes unconsulted which had any connexion with the subject on which he was treating.

In all periods of his life Dr. Young was entirely exempt from those dissipations into which young persons unhappily very generally fall, and here, as
at Edinburgh, he diversified his graver studies by cultivating skill in bodily exercises. He took lessons in horsemanship, in which he always had great pleasure, and practised under various masters all sorts of feats of personal agility, in which he excelled to an extraordinary degree.

The victories of the French at this time prevented him from visiting Italy, which he had intended to do previously to his return to England; and unwilling to be deficient in any species of knowledge, he proceeded to Dresden; where he: spent some time for the purpose of studying the works of Italian art in the galleries of that city, and to compare what he saw with that which he had learnt of them from the Lectures of the professors of Gottingen. Before returninghome, hecompleted his stay on the Continent by a short visit to Berlin.

Dr. Young, during his residence in Germany, had gained a very general and accurate acquaintance with the language and literature of that country, which he kept up throughout his life; but he remarked that he found in Germany a love of new inventions, singularly, and somewhat pedantically, combined with the habit of systematizing older ones, and giving an importance to things in themselves trifling, which in his
case rather confirmed an original habit of dwelling on minutiæ more than his subsequent experience led him to think was advantageous.

In consequence of some new regulations of the College of Physicians, which had taken place during his residence abroad, he found himself precluded from immediately practising as a licentiate in London; he therefore entered himself as a fellow-commoner in Emanuel College, Cambridge, of which Dr. Farmer was then master, who was an intimate friend of his uncle's. He here proceeded to take his regular degrees in physic in that university, pursuing, during his residence, the various studies in which he was engaged; but finding no rival in the variety of his knowledge, and few competitors in most of its branches, he lived with those most highly gifted, discussing subjects of science with the professors, but not attending any of the public lectures, considering that they were in their nature intended for a junior class of students, and relating to branches of knowledge with which he had already made himself acquainted.

Dr. Brocklesby died in December 1797, when the larger part of his fortune was inherited by his nephew, Mr. Beeby; the remainder, with his
house, his books, and his pictures, was left to Dr. Young. He now found himself in circumstances of independence, surrounded by a circle of academical friends and associates, and formed many friendships in distinguished and highly cultivated society, which he continued to prize and to enjoy through life.

He had, during his residence at Cambridge, given some papers to the Royal Society, and had amused himself by contributing several essays on philosophical and other subjects to some periodical publications; a part of these he afterwards reprinted, but considered others of a lighter texture than would bear the criticism of severer experience.

When his necessary residence at college was completed, Dr. Young settled himself as a physician in London, in Welbeck-street, where he continued to reside during twenty-five years. It was not long, however, before he accepted the situation of Professor of Natural Philosophy in the Royal Institution, where he was for two years colleague as lecturer with Sir Humphrey Davy. The first volume of the Journals of the Royal Institution and a part of the second were edited, and for the most part composed by him. He gave two

Bakerian lectures on the subjects of Light and Colours to the Royal Society, and in 1802 he published a Syllabus of a Course of Lectures on Natural and Experimental Philosophy, with mathematical demonstrations of the most important theorems in mechanics and optics ; and containing the first publication of his discovery of the general law of the Interference of Light, being the application of a principle which has since been universally appreciated as one of the greatest discoveries since the time of Newton, and which has subsequently changed the whole face of Optical science.

As a lecturer at the Royal Institution, Dr. Young was apt, in no small degree, to pass the capacities of his audience, who at this conjuncture were led to their attendance more as a matter of fashion, than from a love of research, and who for the most part had little previous knowledge. His style was compressed and laconic ; he went into the depths of science, and indeed gave more matter than it would perhaps have been possible for persons really scientific to have followed at the moment without considerable difficulty.

In the summer of 1802 Dr . Young accompanied the present Duke of Richmond and his brother,

Lord George Lennox, in his medical capacity, to Rouen in Normandy, with their tutor, Mr. Vincent; and in an excursion from thence to Paris, was first present at the discussions of the National Institute of France, at that time attended by Napoleon; where he made the acquaintance of several leading members of that distinguished body, into which he himself was eventually elected. On his return he was constituted foreign secretary to the Royal Society, an office which he held during life, being long their senior officer, and always one of the leading and most efficient members of their council.

In 1804, Dr. Young married Miss Eliza Maxwell, daughter of James Primrose Maxwell, Esq., of Cavendish-square, who has lived to lament his loss, after an union which was attended with uninterrupted happiness.

At this time he resigned his office as lecturer to the Royal Institution, it being thought by his friends that his holding it longer would be likely to interfere with his success as a medical practitioner. This view, as regarding his continuance in a situation which would appear to the public to be anomalous to his profession, and hardly compatible with its duties, was probably a
just one. But in settling in married life, Dr. Young carried a deference to the supposed feelings of the world towards those physicians who distinguished themselves in lines of research not obviously connected with their calling, to an excess which, in a man of his extraordinary talents and attainments, was certainly to be lamented, and possibly even with reference to those objects proposed to be compassed by it.

His resolution at that juncture was to confine himself for the most part to medical pursuits, and to make himself known to the public in no other character. But he had resolved on that which to him was impossible. He never slackened either in his literary or philosophical researches. He was always aiding, and always willing to be the counsellor of any one engaged in similar investigations. He was living in the first circles of London, amongst all who were most eminent. The nature of his habitual avocations was necessarily well known; and therefore in putting forth his nonmedical papers, separately and anonymously, he was making a fruitless as well as voluntary sacrifice of the general celebrity to which he was entitled; and shrinking as it were from the cumulative reputation which he must otherwise have
enjoyed, he waived, in some degree, the advantage which is given by a great name towards the pursuit even of professional success.

In 1807 however, Dr. Young published his " Course of Lectures on Natural Philosophy and the Mechanical Arts," in two volumes quarto. This elaborate work he stated to have been the result of the unremitting application of five years; two having been given to the composition of the original lectures, and three more to the compilation of the mass of references in the second volume, to all those works to which the student might advantageously have recourse who wished to pursue any more minute enquiry ; and to incorporating at the same time with the Lectures, as at first given, such results as might require insertion.

The booksellers engaged in this publication failed at the moment of its coming out, which greatly injured the immediate sale of the work; but it was a mine to which every one has since resorted, and contained the original hints of more things since claimed as discoveries, than can perhaps be found in a single production of any known author. For some years, indeed, it seemed hardly to have made its way to general use in England, but it was so appreciated by the phi-
losophers of the Continent, that one of the men most distinguished for science in Europe has been known to say, that if his library were on fire, and he could save only one book from the conflagration, it should be the Lectures of Dr. Young.

For sixteen successive years from the period of his marriage, Dr. Young passed his winters in London and his summers at Worthing, having been in 1810 appointed physician to St. George's Hospital. In his profession his published labours would prove him to have been of the most learned of scientific physicians, and his judgment and acuteness were equally great: but in the practice of medicine Dr. Young was not one of those who were likely to win the most extended occupation amongst the multitude. He was averse to some of the ordinary methods by which it is acquired. He never affected an assurance which he did not feel, and had perhaps rather a tendency to fear the injurious effects which might eventually result from the application of powerful remedies, than to any overweening confidence in theirimmediate efficacy. His treatises bear the same impress. That on Consumption, is a most striking instance of his assiduity in collecting all recorded facts, and his abstinence in drawing inferences from isolated
cases, or putting forth that which he did not feel was established with certainty. Possibly he herein was an example, that increase of knowledge does not tend to increase of confidence, and that those whose acquirements are the greatest, meet in the progress of their investigations with most that leads to distrust. However it might be, his practice, though respectable, was never very extensive.

Dr. Young afterwards published a " Syllabus of Lectures on the Elements of the Medical Sciences," as delivered by him at the Middlesex Hospital, and his " Introduction to Medical Literature, including a System of Practical Nosology" -the latter a work of great labour, forming like his Natural Philosophy, a text book of the highest practical utility, and accompanied by a mass of references, which, to industry and perseverance less than his, it should seem almost impossible to have accumulated.

The Lectures, like every thing which proceeded from Dr. Young, were, even in his own estimation, too full of matter and too much compressed to be conveniently followed by the hearer in a course of oral instruction. Indeed, in all things he was rather too apt to presume a knowledge in other persons which they did not possess, and consequently
to fail in his estimate of how much of explanation was needed in communicating the results of science to those who were comparatively ignorant.

To the larger of these works he prefixed a " Preliminary Essay on the Study of Physic;" in which he gives a singular picture of what, in his opinion, is required to constitute a well-educated physician; enumerating nearly every possible quality of which man could wish, but of which few could hope, the attainment.

Dr. Young contributed to the Quarterly Review a variety of articles, literary and scientific. He first engaged, at the suggestion of Mr. George Ellis, one of his most intimate and most valued friends, to furnish those on medical subjects to that work. But his communications soon branched into other lines, many of them connected with the higher departments of science, and containing the results of some of his most laboured researches. The Review of Adelung's Mithridates, Vol. X. October 1813, is perhaps the most remarkable, not only from the immense knowledge it displays of the structure of almost all languages, but as having been the composition which first led him to the investigation of the lost literature of ancient Egypt.

In the year 1814, Sir William Rouse Boughton had brought with him from Egypt some fragments of Papyri, which he put into the hands of Dr. Young; the fragment of the Rosetta stone having been about this time deposited in the British Museum, and a correct copy of its three inscriptions having been engraved and circulated by the Society of Antiquaries. Dr. Young first proceeded to examine the enchorial inscription, and afterwards the sacred characters, and after a minute comparison of these documents, he was enabled to attach some " Remarks on Egyptian Papyri, and on the inscription of Rosetta," containing an interpretation of the principal parts of both the Egyptian inscriptions on the pillar, to a paper of Sir William Boughton's, which was published by the Society of Antiquaries in 1815, in the eighteenth vo lume of the Archæologia.

Dr Young now found he had discovered a key to the lost literature of ancient Egypt. He had occupied himself, though without deriving from it the asistance he had at first expected, in the study of the Coptic and Thebaic version of the Scriptures; but having satisfied himself of the nature and origin of the enchorial character, he produced the result to the world anonymously in the Museum

Criticum of Cambridge, part the sixth, published in 1815 ; being then determined to prosecute the discovery, but at the same time abstaining from claiming it in a more substantive form, from the resolution he had previously taken to be known only as a medical author.

The labour he bestowed on these investigations, and the minuteness and accuracy with which he copied the papyri, and compared the materials which came into his hands, would be nearly incredible to those who had not access to him whilst employed on this pursuit.

In 1816, he printed and circulated two additional Letters relating to his hieroglyphical discoveries, and the inscription of Rosetta; the first addressed to the Archduke John of Austria, who had recently been in this country, the other to M. Akerblad. These letters announce the progress of the discovery of the relation between the Egyptian characters and hieroglyphics, forming the basis on which Dr. Young continued his enquiries, as well as of the system afterwards carried further in its details by M. Champollion, whose attention had long been directed to similar studies, and in which he has since so greatly distinguished himself. The letters were first pub-
lished when re-printed in the seventh number of the Museum Criticum in 1821 ; and were, with the former letters in that work, beyond all question or dispute, the earliest announcement of the discovery of a key to a character which had remained uninterpreted for ages.

In the same year he agreed with Mr. M•Vey Napier to furnish various articles to the Supplement to the Encyclopædia Britannica, conducted under the superintendance of that gentleman; and in this work, under the head "Egypt," he first brought out the whole results of his discoveries in a perfect and concentrated form.

To the Supplement of the Encyclopædia Britannica, Dr. Young furnished sixty-three articles, scientific, biographical, and literary; the signature by which they are marked, being two consecutive letters of the sentence " Fortunam ex aliis." His adoption of such a motto appears to have been caused by his considering at this period of his life, that he had not succeeded to his wish or expectation in the profession which he had chosen, and that he had reason to complain of some injustice, in that the extent and utility of his labours in science, after having been fully appreciated by the philosophers of the Continent, had not appeared
to have met with the same acceptance amongst his own countrymen. But this feeling, as it was transitory, so it should seem that it was hardly well-founded. By those competent to form a judgment, he was known to stand at the head both of the letters and of the science of England; but from the time of his quitting the professorship of the Royal Institution, all his philosophical and literary tracts, with the exception of his Lectures and his communications to the Royal Society, were scattered through so many and such diverging channels of publication, as well as branched into such varied lines, that they never were within the reach of any one class of readers, nor ever in the aggregate came before the public as proceeding from him; to which may be added, that the slightest reference to his non-professional works will shew him, in these years, to have used expressions studiously to conceal himself.

Of Dr. Young's philosophical articles in the Supplement to the Encyclopædia Britannica, some of which contain the results of his most elaborate investigations, the writer of the present memoir is not competent to speak. Many of his biographical sketches are admirably given; but he would refer to the Life of Porson, not only as being in
itself a most masterly production, but as containing a very interesting indication of some of Dr. Young's opinions, both on the value of classical studies, and on the mechanism of the human mind ; and he would instance the dissertation on "Languages," as containing the stupendous collections he had made for the subject, when led to it by reviewing Adelung's Mithridates for the Quarterly Review.

Early in 1817, Dr. Young having occasion to visit a patient in Paris, was greatly pleased with his reception in the scientific circles of that metropolis. With the Baron Alexander Von Humboldt, Messrs. Arago, Cuvier, Biot, and Guy Lussac, he had made previous acquaintance in this country. He found himself happy in renewing his intercourse with these very eminent men, and after his return to London, he went back to Paris for a few weeks in the summer of the same year.

In 1818, he was appointed by a commission under the Privy Seal, together with Sir Joseph Banks, Sir George Clerk, Mr. Davies Gilbert, Dr. Woollaston, and Captain Kater, a commissioner for taking into consideration the state of the weights and measures employed throughout Great Britain. Dr. Young acted as secretary at the
meetings of this Board, and to the three Reports which were laid before Parliament he furnished both the scientific calculations, and the attached account of the various measures customarily in use. It seems right to state, that in pursuing these investigations it was his opinion, that however theoretically desirable it might be, that all weights and measures should be reducible to a common standard of scientific accuracy, yet that, practically, the least possible disturbance of that to which people had long been habituated was the point to be looked to, and on this ground he was extremely averse to unnecessary changes.

Towards the end of the year 1818, Dr. Young was appointed secretary to the Board of Longitude, with the charge of the supervision of the Nautical Almanack, under a new Act of Parliament brought in by Mr. Croker and Mr. Davies Gilbert; having in the first instance been nominated in the Act as one of the Commissioners, without his previous knowledge. This appointment was to him a very desirable one, though the labour in which it involved him was great, as his anxiety to increase his medical practice henceforth ceased, and it made that the business of his life which had always been his inclination.

He now discontinued his residence at Worthing, and devoted the summer to a hasty tour into Italy, an object which he always had in view. In about five months he visited all the most remarkable Italian cities, and amongst other objects of interest, gave the first place to the examination of the Egyptian monuments preserved in that country. He returned to England by Switzerland and the Rhine.

From the year 1820 to the end of his life, Dr. Young continued to furnish a variety of astronomical and nautical collections to Brande's Philosophical Journal, the greater part of which were original, and others which were translated were accompanied by his own comments.

In 1821, he published anonymously an "Elementary Illustration of the Celestial Mechanics of La Place, with some additions relating to the motion of Waves and of Sound, and to the cohesion of Fluids." This volume, and the article "Tides," in the Supplement to the Encyclopædia Britannica, were considered by him to have contained the most fortunate of the results of his mathematical labours. He proceeds in his own course and manner of investigation, and uses his own processes, and the great reach of mind displayed in these
works seems universally acknowledged ; but whether he have sufficiently established all the points which he considered himself to have proved, remains matter of dispute amongst those best qualified to judge. They were spoken of in the highest terms of praise by Mr. Davies Gilbert from the Chair of the Royal Society; but there are some amongst the most distinguished of surviving English philosophers, who still think that his theory of the Tides rests too exclusively on analogies, and that many of the elements of the computation are too much out of human reach to render the boldness of the original thought susceptible of being subjected to the severity of mathematical deduction.

Dr. Young as a mathematician was of an elder school, and was possibly somewhat prejudiced against the system now obtaining, both amongst the continental and the English philosophers; as he thought the powers of intellect exercised by a preceding race of mathematicians, were in no small danger of being lost or weakened by the substitution of processes in their nature mechanical.

The next year he went again to Paris, and in 1823 he published his "Account of some recent

Discoveries in Hieroglyphical Literature and Egyptian Antiquities," in which he gave his own original alphabet, his translations from papyri, and the extensions which that alphabet had received from M. Champollion. This was the first non-professional publication since 1804 , to which he had prefixed his name, and made open claim to his discoveries; having, as stated in his Preface, now attained his fiftieth year, and having at last determined to throw off the shackles by which he had hitherto considered himself to be bound by the etiquette of a medical practitioner.

At this time he attempted to form a society of about fifty subscribers, for the lithography of a collection of plates of Egyptian antiquities, subservient to the study of hieroglyphical literature. This work was, however, entirely carried on by Dr. Young, and was afterwards made over to the Royal Society of Literature, and continued during the remainder of his life, to be executed under his supervision.

In 1824, he made an excursion to Spa and to Holland, and on his return undertook the medical responsibility and mathematical direction of a society for life insurance. This was established at a moment when a mania for joint stock
companies was springing up in England, and which at the time was supposed to offer great pecuniary advantages ; but Dr. Young's most scrupulous regard to what he supposed the strictest justice, never forsook him: he declined all participation in the speculation, and confined himself to the performance of the duties which he undertook. The connexion however with this company led him into new lines of research, in which he took great interest. He contributed to the Royal Society a "Formula for expressing the Decrement of Human Life," in a letter addressed to Sir Edward Hyde East, which was published in the Philosophical Transactions for 1826; and a " Practical Application of the Doctrine of Chances," to Brande's Philosophical Journal for October in the same year; whilst he had a singular satisfaction in witnessing the prosperity of the concern in the department under his direction.

The year before this he removed from Welbeckstreet to a house which he had built in Park Square in the Regent's Park, where he continued to reside during the remainder of his life, and where, in a situation to which he was extremely attached, he led the life of a philosopher, surrounded by every domestic comfort, and enjoying
the pleasures of an extensive and cultivated society, who knew how to appreciate him. He expressed himself as having now attained all the main objects which he had looked forward to in life as the subject either of his hopes or his wishes. This end being, to use his own words, " the pursuit of such fame as he valued, or of such acquirements as he might think to deserve it."

In 1827, Dr. Young was elected one of the eight foreign members of the Royal Institute of France, and was much gratified, not only by the honour conferred, but by being associated with so many distinguished persons, with whom he had long been in habits of correspondence and of friendship.

His health had hitherto, with the exception of the consumptive tendency which had visited him in youth, been uninterrupted by a day's serious illness, and no person would have appeared as giving a promise of greater longevity; but in 1828 there was a perceptible diminution of strength. In that summer he went to Geneva, and appeared to suffer what was to him an unusual degree of fatigue on great bodily exertion, and his friends from that time could not help remarking symptoms of age which appeared to be on the increase, and which
contrasted strongly with the singular freedom from complaint which he had hitherto enjoyed.

During the time that Dr. Young was abroad, the general state of the finances of the country had been submitted to the examination of a Committee of the House of Commons. Amongst other things, some of the severer economists had brought under their consideration the construction and utility of the Board of Longitude as being under the direction of the Admiralty, and as giving an allowance of a hundred pounds a year to certain professors of the two universities, whose attendance was not often called for. The committee did not consist of members who were much acquainted with science; not one scientific person was examined before them. The amount of saving by the abolition of the only salaries which the government of England held forth for the encouragement of science, little if at all exceeded $\mathscr{E} 500$ a year ; and though many projects which might not prove of utility were referred by Government to this Board, yet the sums actually expended through them on such as they might conceive to be useful, had been extremely limited. But on the recommendation of this committee a bill was passed abolishing the Board, at the same time permitting the Admiralty to retain the officer
entrusted with the calculations of the Nautical Almanack.

Dr. Young continued to execute these duties; but this singular, and as it should seem ill-advised proceeding, caused great heart-burnings and discontent in the scientific bodies, amongst those who considered themselves or their friends treated unhandsomely as well as illiberally, in the manner in which their services had been dispensed with; and the assistance of men of science was soon found to be so indispensable to many departments connected with the Admiralty, that a new council of three members, consisting of Dr. Young, Captain Sabine, and Mr. Farraday, was appointed for the performance of the duties which had before devolved upon the Board.

The discussions incident to this subject, and the various reports which Dr. Young had in consequence to draw up, together involved him in more labour than the situation of his health rendered him competent to perform without injury, and exacerbated a complaint which it afterwards appeared must have been long in progress, but which now was bringing him rapidly to a state of extreme debility.

He had from the month of February 1829, suf-
fered from what he considered repeated attacks of asthma, and though he said little of it, as unwilling to alarm those about him, was evidently uneasy at the situation of his health. This gradually deteriorated. He had in the beginning of April great difficulty in breathing, with some discharge of blood habitually from the lungs, and was in a state of great weakness. His friends and physicians, Doctors Nevinson and Chambers, considered that there was something extremely wrong in the action of the heart, as well as that the lungs were very seriously affected.

Though thus under the pressure of severe illness, nothing could be more striking than the entire calmness and composure of his mind, or could surpass the kindness of his affections to all around him. He said that he had completed all the works on which he was engaged, with the exception of the rudiments of an Egyptian Dictionary, which he had brought near to its completion, and which he was extremely anxious to be able to finish. It was then in the hands of the lithographers, and he not only continued to give directions concerning it, but laboured at it with a pencil when, confined to his bed, he was unable to hold a pen. To a friend who ex-
postulated with him on the danger of fatiguing himself, he replied it was no fatigue, but a great amusement to him; that it was a work which if he should live it would be a satisfaction to him to have finished, but that if it were otherwise, which seemed most probable, as he had never witnessed a complaint which appeared to make more rapid progress, it would still be a great satisfaction to him never to have spent an idle day in his life.

His last anxiety concerning the proceedings of one or two persons who had made him the object of reiterated attacks, in consequence of being dissatisfied with the arrangements of the Nautical Almanack, was, that nothing should go forth on his part to increase irritation, and when papers were sent him which went to enumerate and to prove the errors, into which these individuals had fallen, his desire was that they should be suppressed.

In the very last stage of his complaint, in the last lengthened interview with the writer of the present memoir, his perfect self-possession was displayed in the most remarkable manner. After some information concerning his affairs, and some instructions concerning the hieroglyphical papers in his hands, he said that, perfectly aware of his situation,
he had taken the sacraments of the church on the day preceding; that whether he should ever partially recover, or whether he were rapidly taken off, he could patiently and contentedly await the issue: that he thought he had exerted his faculties through life as far as they were capable of, but that for the last eight years he had been careful of straining them to more than he thought they could compass without injury; that he had settled all his concerns; that if his health had been continued to him, he might have looked forward to the prolongation of much that was to be enjoyed; but that though he was in no other suffering than that of great oppression and weakness, still that if life were continued in the state he then was of inability to any of his accustomed employments, he could hardly wish it to be long protracted.

His illness continued with some slight variations, but he was gradually sinking into greater and greater weakness till the morning of the 10 th of May, when he expired without a struggle, having hardly completed his fifty-sixth year. The disease proved to be an ossification of the äorta, which must have been in progress for many years, and every appearance indicated an advance of age, not brought on probably by the natural courses of time,
nor even by constitutional formation, but by unwearied and incessant labour of the mind from the earliest days of infancy. His remains were deposited in the vault of his wife's family, in the Church of Farnborough in Kent.

To delineate adequately the character of Dr. Young would require an ability in some proportion to his own, and must be ill supplied by one incompetent to judge of the talents of a man, who as a physician, a linguist, an antiquary, a mathematician, scholar, and philosopher, in their most difficult and abstruse investigations, has added to almost every department of human knowledge that which will be remembered to aftertimes-" who," as was justly observed by Mr. Davies Gilbert, in his eloquent address to the Royal Society, over which he so worthily presided, "came into the world with a confidence in his own talents growing out of an expectation of excellence entertained in common by all his friends, which expectation was more than realized in the progress of his future life. The multiplied objects which he pursued were carried to such an extent, that each might have been supposed to have exclusively occupied the full powers of his mind; knowledge in the abstract, the most enlarged generalizations,
and the most minute and intricate details, were equally affected by him; but he had most pleasure in that which appeared to be most difficult of investigation." The president added, that " the example is only to be followed by those of equal capacity and equal perseverance; and rather recommends the concentration of research within the limits of some defined portion of science, than the endeavour to embrace the whole."

Dr. Young's opinion was, that it was probably most advantageous to mankind, that the researches of some inquirers should be concentrated within a given compass, but that others should pass more rapidly through a wider range-that the faculties of the mind were more exercised, and probably rendered stronger, by going beyond the rudiments, and overcoming the great elementary difficulties, of a variety of studies, than by employing the same number of hours in any one pursuitthat the doctrine of the division of labour, however applicable to material product, was not so to intellect, and that it went to reduce the dignity of man in the scale of rational existences. He thought it so impossible to foresee the capabilities of improvement in any science, so much of accident having led to the most important discoveries,
that no man could say what might be the comparative advantage of any one study rather than of another ; and though he would scarcely have recommended the plan of his own as the model of those of others, he still was satisfied in the course which he had pursued.

It has been said, that the powers of imagination were the only ones of which he was destitute. From the highly poetical cast of some of his early Greek translations, this is at least doubtful. It might, perhaps, have been said more justly, that he never cultivated the talent of throwing a brilliancy on objects which he had not ascertained to belong to them. Dr. Young was emphatically a man of truth. The truth, the whole truth, and nothing but the truth, was the end at which he aimed in all his investigations, and he could not bear, in the most common conversation, the slightest degree of exaggeration, or even of colouring. Now, all exercise of what is ordinarily called imagination, is the figuring forth something which, either in kind or in degree, is not in truth existent; and whether originally gifted with this faculty, or otherwise, Dr. Young would, on principle, have abstained from its indulgence.

To sum up the whole with that which passes
all acquirement, Dr. Young was a man in all the relations of life, upright, kind-hearted, blameless. His domestic virtues were as exemplary as his talents were great. He was entirely free from either envy or jealousy, and the assistance which he gave to others engaged in the same lines of research with himself, was constant and unbounded. His morality through life had been pure, though unostentatious. His religious sentiments were by himself stated to be liberal, though orthodox. He had extensively studied the Scriptures, of which the precepts were deeply impressed upon his mind from his earliest years; and he evidenced the faith which he professed, in an unbending course of usefulness and rectitude.

## A

## CATALOGUE

of the

# WORKS AND ESSAYS of the late 

## DR. YOUNG.

(Found in his own Hand-Writing, to 1827.)

## A

## CATALOGUE,

sc.

1. A short Note on Gum Ladanum, with a verbal Criticism on Longinus, signed with his initials, and inserted in the Monthly Review for 1791, seems to have been his first appearance before the Public. The criticism was admitted by Dr. Burney to be correct.
2. In the Gentleman's Magazine for April 1792, Observations on the Manufacture of Iron : an attempt to remove some objections to Dr. Crawford's theory of Heat, which had been advanced by Dr. Beddoes.
3. Entomological Remarks; Gentleman's Magazine, December 1792: on the habits of Spiders; on a passage of Aristotle, with an illustration of the Fabrician System; and a plate of the mouth of an insect.
4. Observations on Vision : Philosophical Transactions, 1793, p. 169, explaining the accommodation of the Eye, from a muscular power in the crystalline lens-a theory not altogether new, but immediately afterwards claimed by John Hunter, as a discovery of his own.
5. Contributions to Hodgkin's Calligraphia Græca, 4to. London, 1794 ; including Lear's Curses in Iambics.
6. Description of an Opercularia. Linnæan Transactions, Vol. III. p. 30. London 1797: read in 1794. The Opercularia,

Aspera of Gaertner, called by Persoon, Cryptospermum Youngii, from the name here suggested.
7. Some Notes and an Epigram, in Dalzel's Collectanea Græca, 8vo. Edinburgh, 1795.
8. De Corporis Humani viribus conservatricibus, Dissertatio, 8vo. Gottingen, 1796: an Inaugural Dissertation, collected from a multiplicity of authors.
9. Translation of Lichtenstein on the Genus Mantis. Linnæan Transactions, Vol. VI. p. I. : read in 1797.
10. The Leptologist. British Magazine, 1800: a series of Essays on Grammar, Criticism, Geometry, Paintings, Manners, Riches, Exercises, Medicine, and Music; some of them reprinted afterwards.

11, 12. There is also an account of the French Calendar and Measures, and an Essay on the Morals of the Germans.
13. Experiments and Enquiries respecting Sound and Light. Philosophical Transactions, 1800, p. 106: the vibrations of the air observed by means of smoke; those of strings counted, and their orbits observed with a microscope; their harmonics suppressed at pleasure.
14. A Bakerian Lecture on the Mechanism of the Eye. Philosophical Transactions, 1801, p. 23: describing a new Optometer, and shewing that the eye retains its power of accommodation under water; measuring also the dispersive power of the eye. (Dr. Y. remarks, that he "afterwards found that his own eye lost almost the whole of its power of accommodation soon after fifty, remaining fixed at its greatest focal distance.")
15. A Letter respecting Sound and Light. Nicholson's Journal, August 1801, in answer to Professor Robison, of Edinburgh.
16. A Syllabus of a Course of Lectures on Natural and Experimental Philosophy; 8vo. London, 1802: presenting a Mathematical Demonstration of the most important Theorems in Mechanics and in Optics; and containing the first publication of the general law of the Interference of Light, which has been considered as the happiest result of all the Author's efforts. It was not till the year 1827, that the importance of this law could be said to be fully admitted in England: it was in that year that the Council of the Royal Society adjudged Count Rumford's Medal to M. Fresnel, for having applied it, with some modifications, to the most intricate phenomena of polarized light.
17. A Bakerian Lecture on the Theory of Light and Colours ; Phil. Trans. 1802, p. 12, developing the law of Interference, and entering into all the details of the theory to which it leads; dwelling, at the same time, upon the difficult points, with somewhat more of candour than might have been consistent with his object, had he been anxious to obtain proselytes.
18. An Account of some Cases of the Production of Colours, p. 387, containing a simpler statement of some applications of the same law, intended to exhibit the facts in a more concentrated form.
19. A Reply to Mr. Gougl's Remarks. Nicholson, November 1802, p. 1. This Letter, together with some subsequent Correspondence, relates principally to the coalescence or composition of Sounds, affording an analogy to the interference of Light.
20. Journals of the Royal Institution, 8vo. London, 1802-3. A first volume, and part of a second, were edited, and chiefly written, by Dr.Young.
21. Experiments and Calculations relative to Physical Optics. Phil. Trans. 1804, p. 1. Another Bakerian Lecture, continuing the demonstration and the application of the law of Interference.
22. A Reply to the Animadversions of the Edinburgh Reviewers, 8vo. 1804:-a defence of the Papers printed in the Transactions against two articles supposed to have been written by Mr. Brougham.
23. To an Imperial Review, which was an unsuccessful speculation of some booksellers in 1804, he contributed several medical and some other miscellaneous articles. The works that he reviewed were, Dumas Phisiologie, Darwin's Temple of Nature, Blackburn on Scarlet Fever, Percival's Medical Ethics, Fothergill's Tic Douloureux, Crichton's Table, Nisbet's Watering Places, Rowley on Madness, Hutton's Ozanum, Buchan on Sea-Bathing, Robison's Astronomy, Winterbottom's Sierra Leone, Macgregor's Medical Sketches, Wilson's Philosophy of Physic, Richerand's Physiology, and Joyce's Scientific Dialogues.
24. An Essay on the Cohesion of Fluids. Pliil. Trans. 1805, p. 71, containing many of the results which were published as new, about a year afterwards, by La Place. The mathematical reasoning, for want of mathematical symbols, was not understood, even by tolerable mathematicians; from a dislike of the affectation of algebraical formality, which he had observed in some foreign authors, he was led into something like an affectation of simplicity, which was equally inconvenient to a scientific reader.
25. A Course of Lectures on Natural Philosophy and the Mechanical Arts; two volumes, 4to. London, 1807. This elaborate work was the result of the unremitting application of five years; two, whilst the Author was engaged in giving the Lectures at the Royal Institution, and three more in compiling the mass of references contained in the second volume, and in incorporating their results, when requisite, with the text of the first. By means of numerous plates, and by indexes of various kinds, he had endeavoured to render the book as convenient for occasional reference, as it was correct for the purposes of methodical study. (The failure of the Booksellers who pub-
lished this work, at the moment of its appearance, so greatly injured its sale at the time, that it did not repay the expenses of the publication; and Dr. Young considered that his labours were first generally appreciated by the Natural Philosophers of the Continent.)
26. Remarks on Looming, or Horizontal Refraction. Nicholson, July 1807, p. 153, supplying some deficiencies in Dr. Wollaston's Theory, particularly with regard tothe occurrence of actual Reflection.
27. A Table of Chances, with remarks on Waves. Nicholson, Oct. 1807, p. 116.
28. A Theory of Covered Ways and Arches. Nicholson, Dec. 1807, p. 24.
29. Remarks on a Pamphlet of Professor Vince. Nicholson, April 1808, p. 304; pointing out the mathematical fallacy of the Professor's supposed refutation of the hypothesis of Newton respecting the cause of Gravitation.
30. Calculation of the rate of Expansion of a supposed Lunar Atmosphere Nicholson, June 1808, p. 117.
31. Determination of the Figure of a gravitating Body. Nicholson, June 1808, p. 208.
32. Calculation of the Attraction of a Spheroid. Nicholson, August 1808, p. 273.
33. A Review of Sinclair on Longevity. British Critic.
34. Abstracts and Criticisms in the "Retrospect," about 1808 and 1809.
35. Hydraulic Investigations. Phil. Trans. 1808, p. 164; principally subservient to an intended Croonian Lecture.
36. A Syllabus of a Course of Lectures on the Elements of the Medigal Sciences; 8vo. London, 1809. These Lectures were delivered for two seasons at the Middlesex

Hospital. (Dr. Young remarks, that "they were little frequented, on account of the usual miscalculation of the Lecturer, who gave his audience more information in a given time, than it was in their power to follow.")
37. Computation of the Depression of Mercury in the Barometer. Nich. March 1809, p. 215. Continuation of the Paper on the Cohesion of Fluids, Oct. p. 81.
38. Remarks on the Friction of Wheels, in Buchanan's Essay on Wheel-work, 8vo. Glasgow, 1809.
39. A Croonian Lecture on the Heart and Arteries. Phil. Trans. 1809, p. 1 : attempting to demonstrate, on Mathematical principles, that the larger arteries can have little or no concern in propelling the blood by their active muscular powers.
40. A Numerical Table of Elective Attractions. Phil. Trans. 1809, p. 148: with remarks on the sequences of double decompositions, shewing that if numerical expressions of electric attractions are possible, their effects in double decompositions may be compendiously expressed by tables of sequences only.
41. A Memoria Technica for Elective Attractions, in a few Latin hexameters. Nich. April, 1809.
42. Account of the Pharmacopeia Londinensis, in Cumberland's London Review, 1810.
43. To the earlier Volumes of the Quarterly Review he contributed a variety of Articles, which frequently, according to the custom of modern times, contained more of original research than of immediate criticism. To Vol. I. La Place, Action Capillaire. Vol. II. Haslam, Pinel, Cox, and Arnold, on Insanity; La Place, Refraction Extraordinaire. Vol. III. Herculanensia; Jones on the Gout ; Memoires d'Arcueil. Vol. VI. Cuthbert on the Tides. Vol. VIII. Davy's Chemical Philosophy. Vol. IX. Blackall on Dropsies. Vol. X. Adeleng's Mithridates; Göthe on Colours. Vol. XI. Malus, Biot,

Seebeck, and Brewster, on Light; Bancroft on Dying; Davy's Agricultural Chemistry; Adams on Ectropium. Vol. XIII. Wells on Dew. Vol. XIV. Jamieson and Townsend on Languages; Pym and Fellowes on Yellow Fever, an article printed, but not published in the Work. Vol. XIX. p. 411. Restoration and Translation of the Inscription on the Sphynx.
44. Berzelius on Definite Proportions, from the German, appeared in several successive numbers of the Philosophical Magazine, from January 1813 to April 1814.
45. A Theory of the Tides. Nicholson, July-Aug. 1813.
46. An Introduction to Medical Literature, including a System of Practical Nosology, 8vo. London, 1813: a work of considerable labour, though far less arduous than the " Natural Philosophy." The Appendix contains an abstract of Berzelius's Animal Chemistry, from the Swedish. To a second edition, published in 1823, were added the References to later Journals, and an Essay on Palpitations, which first appeared in the fifth Volume of the Medical Transactions of the College of London.
47. Remarks on the Employment of Oblique Riders, and on other Alterations in the construction of Ships. Phil. Trans. 1814, p. 303; the substance of a Report before presented to the Board of Admiralty, relating to Sir Robert Sepping's Improvements, with some additional illustrations.
48. An Investigation of the Thrust of soft Substances. Hutton's Mathematical Dictionary, Edition 2, 1815. Article, Pressure.
49. A Practical and Historical Treatise on Consumptive Diseases : 8vo. London, 1815 ; being a condensed abstract of every thing recorded to have been said or done, with regard to Consumption. Particular circumstances had pressed the publication of this Work within nine months after it had been commenced.
50. In the eighteenth Volume of the Archæologia, London, 1815, appeared some Remarks on Egyptian Papyri, and on the Inscription of Rosetta, annexed to a communication made by Sir William Edward Rouse Boughton, Bart. They contain an interpretation of the principal parts of both the Egyptian Inscriptions on the Pillar found at Rosetta, and consequently A Key to the lost Literature of ancient Egypt; though, for professional reasons, the discovery was made public with as little parade as possible.
51. Extracts of Letters and Papers relating to the Egyptian Inscription of Rosetta, in the Museum Criticum of Cambridge, Part VI. 8vo. 1815; a Correspondence with MM. Silvestre de Sacy, and Akerblad.
52. An Investigation of the Pressure sustained by the fixed supports of flexible Substances. Phil. Mag. Sep. 1813, applied to the Hoops of Casks, and to Dock Gates.
53. An Algebraical Expression of the Values of Lives. Phil. Mag. Jan. 1816, with a Diagram.
54. Account of some Thebaic Manuscripts, written on leather. Legh's Narrative, 4to. London, 1816.
55. Additional Letters relating to the Inscription of Rosetta; the first addressed to the Archduke John, who had lately been in England; the second to M. Akerblad, Museum Criticum VII. The Letters were printed and distributed in 1816; the Journal was not published till 1821. They announce the discovery of the relation between the different kinds of Egyptian Letters, or Characters-the basis on which the system of M. Champollion was afterwards erected.
56. Letters of Canova, and two Memoirs of Visconti, translated from the French and Italian. 8vo. London. 1816. A volume of 200 pages, which was completed in twelve days; together with remarks on an error of Delambre, which was afterwards confuted more at large by Mr. Cadell.
57. It was in 1816, that Dr. Young complied with an application made to him by Mr. M‘Vey Napier, to write some articles for a Supplement to the Encyclopædia Britannica, conducted under the superintendence of that gentleman, and completed in 1825.

The Articles which he furnished were: Atwood-Addendum to Annuities - Bathing - G. Beccaria-Bloch - Borda -Boulton-Bramah-Bridge - Brisson -Bryant -Camus Notes on Carpentry-Cavallo-Cavendish-Chromatics-Cobe-sion-Condamine-Coulamb-Dolland-Dolomieu-Duhamel -Egypt-Fermat-Fluents-F. Fontana-G. Fontana-J. R. Forster-J. G. A. Forster-Fourcroy-Frisi-Guyton de Mor-veau-Herculaneum- Hydraulics- Ingehousz- Lagrange La Lande-Lambert-Languages-Lemmonier-Luc_-Malus -Maskelyne—Mason-Mechain-Messier—Orme - Pallas-Pauw-Porson-Preservers of Life-Road-making - Robison -Rush—Steam-Engine-Tennant-Thomson-Count Rumford -Tides-Tooke-Wakefield-Watson-Weights and Mea-ures-Polarization by Arago, translated, with Notes. In all, about sixty-three articles, each marked with two different letters. (These were two consecutive letters of the sentence "Fortunam ex aliis;" the $u$ in fortunam being sometimes printed as a $\%$.)
58. Remarks on some Theorems relating to the Pendulum. Phil. Trans. 1818, p. 95, in a Letter to Captain Kater.
59. Translation of some Greek Inscriptions. Light's Travels. 4to. London, 1818.
60. Specimen of a Greek Manuscript in the possession of the Earl of Mountmorris, 1819. Archæologia, vol. XIX. This may possibly have been a pawnbroker's account : another piece nearly resembling it was sent by Mr. Salt to the British Museum.
61. Remarks on the Probabilities of Error in Physical Experiments, and on the Density of the Earth, considered espe-
cially with regard to the reduction of Experiments on the Pendulum. Phil. Trans. 1819, p. 70, computing the density of the earth, upon the supposition of the compression of a homogeneous elastic substance only.
62. Dr. Young edited the Nautical Almanac, from the year 1819, for the remainder of his life.
63. Remarks on Laplace's latest Computation of the Density and Figure of the Earth. Brande's Journal, April 1820 ; determining the Ellipticity, on the supposition of a compressed elastic substance.
64. Dr. Young furnished quarterly, for many years, to Brande's Philosophical Journal, about twenty pages of Astronomical and Nautical Collections, beginning in 1820; the greater part either original or translated by himself.
65. Appendix to the second edition of Belzoni's Travels, 4to. London, 1821.
66. Elementary Illustration of the Celestial Mechanics of Laplace, 8 vo . London, 1821 ; with some additions relating to the motions of Waves, and of Sound, and to the cohesion of Fluids. (This volume, and the article "Tides," in the Supplement to the Encyclopædia Britannica, Dr. Young considered as together containing the most fortunate of the results of his mathematical labours.)

## 67. An Account of some recent Discoveries in Hiero-

 glyphical Literature and Egyptian Antiquities, including the author's original Alphabet, as extended by M. Champollion, 8 vo . London, 1823 ; with a translation of some Greek Manuscripts on Papyrus, the most remarkable of which was Mr. Grey's "Antigraph" of an Egyptian original then lying on his table; the discovery of which singular coincidence was the immediate cause of the publication of the volume.68. Hieroglyphics, collected by the Egyptian Society, folio. London, 1823-a collection of Plates of Egyptian Antiquities
subservient to the study of Hieroglyphical Literature, lithographized at the expense of about fifty subscribers, but not at that time publicly sold. The second number, plates 16 to 40 , contains nearly all that was known of the interpretation of the Hieroglyphics, the evidence for each word being exlibited in a comparative Index.
(This work was entirely carried on by Dr. Young; but the subscriptions not being adequate to the expenses, it was afterwards made over to the Royal Society of Literature, he undertaking to continue the supervision as before.)
69. A finite and exact Expression for the Refraction of an Atmosphere nearly resembling that of the Earth. Phil. Trans, 1824, p. 159; a computation derived from an optical hypothesis not exactly agreeing with the probable height of the physical atmosphere, but affording correct results.
70. Remarks on Spohn and Seyffarth. Brande's Phil. Journal, Oct. 1826, in a Letter addressed to the Baron William Von Humboldt.
71. A Formula for expressing the Decrement of Human Life; in a Letter addressed to Sir Edward Hyde East, Bart. Phil. Trans. 1826, intended to render the interpolation from the best observations more regular : it is followed by a correction of Dr. Price's mistake, respecting the periodical payments of annuities.
72. Practical Application of the Doctrine of Chances, as it regards the subdivision of Risks. Brande's Phil. Journ. Oct. 1826; slewing the Limitations under which Speculations on Probabilities may be conducted with prudence.
73. Remarks on Mr. Peyron's Account of the Egyptian Papyrus. Brande's Phil. Journ. Jan. 1827-the great Greek Papyrus of Turin : in which Mr. Grey's three contracts are cited and explained,-not two of them only, as had been supposed by Mr. Peyron.

The following Articles, of a later date than those contained in the above Catalogue, are known to have been written by Dr. Young.
74. Hieroglyphical Fragments. Brande's Philosophical Journal, April-June, 1827.—Hieroglyphical Fragments; with some Remarks on English Grammar: in a Letter to Baron William Von Humboldt. Brande's Phil. Journal, July-September, 1827.-Hieroglyphical Fragments, illustrative of Inscriptions preserved in the British Museum; with some Remarks on M. Champolion's Opinions: in a Letter to the Cavalier San Quintino. Brande's Phil. Journal, October-December, $182 \%$. -Hieroglyphical Fragments. Brande's Phil. Journal, Ja-nuary-March, 1828.
75. A Letter to M. Arago, relating to M. Champollion's Discoveries: dated, Geneva, July 1828. Inserted in the Classical Journal, No. 75.
76. Comparison of different Tables of Mortality. Brande's Phil. Journal, December 1828.
77. Letter to Mr. Bailey, April 1829.
78. A Translation of Fresnel's Elementary View of the Undulatory Theory of Light. In various Numbers of Brande's Phil. Journal; commenced in January 1827, and concluded in April 1829.
79. Dr. Young left also - Rudiments of an Egyptian Dictionary in the ancient Enchorial Character; containing all the Words of which the Sense has been ascertained. Intended as an Appendix to Mr. Tattam's Coptic Grammar.
(This Work was under the hands of the Lithographer at the time of his death.)

LONDON:
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## ADVERTISEMENT.

The progress that has been hitherto made in the investigation of the modes of writing of the ancient Egyptians, however inconsiderable in its extent, is yet sufficient to throw some important lights on the philosophy of language in general.

It is obvious that a written language may be either essentially expressive of sounds only, or may represent the objects to which the words relate, like our numerical cyphers, without any reference whatever to the sounds.- It is now generally understood that the Chinese written language is an original, independent of any sounds supposed to be pronounced by the reader : and the Hieroglyphics of Egypt, as well as those of China, appear clearly to have been, at first, rude pictures only of sensible objects. In the course of ages, the resemblance seems to have been forgotten in both countries, and imitations of the imitations only were employed; sometimes for denoting the same objects, and sometimes for expressing either the whole or a part only of the sounds of the names which were applied to them.

The Hieratic characters of the Egyptians appear to have been intended for simple imitations of the distinct Hieroglyphics; and from these the Enchorial or Popular characters seem to have been gradually derived, without any abrupt or systematic changes : the written language being in both cases principally independent of the sounds employed in speaking, except in the case of foreign proper names; and retaining always some parts which were never fully expressed in speaking. Neither this nor any other intelligible account of the Egyptian modes of writing can be derived from the vague descriptions of the Greek authors; which, among other reasons, are probably the more confused from the habitual use of the same word to express writing and drawing.

The essential identity of the Enchorial characters with the distinct Hieroglyphics had been conjecturally suspected by some former critics, but was first fully demonstrated in the Museum Criticum for 1816. The examples of dates, which are here exhibited, will serve to illustrate the steps by which the changes of forms took place between the reign of Psammetichus, and the dynasty of the Ptolemies: the manuscripts, which belong to the time of Psammetichus, appearing to be decidedly Hieratic, and to follow closely the traces of the distinct characters, while those of Darius approach in some degree to the Enchorial form, which probably came into common use as the "epistographic" character, while
the Hieratic was so called as being more employed by the Priests for the purposes of their religion. In the mean time other changes must have been made in different parts of the language; which caused the characters to vary more widely from each other. The report that a manuscript of the age of Sesostris, written "in superb demotic characters," still exists at Aix, appears in many respects to require confirmation.

A single example will be abundantly sufficient to show the way in which some of these changes took place. The city of Cairo was probably first called Memphis or Memphe, the Hieroglyphic name being read мa-м-рнтнан, the place of Phthah or Vulcan: its elements consisting, according to the most natural reading, of temple, or sacred place, and phthah. Before the time of the Ptolemies, the place had apparently assumed the synonymous appellation of panuf or phanouphis, the noph of the Hebrews, meaning the temple of the Good god, which is clearly the sense of the two Enchorial characters 3 and $T$, while the sound panur is as little expressed by the distinct Hieroglyphics as memphe is by the popular characters. But in neither case did the sound adequately express the written characters; the sacred of the one, and the god of the other, being equally omitted in the pronunciation.

The correct interpretation of the Enchorial dates depends almost entirely on the ingenious and successful investigations of the justly-celebrated Jean François Champollion, applied to the manuscripts
which he had the good fortune to discover at Paris and at Turin, and which exhibited a great variety of numbers in the form of accounts: and he has been equally happy in illustrating the characters denoting the months, which an unaccountable error of the original engraver of the pillar of Rosetta had before thrown into confusion.

His system of phonetic characters may often be of use in assisting the memory, but it can only be applied with confidence to particular cases when supported in each by the same kind of evidence that had been employed before its invention. His manuscript communications have furnished many valuable additions to this work, all of which have been acknowledged in their proper places.

From the mixed nature of the characters employed in the written language or rather languages of the Egyptians, it is difficult to determine what would be the best arrangement for a dictionary, even if they were all perfectly clear in their forms, and perfectly well understood: at present, however, so many of them remain unknown, and those which are better known assume so diversified an appearance, that the original difficulty is greatly increased. Every methodical arrangement, however arbitrary, has the advantage of bringing together such words as nearly resemble each other : and it appears most likely to be subservient to the purposes of future investigation, to employ an imitation of an alphabetical order, or an artificial

## vii

alphabet, founded upon the resemblance of the characters to those, of which the phonetic value was clearly and correctly determined by the late Mr. Akerblad; and to arrange the words, that are to be interpreted, according to their places in this artificial order; choosing, however, in each instance, not always the first character that enters into the composition of the word, but that which appears to be the most radical, or the most essential to its signification, or sometimes that which is merely the most readily ascertained or distinguished.

It is obvious that neither the numbers nor the names of months require to be admitted into this arrangement, their natural order being so much more simple and determinate: they are therefore placed at the beginning of the work.

If, on the one hand, the meagerness of this catalogue should be considered as somewhat humiliating, it must be remembered, on the other, that thirty years ago, not a single article of the list existed even in the imagination of the wildest enthusiast : and that within these ten years, a single date only was tolerably ascertained, out of about fifty which are here interpreted, and in many instances ascertained with astronomical precision.

It must still be confessed that notwithstanding all the efforts of the few well-qualified persons who have laboured in this field, it still remains extremely uncertain whether these Enchorial words can be properly said to belong to an ancient Coptic
language, or no: at any rate, the historical evidence of the antiquity of the original Coptic words collected by Wilkins, Lacroze, and Jablonsky, affords fuller demonstration of the truth than any thing hitherto obtained from Hieroglyphical literature: though some of the particles and some forms of grammatical construction do appear to coincide with the Hieroglyphical characters more nearly than those of any other language would do. But on the whole, I have little to add to the opinion which I published in a letter to M. Silvestre de Sacy, dated October, 1814. Mus. Crit.
"The remark of Varro upon the Egyptian language is even more correctly applicable to this inscription [on the pillar of Rosetta], than to the Coptic; that is, that the nouns are the same in all the cases. Aëtos Aëtos, for example, is Aëtos the son of Aëtos; Mptolomeos, Mptolomeos, Ptolemy the son of Ptolemy : and indeed we sometimes find the same relation similarly expressed in the Coptic ; thus, Niudas Simon, Jo. xiii. 26, Judas the son of Simon. Verbs are scarcely distinguished from participles or from nouns, in the Coptic, and still less in this inscription. The Copts had their articles, which they used nearly as the French, or rather as the Italians; in the inscription there is [rarely] a definite article $[\mathbf{p}$ or $P$ ] in the singular, and the prefix, which assists in the formation of the plural, may represent either the definite or the indefinite article, but seems to resemble the latter rather than
the former. The prefix $M$ of the Copts, which cannot be translated, is frequently found in the inscription, with the same indifference as to the sense: [representing apparently a part of the royal ring.] In short, we may venture to assert, that this language is formed entirely on the model of the Hieroglyphics, and that the rules of grammar, which are almost superfluous in Coptic, would here be totally inapplicable. [Perhaps the strongest coincidence of the old Egyptian with the Coptic is that of the article masculine, which occurs in many places in the same form with some of the characters representing a $\mathbf{P}$; characters not easily recognised in the pillar of Rosetta, but more lately identified in several manuscripts by Professor Ungarter as well as by myself. We also often find the passive tense expressed as in Coptic by the $\mathbf{M}$, followed by $\mathbf{F}$, him as $i t$.]"

It was in a subsequent letter dated August, 1821, and addressed to the Archduke John of Austria, that I first made known the original identity of the different systems of writing employed by the old Egyptians, observing that "A loose imitation of the Hieroglyphical characters may even be traced by means of the intermediate steps in the Enchorial name of Ptolemy, which is the only proper name that remains among the Hieroglyphics of the stone at Rosetta." The same comparison I afterwards extended to the name Berenice: and it is well known how much further M: Champollion has since had the ingenuity and good fortune to carry it.

It deserves to be mentioned as an encouraging circumstance for the application of the Hieroglyphical literature to the subject of chronology, that a German Professor as well as myself had recognised in an inscription found near Cosseir, published at Cairo by Mr. Burton, the names of three Persian kings, with dates confirming the testimony of the Greek chronologers, and which seem to be the same that M. Champollion has since mentioned in one of his letters from Egypt, with a similar interpretation.

I have reprinted, from the Quarterly Journal, as an illustration of this subject of chronology, an enumeration of the principal events mentioned by the astronomer Ptolemy and his commentators, with a mathematical determination of the times of their occurrence, so accurate and indisputable, as to remove all scepticism respecting the precision not only of these epochs, but of many others which are connected with them by a similar train of evidence and reasoning.

The dates are principally referred to the exact instants of the true equinoxes or solstices of the year concerned, in a manner suggested by the mean equinoctial time of Mr . Herschel, which supersedes every artificial regulation of the length of the year.

The words have all been accurately compared with the original documents, except the last 16 pages, which have been taken of necessity from the rough copy.

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The following Rudiments of an Egyptian Dictionary in the ancient Enchorial Character were completed by the late lamented $\mathrm{D}_{\mathrm{r}}$. Young during the progress and under the pressure of his last illness.

He had composed the Advertisement, and overlooked the Proofs as they came from the Lithographer to the 96th page; and those following, to the end of the Work, have been carefully compared with his own Copy, under the supervision of the Rev. Mr. Tattam, who had also the kindness to furnish the Index on the plan in which it had been commenced by Dr. Young.

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A. Z, $\mathbf{A}^{\prime} \ldots \mathbf{Z}^{\prime}, \mathbf{A}^{\prime \prime}$. See Dates.

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## i. Astronomical Chronology of Egypt, deduced fromi Ptolemy, and his Commentators.

Year
1 of the canicular cycle, called by Theon, (MS. " 2390 ") as cited by Larcher and Champollion Figeac, the epoch of Menophres, is ascertained by the testimony of Censorinus, chapters 18 and 21 ; he says that the 986 th year of Nabonassar, in which he wrote, was the 100th of the canicular cycle of 1461 Egyptian years: the 1st year of that cycle, which may be called the 1462d of the preceding cycle, was consequently the 887th of Nabonassar, and the 1st of Nabonassar the 576th of that cycle, which began 575 Egyptian years before the epoch of Nabonassar, or as many tropical years wanting 139.3 days; and, this epoch laving been determined to be $\stackrel{\odot}{\sim}-746^{y}-30.4^{d}$ (Collections for April, 1828), in true equinoctial time, the date was nearly
$\stackrel{\odot}{\odot}-1321^{y}+108.9^{d}$.
This determination is very simply and directly obtained from a comparison of the mean motions of Saturn and $J$ upiter, which agree perfectly with those of the modern tables, so as to make it impossible that they could belong to any other year than that which is assigned: the early eclipses, computed by Ideler and others, afford us still more precise confirmations of the dates.

It appears from Censorinus, that the canicular period began when the 1st Thoth was the 20th July. The number of years allotted to it seems to have been very simply deduced from the supposed length of the true year, as consisting of $365 \frac{1}{4}$ days, without any knowledge of the distinction between the tropical and the sidereal year: and it commenced when the apparent heliacal rising of Sirius was on the first day of the Egyptian year; the sun being supposed to be about ten degrees below the horizon. Professor Ideler has shown (Halma's Ptolemy III., p. 31, 38) that this occurred on the 1 Thoth in - 1321 as well as in +139 , exactly at the interval of 1460 tropical years; but that in +1599 it must have happened about two days later: and he very truly observes, that there was nothing in this phenomenon that could serve to establish or to correct the supposed length of the year, deduced, as it must have been, from the regular return of the seasons.

The nature of the heliacal rising of the stars is illustrated by a passage of Geminus (Halma, p. 57). "The heliacal risings of the stars are either true or apparent; the true are when the sun and star are at the same instant on the horizon;
but these are not visible, on account of the strength of the sun's light. The sun, however, moving gradually among the stars from west to east, the given star will rise every morning afterwards a little more and more before the sun; when it has become so remote from it as to be visible, the star is said to be at its apparent heliacal rising: and in this manner the risings are predicted and are observed." "It is a vulgar prejudice," he continues, ( $\mathbf{p} .67$,) " to suppose that the rising and setting of the stars have any influence on the atmosphere: they are far too remote for the clouds to come within their reach. The weather has been observed at certain times of the year, and the places of the sun at these times having been noted, the rising and setting of the stars have been employed as marking those places and those seasons only : and a lighted beacon might as well be called the cause of a war, as the appearance of the stars the cause of a change of weather. And since the sun has been about 40 days in the neighbourhood of the tropic, about the time of the rising of the dog star, the coincidence serves to mark the hottest time of the year, without giving the dog star any claim to be the cause of heat: and in fact it is the time of the apparentheliacal rising that we remark : not that of the true rising, as it ought to be, if any immediate operation of the stars were concerned."

Mr. Champollion Figeac has attempted to go back to the era of Menophres, in order to bring down from it, by the testimony of miscellaneous authors respecting some facts of very high antiquity, the dates of the series of reigns enumerated by Manetho. But unless we prefer these authorities to that of Manetho himself, we gain nothing by this substitution. The name of "Menophres" cannot be identified with any kind of certainty among Manetho's kings: while the date of the reign of Darius is as well ascertained as that of the accession of Lewis the 14th: and this reign belongs as clearly to Manetho's 27th dynasty, as to Ptolemy's records of eclipses.

## Egyptian year

of Nabonassar.
1, Thoth (I.) 1; true noon at Alexandria. This is the general epoch of Ptolemy's tables, except those of the stars, which are reduced to the first year of Antonine. His mean solar time is reckoned from the true time of this epoch.

In order to proceed with regularity in the computation of the correct date of the epoch, it will be necessary to anticipate some of the observations of Hipparchus: premising also a table of the length of the true tropical year, beginning from the reign of Nabonassar, according to the numbers lately employed by Mr. Poisson, which afford us, for any number $x$ of years beginning about this time, $365.2423854 x$ -

Egyptian year
of Nabonassar.
$.000000033275 x^{2}$, for the days that they contain. Hence, if we include in the variation that of the time of the true equinox, as shewn in the Supplement to the Nautical Almanac for 1828, we obtain the number of days wanting in the Egyptian years.

| Egyplian <br> years. | Days wanting of <br> m. .tr. ears. |  | Corr. of <br> true E. | Sum. |
| ---: | ---: | ---: | ---: | ---: |
| 100 | 24.23854 | $(-.000333$ | $-.01)$ | -.010 |
| 200 | 48.47708 | .001331 | .05 | .051 |
| 300 | 72.71562 | .002995 | .07 | .073 |
| 400 | 96.95416 | .005324 | .09 | .095 |
| 500 | 121.19270 | .008319 | .12 | .128 |
| 600 | 145.43124 | .011979 | .15 | .162 |
| 700 | 169.66998 | .016304 | .17 | .186 |
| 800 | 193.90832 | .021296 | .18 | .201 |
| 900 | 218.14686 | .026955 | .19 | .217 |
| 1000 | 242.38540 | .033100 | .20 | .233 |
| 2000 | 484.77080 | .133100 | .20 | .333 |
| 2500 | 605.96350 | .207975 | .19 | .398 |

The principal observations of the vernal equinox, made by Hipparchus, were in the years
602, Mechir 27, 2h. before N.; $601^{\text {y }} 175.917^{\mathrm{d}}-145.512^{\mathrm{d}}$.
613, Mechir 29, 12h.; $\quad 612^{y} 178.5^{d}-148.176^{\text {d }}$.
620, Phamenoth 1, 6h.; $\quad 619^{y} 180.25^{\mathrm{d}}-149.870^{\text {d }}$.
The first gives 30.405 , the second 30.324 , and the third 30.389 , for the time of the vernal equinox in the first year of Nabonassar: the mean being 30.366. But the two latter observations being confirmed by their coincidence with those of the intervening equinoxes, they must be allowed to preponderate in some small degree, and we must call the most probable mean about 30.360 , and the epoch

$$
\odot-746^{y}-30.36^{d}
$$

It can hardly be supposed, however, that this number is much more decidedly accurate than 30.40 ; but some further corrections might possibly be obtained from the early eclipses, if greater precision were of any importance.
1, Paophi (II.) 1, at $9 \frac{1}{2} \mathrm{~h}$., was consequently the eq. $\odot-746^{\%}$.
27. Thoth (I.) 29, $2 \frac{1}{2}$ hours before midnight at Babylon was the middle of a total lunar eclipse, which lasted in the whole four hours. (Ptolemy, p. 95, Ed. B. p. 244, H.) The interval is 26 E. y. $28 \frac{21}{4} \frac{1}{8}$ days, allowing for the difference of longitude; the days wanting 6.29; and the whole time elapsed $26^{y} 22.15$, making

$$
\odot-720^{\mathrm{y}}-8.21^{\mathrm{d}} .
$$

Ideler has computed the time of this eclipse from Mayer's tables, and finds the beginning a minute later, the end six

## Egyptian year

of Nabonassar.
minutes earlier than the observation recorded by Ptolemy.
Bïrg's tables agree much less accurately : but still later astronomers have corrected the node nearly in the manner that Ideler has suggested. The sun's true longitude is made by Ptolemy $354^{\circ} 30^{\prime}$.
" This was the 1 st year of Mardoc Empadus."
28, Thoth (I.) 18, at the midnight of Babylon, was the middle of a iunar eclipse of three digits. (p. 95, B. p. 245, H.) Now, 27 E. y. $17.46^{\mathrm{d}}$ are 27 eq. y. $10.93^{\mathrm{d}}$; whence we have

$$
\stackrel{\odot}{\gamma}-719^{\mathrm{y}}-19.43^{\mathrm{d}}
$$

Ideler makes the middle 48 minutes earlier than the recorded time, and the magnitude only $1 \frac{1}{2}$ digit. (H. IV. 172.)
28, Phamenoth (VII.) 15, 31 h . before midnight at Babylon, somewhat more than 6 digits on the moon's northern limb were eclipsed. (p.95, B. p. 245, H. The date is $176.7^{\text {d }}$ later than that of the preceding observation, or $\stackrel{\odot}{\sim}-719^{y}+157.3^{d}$.

Ideler finds the time assigned to the middle, 12 minutes too early.
127, Athyr (III.) 27, 17h. true Alexandrian time, $16 \frac{3}{4} \mathrm{~h}$. mean time, reckoned from the epoch of the tables, the middle of an eclipse of 3 digits on the moon's southern limb was observed at Babylon. (p. 125, B. p. 340, H.) Now 126 E. y. $867 \mathrm{7d}$ require a correction of $30.52^{\mathrm{d}}$, leaving $126^{y} 56.18 \mathrm{~d}$, which makes

Ideler finds the middle $\mathbf{1 h} .4 \mathrm{~m}$. earlier, and the magnitude only $1 \frac{1}{2}$ digit.

The year was the 5th of Nabopolassar, consequently the 1st of Nabopolassar was the 123 rd of Nabonassar.
219, 1st Cambyses. See 225.
225, Phamenoth (VII.) 17, 1 hour before midnight at Babylon, the moon was eclipsed half a diameter on the northern limb, (p. 125, B. p. 346, H.) For 224 E. y. 6 m .14 days, the correction is $54.24^{\mathrm{d}}$, leaving 142.16 : $\quad \stackrel{\text { e }}{ }$ - $522^{y}+111.80^{d}$.

Ideler makes the time of the middle $11 \frac{1}{4} \mathrm{~h}$.; the magnitude as observed.

This year was the 7th of Cambyses; whence the 1st of Cambyses was the 219th of Nabonassar.
246, Epiphi(XI.) 28, 10 $\frac{1}{4} \mathrm{~h}$., Alexandrian time, the moon eclipsed $\frac{1}{4}$ of a diameter on the south side, according to the records employed by Hipparchus: the moon being near the apogee. The correction is $59.56^{\text {d }}$, for 246 E. years, of which the interval wants $37.36^{\mathrm{d}}$. $\&-500^{y}-127.28^{\mathrm{d}}$.

Egyptian year
of Nabonassar.
P. 102, B. p. 269, H. Ptolemy observes that the date is 218 E. y. 309 d .23 h .12 m . after the eclipse in the second year of Mardoc Empadus. Ideler finds the middle 12 minutes later than the observation, and the magnitude 2 digits only.

The year was the 20th of Darius, the successor of Cambyses; whence the last of Cambyses must have been the 226th of Nabonassar, which was also the eighth of Cambyses.
257, Tybi (V.) 3, 10h. 30m. true time at Alexandria, or 10 h .15 m . mean time reckoned from the epoch, the moon was eclipsed 3 digits (p. 102, B. p. 267, H.) : the 31st Darius I. Correction, 61.99 ${ }^{\text {d. }}$
$\stackrel{\odot}{\gamma}-490^{\mathrm{y}} .+30.09^{\mathrm{d}}$.
Ideler makes the middle 35 minutes earlier, the magnitude 1 digit (H. IV. p. 177).
316, Phamenoth (VII.) 20-21, (p. 62, B. p. 162, H.) The summer solstice, roughly observed by Meton and Euctemon, is recorded as having occurred when Apseudes was archon of Athens, in the morning of the 21st Phamenoth: from this observation to that of Aristarchus in the 50th year of the first period of Calippus, according to Aristarchus himself, there were 152 years; and this 50th year was the 44th from the death of Alexander: it was 419 years earlier than that of Ptolemy made in the 463rd year after Alexander: so that from Meton to Ptolemy there were 571 years. Now the 476 th of Nabonassar is called the 52 nd from the death of Alexander (p. 252, B.) ; and the 468th would be the 44th; whence, deducting 152, we have 316 ; and the correction 76.27 ${ }^{\text {d }}$, giving
$\odot-431^{\mathrm{y}}+94.12^{\mathrm{d}}$.
The interval between the vernal equinox and the solstice, as assigned by Hipparchus and Ptolemy, was $94 \frac{1}{2}$ days: at present it is 92.9.

The first year of Calippus must have been about the 419 th of Nabonassar. See 547.

The names of the archons, mentioned by Ptolemy, are found in their proper places in the Anonymous Catalogue of the Olympiads, not improbably compiled by Africanus, and published in Scaliger's Eusebius.
366, Thoth, (I.) 26-7, l(p. 105, B. p. 275, H.) According to Hipparchus, a lunar eclipse was observed at Babylon, of which the middle was apparently $18 \frac{1}{2}$ hours, "correctly" $18 \frac{1}{4}$, after the Alexandrian noon of the 26th Thoth.

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\odot-381^{\mathrm{y}}-92.98^{\mathrm{d}}
$$

This was in the 6th Athenian month Posideon, near the winter solstice: Phanostratus being archon.
366, Phamenoth (VII.) 24, (p. 105, B. p. 276, H.) A lunar

## Egyptian year

of Nathonassar.
eclipse observed at Babylon; the middle at 8 h. 15 m . Alexandrian mean time apparently; but correctly at 7 h .50 m . : the whole duration about 3 hours.

Phanostratus was still archon: the month being Scirrhophorion, which was the 12 th of the Athenian year, preceding the summer solstice.

Both these eclipses are mentioned in the Catalogue of the Olympiads, as having occurred in the 394th Olympic year, which must therefore have commenced about $\odot-382^{y}+94^{\text {d }}$, and ended about $\odot-381^{\mathrm{y}}+94^{\mathrm{d}}$ : and, deducting 393, the first Olympic year began $\underset{\sim}{\odot} \mathbf{7 7 5}+\mathbf{9 4}$ d : so that we may find the equinoctial year by deducting 776 from the Olympic year, and adding 776 to the equinoctial date at midsummer, we have the corresponding Olympic year, which begins about that solstice : for instance, at the midsummer of 1828 , we have the beginning of the Olympic year 2604: or, according to the Connoissance des Tems, in July, 1828; and indeed Ptolemy mentions a solstice as occurring towards the end of an Athenian year.
367, Thoth (I.) 16, (p. 106, B. p. 278, H.) The middle of a lunar eclipse observed, at Babylon, at 10 h .10 m . apparent, or 9 h .50 m . correct Alexandrian time: the interval being 366 E . y. 15.4 days: correction 88.62d.

$$
\odot-380^{y}-103.58^{\mathrm{d}} .
$$

This was in the month Posideon the earlier, Evander being archon at Athens.
418. The first year of the first period of Calippus. The Catalogue of the Olympiads, CXII. 2, has the " Battle of Arbela: beginning of the periods of Calippus of Cyzicum." The year of Calippus probably began with the Olympic or A thenian year: and the 50th ended in 468 ; consequently the first ended in 419. See 597 .
425, Thoth 1. The first year after the death of Alexander; begins. See 316. 552.
$\stackrel{\ominus}{\sim}-322^{y}-133.03 \mathrm{~d}$.
438. The first year of the "Chaldean era."-See 504. Of this era little or nothing more is known.
454, Paophi (II.) 16, (p. 171, B. vol. 2, p. 26, H.) Timocharis writes that he observed at Alexandria, in the 36th year of the first period of Calippus, on the 25th of Posideon, at the beginning of the 10 th hour of the night, that the moon exactly touched, with her northernmost point, the northern star in the forehead of the scorpion: the longitude of the star, reckoned from the autumnal equinox, being $32^{\circ}$, and its latitude

## Egyptian year

of Nabonassar.
$1^{\circ} 20^{\prime} \mathrm{N}$. The year was the 454th of Nabonassar, the days elapsed 45.62: the correction 109.69, giving $\odot-293^{y}-94.43^{\mathrm{d}}$ 。
454, Tybi (V.) 5, (p. 170, B. vol. 2, p. 23, H.) Timocharis writes that he observed at Alexandria, in the 36th year of the first period of Calippus, the 15th of Elaphebolion, at the beginning of the Brd hour of the night, that the moon touched Spica with her eastern limb, the star cutting off exactly one third of a diameter on the north: the year being the 454th of Nabonassar: the star's longitude from the tropic of Cancer being $82^{\circ} 20^{\prime}$; its latitude $\mathbf{2}^{\circ}$ south : the time Tybi $5,8 \mathrm{~h}$.

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\stackrel{\odot}{\Upsilon}-293^{y}-15.72^{\mathrm{d}} .
$$

464, The first year of Dionysius. See $476 . .507$. This astronomer named his months from the signs of the zodiac, and of course employed the true length of the year, as far as it was ascertained. He is said to have allotted to it 365 d .5 h .49 m. ; and to have made it begin the 26th June; but perhaps without any very good authority; for his determination of the year could scarcely have been unknown to Ptolemy. This was the first year of Ptolemy Philadelphus.
465, Athyr (III.) 29, (p. 169, B. vol. 2, p. 21, H.) Timocharis writes that he observed in Alexandria, the 47th year of the first Calippic period of 76 years, on the 8th of Anthesterion, or the 29th of the Egyptian month Athyr, 31 $\frac{1}{3}$ hours before midnight, the moon in $80^{\circ} 20^{\prime}$; her southern half occulted the following third or half of the Pleiades: the extremity of the Pleiades being in $r^{\prime} 29 \frac{1}{2}^{\circ}$, and in nearly $3^{\circ} 2^{\prime} \mathrm{N}$. lat.

$$
\stackrel{\odot}{\odot}-282 y-54.35 \mathrm{~d}
$$

466, Thoth (I.) 7, (p. 170, B. vol. 2, p. 24, H.) Timocharis continues, that in the 48th year of the same Calippic period of 76 years, on the 20th of Pyanepsion, which was the 7th of Thoth, about $14 \frac{1}{2}$ h., the moon, just after her rising, touched the star Spica at her northernmost limb: the latitude of the star was $2^{\circ} \mathrm{S}$.; its longitude $172 \frac{12^{\circ}}{}{ }^{\circ}$. These two observations of Spica give the precession $10^{\prime}$ in 12 years, as they ought to do, according to more modern experience. $\quad \stackrel{\ominus}{\sim}-281^{y}-136.34^{\text {d }}$.
468, (p. 62, 63, B. p. 162, 163, H.) Aristarchus observed the summer solstice at the end of the 50th year of the first Calippic period; that is, according to Hipparchus, 152 years after Meton and Euctemon, or in the 44th from the death of Alexander, which was the year 468 of Nabonassar. See 316. About

$$
\stackrel{\odot}{\Upsilon}-279^{y}+94^{\mathrm{d}} .
$$

476, Athyr (III.) 20, (p. 252, B. vol. 2, p. 226, H.) In Dionysius's 13th year, the 25 th of his month Aegon, the planet Mars came close to the northernmost star in the forehead of

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the scorpion; this was in the 52nd year after the death of Alexander, or the 476 th of Nabonassar ; the 20-21st of the Egyptian month Athyr, toward sunrise: the star being in $m$ $2^{\circ} 15^{\prime}$.
476, Mesore (XII.) 17. (p. 242, B. vol. 2, p. 205, H Timocharis records an observation made in the 13th year of Philadelphus, on the 17-18th of Mesore; Venus passed exactly over the star opposite to the forerunner of Vindemiator, which is the star following the star at the end of the southern wing of Virgo, the year being the 467 th of Nabonassar ; the time near sunrise.
$\stackrel{\ominus}{\Upsilon}-271^{y}+201.38^{d}$.
It follows that the first year of Philadelphus was the 464th of Nabonassar, or the 40 th after Alexander. The astronomers seem not to have continued to date from the epoch of Ptolemy Soter so long as the medals.
484, Thoth (I.) 18. (P. 237, B. vol. 2, p. 187, H.) In the 21st year of the era of Dionysius, which was the 484th of Nabonassar, on the 22d of the month which he calls Scorpion, or the 18 19th of the Egyptian month Thoth, in the morning : the planet Mercury was at the distance of the moon's diameter from a line passing through the northern and the middle star in the Scorpion's forehead, and was two diameters to the north of the northernmost.

$$
\odot-263^{\mathrm{y}}-129.56^{\mathrm{d}}
$$

486, Choeac (IV.) 17. (p. 231, B. vol. 2. p. 168, H.) In the year called the 23d of Dionysius, the 27th of Hydron, the planet Mercury was three diameters of the moon to the northwards of the bright star in the tail of Capricorn. The year was the 486 th of Nabonassar; Choeac 17-18, in the morning.

$$
\odot-261^{y}-41.05^{d} .
$$

486, Phamenoth (VII.) (p. 232, B. vol. 2, p. 169, H.) In the 23rd year of Dionysius, the 4 th of Tauron, in the evening, Mercury was at the distance of 3 moons from the line drawn through the bull's horns, or in $8 \mathbf{2 3 ^ { \circ }} \mathbf{2}^{\prime}$; the year being the 486th of Nabonassar: the mean sun being in $r 29 \frac{1}{2}^{\circ}$ : the time was " Phamenoth, the evening of the 30th to the 1st:" this must have been the evening between the 30th of Mechir and the 1st of Phamenoth, in order that the sun's longitude may have been less than $30^{\circ}$ : or

$$
\stackrel{\odot}{\gamma}-261^{\mathrm{v}}+31.6^{\mathrm{d}}
$$

486, Payni (X.) 30. (p. 232, B. vol. 2, p. 170, H. In the 24th of Dionysius, the 28th of Leonton, in the evening; Mercury preceded Spica, according to Hipparchus's reckoning, a little more than $3^{\circ}$; being in $19 \frac{1}{2}{ }^{\circ}$ of m以
$\stackrel{\odot}{\gamma}-261^{y}+151.6^{d}$.
491, Pharmuthi (VIII.) 5. (p. 232, B. vol. 2, p. 169, H.) In the 28th year of Dionysius, the 7th of Didymon in the evening,

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Mercury was in a line with the heads of the Twins, $1 \frac{2}{3}$ moons to the south of the southernmost, or in II $29^{\circ} 20^{\prime}$.

$$
\odot-256^{y}+65.39^{\mathrm{d}} .
$$

504, Thoth (I.) 27. (p. 232, B. vol. 2, p. 171, H.) In the 67th year according to the Chaldeans, on the 5th of Apellaeus, Mercury was in $\Pi 2^{\circ} 20^{\prime}$ : this was the 27-8th of Thoth, 504 N . towards the morning.
$\stackrel{\odot}{\odot}-243^{y}-125.55^{\text {d }}$.
Hence the first Chaldean year must have been the 438th of Nabonassar. Apellaeus is the second of the Macedonian months; and if Dius the first had 30 days, this Macedonian year must have begun about $159 \frac{1}{2}$ days before the vernal equinox; if $29,158 \frac{1}{2}$.
507, Epiphi (XI.) 17. (p. 261, B. vol. 2, p. 263, H.) In the 47th year of Dionysius, the 10th of Parthenon, Jupiter eclipsed the star called the southern ass, near the nebula of Cancer, in $511^{\circ} 20^{\prime}$, the 17-13th of Epiphi in the morning, the 83d year after the death of Alexander.
$\stackrel{\odot}{\gamma}-240^{y}+163.82^{d}$.
512, Thoth (I.) 9. (p. 232, B. vol. 2, p. 170, H.) In the 75th year according to the Chaldeans, the 14 th of Dius, Mercury was above the southern star of Libra, half a cubit, or in $\bumpeq$ $14^{\circ} 6^{\prime}$ : this was the 512 th of Nabonassar, the 9 -10th of Thoth in the morning.
$\stackrel{\odot}{\gamma}-235^{y}-145.39^{\circ}$.
The 1st of Dius and of the Macedonian year, was here consequently about $158 \frac{1}{2}$ days before the equinox: so that if Dius had 29 days, there were exactly 8 correct years from the beginning of the 67th to that of the 75 th Chaldean year. See 504.

519, Tybi (V.) 14. (p. 269, B. vol. 2, p. 288, H.) In the 82d year of the Chaldeans, the 5th of Xanthicus, in the evening, Saturn was below the southern shoulder of the Virgin 4 digits: this was in the evening of the " 12 Tybi, the 519 th of Nabonassar;" but, for 12, Ideler and Halma read 14.

$$
\stackrel{\odot}{\Upsilon}-228^{\mathrm{y}}-22.38^{\mathrm{d}} .
$$

If the five Macedonian months preceding $\mathbf{X}$ anthicus contained 147 days, the 5 th of this month was the 152 d of the year, which must have begun $173 \frac{1}{2}^{\mathrm{d}}$ before the vernal equinox, instead of $158 \frac{1}{2}$; that is, 15 days earlier than in the year 512.
547, Mesore (XII.) 16. (p. 106, B. p. 279, H.) An eclipse of the moon, quoted by Hipparchus, was observed at Alexandria, in the 54 th year of the second Calippic period, on the 16 th of the Egyptian month Mesore: the middle was $5 \frac{1}{2}$ hours before midnight, $546^{y} 345^{\mathrm{d}} 6 \frac{1}{2} \mathrm{~h}$ from the epoch.
$\stackrel{\text { ® }}{ }-200^{y}+182.74^{d}$.

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of Nabonassar.
The 51st year of this Calippic period began therefore about the 9th Egyptian month of 544 N ., that is, soon after the summer solstice of that year; which was 76 years later than 468, the date of the solstice observed by Hipparchus, at the end of the 50th Calippic year of the first period: the beginning of which was 50 years earlier, or in 418 of Nabonassar.
548, Mechir (VI.) 9. (p. 106, B. p. 280, H.) In the 55th year of the same period, the middle of a total lunar eclipse was $547^{y} 158^{\mathrm{d}} 13 \frac{1 \mathrm{~h}}{}{ }^{\mathrm{h}}$ after the epoch, or

The interval from the last eclipse, according to Hipparchus, was $178^{\mathrm{d}} 6^{\mathrm{h}}$; according to Ptolemy, $178^{\mathrm{d}} 6^{\mathrm{h}} 50^{\mathrm{m}}$.
548, Mesore (XII.) 5. (p. 106, B. p. 281, H.) A second total eclipse of the moon occurred in the same 55th year of the second Calippic period, on the 5th of Mesore: the middle, according to Hipparchus, was at $14 \frac{1}{2}$, simply; or accurately, reckoning by mean time, at $133^{3}$, giving $547^{y} 334^{\mathrm{d}} 133^{3 \mathrm{~h}}$ from the epoch, and an interval of $176^{d} \frac{2}{5}$ from the time of the preceding eclipse, that is,

$$
\bigodot-199^{\mathrm{y}}+171.78^{\mathrm{d}} .
$$

There can be no ambiguity respecting the succession of the first and third of these eclipses, which happened at the distance of a lunar year from each other, and which must naturally have happened in two successive years of any system of chronology. But it is much less intelligible, that the second eclipse should be referred to the latter rather than the former of the Calippic years, which must be supposed to have begun about $94^{d}$ after the vernal equinox of -199 , while the eclipse happened a few days before the equinox; though certainly in the same Egyptian year. There cannot well be an error in the manuscripts; because the years are expressly called the same.

352, Mechir (VI.) 18. The date of the Pillar of Rosetta. The 476th of Nabonassar being the 13th of Philadelphus, the 38th, or last of this prince must have been the 501st N.; the 25th of Evergetes the 526th; the 17th of Philopator the 543d, and the 9th of Epiphanes the 552d.
$\odot-195^{y}+4.2^{d}$.
The same inscription bears the date of the 4 th of Xanthicus, which was probably the 151st of the Macedonian year, and the beginning of this year was about 154 days before the vernal equinox: while in 512, that is 40 years before, it had begun 158 days before the equinox: the difference amounting but to 4 days, which is probably less than the error that would attend any other date that could be substituted: and Mr. St. Martin's attempt to prove, that the year of the young

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king began with the 15 th of his father, appears to be completely unsuccessful. Dr. Young seems to have been too hasty in allowing the opinion of this ingenious antiquary to influence his dates of the reigns of the Ptolemies in this particular. (Discoveries, p. 143.)

The perfect agreement of the Macedonian year, at least as observed by the "Chaldeans," in 504 and 512 of Nabonassar, with the true tropical year, leads us at once to suppose, that they must have retained the very ancient mode of intercalation which consisted in inserting three months in each "octaëterid:" and the example of the year 519 , when the Macedonian year began 15 days earlier than it must have done in 520, shews that there must have been an intercalary month at the end of 519 , though there seems to be but 26 days left for it. The precise order of the intercalations has not been fully explained in any good authority: and it is certain that it must have varied greatly among the different nations of the Greeks: for we have the direct testimony of several historians, and particularly of a letter of Philip, quoted by Demosthenes, to prove that the Macedonian names of the months were employed with considerable variations in Macedon and at Corinth. But the best account of these periods is found in Geminus, the author of the Introduction to the Phenomena. (Halma's Ptolemy, vol. 3, p. 44.)
" The first chronological period employed by the ancients was the Octaëterid, which contains 99 months, 3 of them intercalary, and 2924 days. The solar year containing $365 \frac{1}{4}$ days, and the lunar 354, they observed, that the lunar year was $11 \frac{1}{4}$ days shorter than the solar, and they inquired what multiple of this time would give them complete months. Now, 8 times 114 are 90 days, or 3 months: and these months they introduced in the 3d, 5th, and 8th years of each cycle: leaving two years unaltered between two of the pairs of intercalations, and one between the other pair: and since two lunar months make 59 days, they reckoned the months alternately of 29 and 30 days, or deficient and complete, as they were called.
" The octaëterid, thus constituted, agreed sufficiently well with the course of the sun, but not so accurately with that of the moon: for the true month consists of $\frac{1}{33}$ of a day more than $29 \frac{1}{2}$, so that the 99 true months made $2923 \frac{1}{2}$ days: while the 8 solar years gave only 2922 days: and the lunar period was a day and a half greater than the solar, two octaëterids wanting 3 days of the corresponding 198 months: of course, in 20 octaëterids, the difference amounted to a month; and it was necessary to omit an intercalary month once in 160 years, and to make only 29 instead of 30 intercalations in that period.

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" These proportions, however, are still in want of further correction, and instead of omitting an intercalation in 20 octaëterids, it is more accurate to omit one in 19: and instead of $3 \times 19$ or 57 intercalations in this time, to make only 56 , that is 7 in each period of 19 years.
" On this last correction the periods of [Meton,] Euctemon, Philippus, and Calippus, were founded. They first took the solar year as containing $365 \frac{5}{19}$ days, making 6940 days in 19 years, and of the 235 months in this period they made 125 complete and 110 defective; the complete and defective months not being always alternate: and 110 being [about] the 63 d part of 6940 , they left out one day of a complete month every 63d day of the period. Calippus afterwards found that the year, thus measured, was $\frac{1}{76}$ of a day too short: he therefore established a period of 76 years, in which he. corrected the error by dividing it into 940 months, of which 28 are intercalary; the whole containing 27759 days."

This arrangement of Calippus was admirably adapted for preserving the order of the true lunar months: but it must have deviated very considerably from that of the solar years; and we have no positive evidence of the manner in which the seven intercalary months were distributed among the 19 years into which each quarter of the period was divided.

The same period of nineteen years is still of considerable use in modern chronology: for in the present century, if we divide the date of the Christian year by 19, multiply the remainder by 11 , and divide by 30 ; the last remainder will be the EPACT, or the moon's supposed age on the first of January; and the former remainder, increased by 1, will give the golden number. Thus in 1828, the golden number is 5 , and the epact 14.

But to return to the Pillar of Rosetta; it is perfectly true, that the agreement of the two dates would be more satisfactory, according to the evidence of 504 and 502 N . if we supposed the time 3 years earlier, as Mr. St. Martin has done. For at those dates the Macedonian year began 158 days before the vernal equinox; and if it had done the same in 552 , as we should expect, the date would have been the 8th of Xanthicus: in 551, since an intercalation must have intervened, as in 519, the date of the same Egyptian day would have been 19 days later, or the 27 th; the year before, the 16 th; and in 549 , probably about the 5 th of Xanthicus. instead of the 4th. But this analogy is by no means sufficient to make it probable, that the real 6th year of Epiphanes should have been called the 9th: and we may oppose to it the direct inference from the later date of the year 519, in which the 5th of Xanthicus was 22 days before

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the vernal equinox, and according to the regular observance of the octaëterid, this must probably have happened again in the year 551 : and to the 5 th of Xanthicus in 552 there must have been $354+29=383$ days, or 18 days above the solar year: which deducted from 22, leaves four days for the date of the 5th of Xanthicus before the vernal equinox, or 5 days for that of the 4th: while the Egyptian date of Ptolemy gives us $4 \frac{1}{4}$ : and no greater perfection can reasonably be descried in such a coincidence: indeed we have only to suppose the intercalary month to have contained 30 days, which is perfectly admissible, to have the 4th of Xanthicus, instead of the 5 th, for the synonym of the 18th of Mechir.

The knowledge, which we have thus acquired of the Macedonian calendar, will enable us to form a satisfactory estimation at least, if not a certain demonstration of the date of the death of Alexander, which was clearly in the Egyptian year 424 of Nabonassar, and which, as Plutarch informs us, on the authority of the official journal of his illness, happened on the 28th of the month Daesius, which was the eighth month of the year, and the day the 234th. Now, if the Macedonian year began 158 days before the vernal equinox of 504 , it probably did the same in 424, and the former year beginning about $\underset{\gamma}{\odot}-243^{y}-158^{\text {d }}$, the latter must have begun about $\odot-323^{y}-158^{\text {d }}$, and the day in quéstion must have been about $\odot-323^{y}+76^{d}$ : that is, in the common language of chronologers, about the 9 th of June, 324 B. C. This date agrees sufficiently well with the season of the year assigned by an ancient author, quoted by Mr. St. Martin, to the death of Diogenes, which is supposed to have happened on the same day with that of Alexander: but even if it was on the $22 d$ of June, as Mr. St. Martin supposes, it could scarcely have been on lis road to the Olympic games, that Diogenes died. The intercalary month this ingenious critic thinks the "Dioscorus" mentioned in the Maccabees. Plutarch tells us, that Alexander was born on the 6th of the month of Loüs, which was the tenth of the Macedonian year; and this date agrees well enough with the story of Philip's receiving an account of a victory at the Olympic games, and of the birth of his son on the same day.

574, Phamenoth (VII.) 27. (p. 142, B. p. 389, H.) In the 7th year of Philometor, which is the 574th of Nabonassar, the 27-8th of Phamenotl, the moon was eclipsed to the extent of 7 digits on the northern limb; the interval from the epoch to the middle of the eclipse being $573^{\mathrm{y}} 206^{\mathrm{d}} 14^{\mathrm{h}}$ mean time in Alexandria.

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of Nabonassar.
The last year of Philopator having been 543 N., that of Epiphanes 567 N., the 7th of Philometor must have been 574 N.: so that the lengths of the reigns of these kings assigned by the chronologers is fully confirmed by the authority of Ptolemy, as well as by that of the manuscripts of the Cholchytae still existing at Turin.
586, Mesore (XII.) 30. (p. 60, B. p. 156, H.) Hipparchus says that in the 17th year of the third Calippic period, the autumnal equinox was observed the 30th of Mesore, about sunset.

$$
\stackrel{\odot}{\odot}-161^{y}+187.0^{d} .
$$

The interval 187 days agrees with the direct observation of Ptolemy. (p. 72, B.)
The autumnal equinox of the first year of this period must have been in 570 N . We have already seen that Mesore 547 was in the 54th year of the second period, and Mesore 570 would have been in the 77 th of that period, or the 1st of the succeeding.
589, Epagomenae (XIII.) 1. (p.60, B.) Three years afterwards, that is, in the year 20, the equinox was at, on the 1st of the Epagomenae in the morning,
$\stackrel{\odot}{\odot}-158^{y}+186.9^{\mathrm{d}}$.
590, Epagomenae (XIII.) 1. In the 21 st year the equinox was observed at the 6th hour.

$$
\stackrel{\otimes}{\sim}-157^{y}+186.9^{d} .
$$

601, Epagomenae (XIII.) 3-4; after 11 years, in the 32d year of the period, the autumnal equinox was observed at midnight, the 178th year after Alexander, 285 years before the 9th of Athyr in 463 after Alexander: the observation was made with great care.

$$
\stackrel{\odot}{\odot}-146^{y}+186.87^{d} .
$$

602, Mechir (VI.) 27. (p. 62, B. p. 154, H.) Hipparchus says, that the vernal equinox was very accurately observed in the 32d year of the third period of Calippus, on the 27th of Mechir in the morning, about the 5th hour: the year being the 178th after the death of Alexander, which is the 602d of Nabonassar.

$$
\stackrel{\odot}{\odot}-145^{y}+.05^{d} .
$$

Ptolemy says that this observation was 285 years before that of the 7 Pachon, 463 after Alexander: this must therefore have been subsequent to the autumnal equinox last mentioned, which he refers to the end of the same Egyptian year after the death of Alexander; and there must either have been a mistake in some of the numbers, or Ptolemy must have reckoned the year after the death of Alexander from the summer. The error has been already corrected by making the dates of the autumnal equinoxes from 586 to 601, a year earlier than would be inferred from the year of

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of Nabonassar.
Alexander: and it has been found that the date of the Calippic period becomes correct 686 N . We find also that both these equinoxes happened 285 Egyptian years and 70 days before those of Athyr (IV.) and Pachon (IX.) of the 3rd of Antonine, and this could only have been true, if one was at the end of 601 , the other in the middle of 602.

602, (p. 61, B.) Hipparchus found the longitude of Spica $186^{\circ} 30^{\prime}$.
602, Epagomenae (XIII.) 4. (p. 153, H.) After a year the autumnal equinox of Calippus's 33 d year was on the 4th of the Epagomenae in the morning.

$$
\stackrel{\odot}{\gamma}-145^{y}+186.88^{\mathrm{d}} .
$$


605, Epagomenae (XIII.) 4. (p. 60, B. p. 153, H.) The autumnal equinox was observed in the evening.
$\odot-142^{y}+186.9^{d}$.
606, Mechir (VI.) Vernal equinox.

$$
\stackrel{\ominus}{\gamma}-141.00^{y} .
$$

607, Tybi (V.) 2. (p. 142, B. p. 390, H.) In the 37th year of the third Calippic period, the middle of a lunar eclipse observed at Rhodes, was $606^{y} 121^{\mathrm{d}} 10^{\mathrm{h}} 10^{\mathrm{m}}$ after the epoch, both in apparent and in correct time, or

613, Mechir (VI.) (p. 60, B. p. 156, H.) In the 43d year of the third Calippic period, the observation of the vernal equinox was made at midnight of the 29-30th of Mechir, agreeing with the time of the observation made 11 years before.

$$
\odot-134^{y}+0.03^{\mathrm{d}} .
$$

614..620, (p.60.) The agreement of the equinoxes with the regular interval of about $365 \frac{1}{4}$ days was observed in each of these years by Hipparchus, about

$$
\stackrel{\odot}{\gamma}-133.0^{y} \text { to } \underset{\gamma}{\odot}-127.0^{y} .
$$

620, Phamenoth (VII.) 1. (p. 60, 63, B. p. 163, H.) The equinox was observed about sunset, that is $1 \frac{3}{4} d$. later than the observation made 7 years before, in the 43 d year of the period.

$$
\stackrel{\ominus}{\odot}-127.00^{y} .
$$

620, (p. 167, B. vol. 2, p. 12, 13, H.) In the 50th year of the third Calippic period, the longitude of the Lion's heart, according to Hipparchus, was $29^{\circ} 50^{\circ}$. Ptolemy made it $2^{\circ} 40^{\prime}$ more in the $2 d$ year of Antonine.
620, Epiphi (XI.) 16. (p. 111, B. p. 295, H.) Hipparchus found

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at the interval from the epoch of $619^{y} 314^{\mathrm{d}} 17^{\mathrm{h}} 50^{\mathrm{m}}$, apparently, but accurately $45^{\mathrm{m}}$, the distance of the sun from the moon $86^{\circ} 15^{\prime}$.

$$
\stackrel{\odot}{\gamma}-127^{y}+134.51^{\mathrm{d}} .
$$

621, Pharmuthi (VIII.) 11. (p. 112, B. p. 299, H.) Hipparchus relates, that he observed at Rhodes the true distance of the sun and moon, $313^{\circ} 42^{\prime}$ very nearly, $620^{\mathrm{y}} 219^{\mathrm{d}} 18 \frac{1}{3} \mathrm{~b}$, apparently, but correctly $18^{\mathrm{b}}$, after the epoch $\quad \stackrel{\ominus}{\gamma}-126^{y}+39.28^{\mathrm{d}}$.
621, Payni (X.) 17. (p. 114, B. p. 304, H.) In the same year, 197 after the death of Alexander, Hipparchus observed in Rhodes the moon's longitude $20^{\circ}$ of $\Omega$, both apparently and truly, for she had then no parallax in longitude: the time was $620^{y} 286^{\mathrm{d}} 4^{\mathrm{h}}$, apparently, but correctly $3 \frac{?}{3} \mathrm{~h}$. after the epoch.

$$
\bigodot-126^{y}+105.66^{d} .
$$

719. The first year of Augustus, (p. 79, B. p. 204, H.) From the 1 Augustus to the 17 Adrian, the interval is 161 Egyptian years: from the epoch to the 17 Adrian. 879: this year was therefore the 880th of Nabonassar, and the first of Augustus the 719th.
720. Hence the 5th of Augustus was the 723d of Nabonassar. It was in this year, as we are informed by the fragment of the emperor Heraclius, published in Dodwell's Dissertationes Cyprianicae, 1684, (p. 111.) that the Greeks of Alexandria adopted the Julian system of intercalation: and "the number of days added is found by dividing the number of years elapsed from the 5 th of Augustus, and neglecting the remainder." This year began with the 28th, or rather the 29th of August, which was the 1st of Thoth: and in the August of the year preceding each bissextile, the Alexandrians reckoned 6 Epagomenae, instead of 5. In Halma's Ptolemy, vol. 3, p. 9, there is a note of Logothetes, from a manuscript in the king's library at Paris, which tells us that the tetraëterids of the Alexandrian year are reckoned from the beginning of the 6th year of Augustus: the bissextile baving been introduced at the time of the taking of Alexandria by that emperor. See 1112.

The 1 Thoth 723 was

$$
\begin{aligned}
& \stackrel{\odot}{r}-24^{y}-205.2^{\mathrm{d}} . \\
= & \odot \sim-25^{y}+160.0^{\mathrm{d}} .
\end{aligned}
$$

This is about 27 days before the autumnal equinox. It has been generally admitted that the 1st Thoth of this year was the 29th of August. The words of Heraclius are, "the Alexandrians call the first month Thoth, which is

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September, comprehending three days of August:" and the 29th would give but two days of August, and would make the autumnal equinox the 25 th or 26 th of September. The calendar of the stars attributed to Ptolemy (Halma, v. 3, p. 21,) has, indeed; an interpolation of a Roman, after the 1st Thoth, " according to our date, the 29th of A ugust :" and the autumnal equinox is marked on the 28th Thoth: the vernal the 26th of Phamenoth; the summer solstice the 1st Epiphi; the winter the 26th Choeac: agreeing sufficiently well with the reduction from Ptolemy; for 205 days from the 1st Thoth give us the 26th of Phamenoth. Logothetes, and the other later chronological fragments published by Halma, agree in making the 29th of August the 1st of Thoth.
840, Tybi (V.) 2. (p. 170, B. vol. 2, p. 22, H.) Agrippa relates that he observed in Bithynia, in the 12th year of Domitian, the 7th of "their month Metroüs," an occultation of the southern following part of the Pleiades; whence the true place of the moon is made $3^{\circ} 7^{\prime} 8$, the date being the 840th year of Nabonassar, 2d Tybi, $6 \frac{2_{3}^{h}}{}$ apparent time, $6 \frac{1}{4}^{\frac{h}{h}}$ correct time.

$$
\stackrel{\odot}{\odot}+93^{\mathrm{y}}-112.23^{\mathrm{d}} .
$$

The 1st of Domitian was therefore $829 \mathbf{N}$.
883, Athyr (III.) 13. (p. 332, H.) Ptolemy observed the moon's transit in the 20th of Adrian, the 13th Athyr, just before sunset, 5 h .50 m . after noon: the altitude of her centre being $50^{\circ} 55^{\prime}$; whence the parallax is found $50^{\prime} 55^{\prime \prime}$ : the interval from the epoch was apparently 882 y . 72d. $5 \mathrm{~h} .50 \mathrm{~m} .$, but correctly 5 h. 20 m .

$$
\stackrel{\odot}{\gamma}+136^{y}-171.69^{d}
$$

In this computation the latitude of Alexandria is made $30^{\circ} 58^{\prime}$, instead of $31^{\circ} 12^{\prime}$ : and it is inconceivable how an error of such magnitude can have been committed by astronomers so numerous and so accurate as those of the school of Alexandria.
1112, Phamenoth (VII.) 6. (Theon, p. 284, 277, 281, B.) An eclipse of the moon was observed by Theon the commentator, $6 \frac{1}{10}$ hours after noon of the 6th Phamenoth, or $7 \frac{1}{10}$. hours apparent time : the moon being in $828^{\circ} 15^{\prime} 10^{\prime \prime}$.

$$
\stackrel{\odot}{\vee}+365^{\mathrm{y}}-113.9^{\mathrm{d}} .
$$

This was " the 81st year of Diocletian, according to the Alexandrians, in the month of Athyr; but according to the Egyptians, the 81st year, in the month of Phamenoth." "The conjunction which took place in the month Thoth, was on the 24th, according to the tables, and reckoning back 97 for the difference of the years, we have the 22 d

Egyptian year
of Nabonassar.
Payni of the preceding year for the Alexandrian date, since $24+365-97=389-97=292$." The Alexandrian year having been introduced in 723 of Nabonassar, we have 1112-723=389=4×974. And in the same manner the 6th Phamenoth, deducting 97 days, gives the 29th of Athyr, which was the Alexandrian time of the eclipse. The preceding conjunction was, according to the tables, on the 21st Mechir.

It follows that the years of Diocletian are found by deducting 1031 from those of Nabonassar, and that the first of Diocletian was 1032 of Nabonassar. Heraclius says that there were 313 from the 1 Augustus, to the 1 Diocletian, and $719+313=1032$.

We are informed in the same chapter of Theon, (p. 280,) that the "table of cities" gives the longitudes East from the "Fortunate islands;" and we are directed to take out of it the difference of the longitude of a given place from that of Alexandria, in order to find the time of that place.

In Heraclius's example of Alexandrian time for the 77th of Diocletian, the time reckoned from the 5th of Augustus is 385 years, or $4 \times 96 \frac{1}{x}$, and 96 days are deducted. P. 111 . See 723.
1223, Athyr (III.) 21. (Halma, vol. 3, p. 11.) The 192d year of Diocletian, the 21st Athyr, the moon was observed by Thius at Athens to pass over Venus, in $13^{\circ}$ ๒, and $48^{\circ}$ from the sun. This would be

But the longitude of Venus being $\mathbf{2 8 3}$, that of the sun should have been $235^{\circ}$, or $331^{\circ}$, which it could not be 246 days before the equinox. The time must therefure have been Alexandrian, that is, 125 days later, or $\quad \odot+477^{y}-121^{\text {d }}$.

$$
=\stackrel{r}{q}+476 y+244^{d} .
$$

and the sun must have been behind Venus. The other observations of Thius are probably recorded in the same time.
1245, Paohon (IX.) 6. (Halma, vol. 3, p. 10.) Heliodorus observed in the 214th year of Diocletian, the 6-7th Pachon, the second hour of the night, Mars in perfect contact with Jupiter. The interval from the epoch was $1244^{y}$ and either $245.33^{\text {d }}$. or $375.33^{\text {d }}$.
E. Т. $\quad \stackrel{\odot}{\sim}+498^{y}-38.1^{d}$.
or A.T. $\quad \varnothing+498^{y}+91.9^{d}$.
1250, Mechir (VI.) 27. (Halma, vol. 3, p. 10.) Heliodorus observed in 219 of Diocletian, an occultation of the planet

Egyptian year
of Nabonassar.
Saturn by the moon, the $27-8$ th Mechir, a little after the 4th hour of the night, the middle being about 5 hours after sunset: the emersion was at the middle of the enlightened part of the moon.

Either E. T. $\stackrel{\odot}{\odot}+503^{y}-156.3^{d}$.

$$
\text { or A. T. } \stackrel{\odot}{\odot}+503^{\mathrm{y}}-24.3^{\mathrm{d}} .
$$

1256, Thoth (I.) 30. (Halma, vol. 3. p. 11.) Thius observed the passage of Jupiter 3 digits to the North of Regulus, the 225 th of Diocletian. The 133 days of intercalation make this the 163d day of the old Egyptian year, and the equinoctial date
$\odot+509^{\mathrm{y}}-182.0^{\mathrm{d}}$.
1256, Phamenoth (VII.) 15. (Halma, vol. 3, p. 11.) Thius found that the moon in $16 \frac{1_{2}}{}{ }^{\circ} \mathrm{g}$ must have occulted the Hyades in the day time: 225 of Diocletian.
1256, Payni (X.) 29. (Halma, vol. 3, p. 11.) Thius observed that soon after sunset the planet Mars was near to Jupiter 1 digit to the west: in the situation which the tables indicated for the 23 d of the same month: the year was the 225th of Diocletian.
1257, (Halma, vol. 3, p. 12.) In 226 after Diocletian, Thius found that Venus was 20 digits before Jupiter . . . and on the 29th... 10 digits behind him, in the same latitude: while the ephemerides made the conjunction on the 30th: Bouillaud says, of Mesore.

The year began in Alexandrian time
the 30th Mesore, noon,


Dates from the Catalogue of Olympiads.

Solstitial date of the beginning.

In Scaliger's edition of Eusebius, there is a Catalogue of the Olympiads, among the Collections not translated, which has every appearance of high authenticity: the author was acquainted with the principal astronomical occurrences which are mentioned by Ptolemy, and he has introduced many of them in their proper places, at intervals agreeing with those which are assigned by Ptolemy: he seems to have been a person of correct judgment, and he was a Christian, though too fond of recording fictitious prodigies. There is great reason to suppose that he was no other than Africanus, to whom Scaliger himself attributes the more meager catalogue of Oympic victors.

Troy taken by the Greeks. See 692. The begiuning of Grecian history. About
23. Ol. VI. 3. "Rome founded according to some authors."
25.

OI. VII. 1. Rome founded.
$\odot-751$
This date is confirmed by Dionysius and others. Tarutius, the friend of Varro, as quoted by Plutarch, makes the birth of Romulus the 21st Thoth following the 23d Choeac, in the 1st year of the IId Olympiad, and says, that Rome was founded the 9th Pharmuthi, VI. 3: but the Varronian era has not been generally considered as of high authority. Pharmuthi was about the autumnal equinox.

Ol. VIII. 2. The begimning of the era of "Nabusar."

This Olympic year must have ended about $\odot-\mathbf{7 4 6}^{\text {y }}$ +94 d that is, at the first midsummer in the reign of Nabonassar: consequently, the first Olympic year should have begun 30 years earlier, or $\odot-7{ }^{\circ}-76^{y}+94^{d}$. or $\odot-776^{y}$, and not $\odot-775^{y}$.

Hence it appears that the beginning of the era of Nabonassar is here set down as belonging to the Olympic year which began soon after it, and not to the year which was nearly ended at that epoch.
55. p. 314, Ol. XIV. 3. The 1st year of Mardoc Empadus; an eclipse of the moon. See N. 27.

The eclipse happened a little before the vernal equinox following this solstice, that is, $\odot-720$.
137. p. 315, OI. XXXV. 1. Thales born.
188. p. 316, Ol. XLVII. 4. Vaphres began to reign in Egypt.
$\odot-588$
The article Egypt has 590 B. C. ; which, expressed in astronomical language, is -589.
191. Ol. XLVIII. 3. Foundation of the Pythian games. An eclipse of the sun foretold by Thales.

Mr. Baily makes the eclipse mentioned by Herodotus as foretold by Thales, 610, B.C. that is -609. Ph. Tr. 1811. Both these dates might have been in the reign of Alyattes: and if the story of Herodotus is true, Mr. Baily's computations are sufficient to prove that the earlier date is correct; and that the eclipse here mentioned was not that of Herodotus. Pliny is the oldest author that has recorded this eclipse, in the reign of Halyattes, as having happened Ol. XLVIII. 4. Mr. Baily makes it 30th Sept. 610, B. C., the sun's declination being $8^{\prime \prime}$ : that is, $\odot-609.0^{y}$; the 167 th Olympiadic year.
251. p. 318, Ol. LXIII. 3. Amasis dies, having reigned 55 years. Cambyses conquers Egypt.
254. Ol. LXIV. 2. The moon eclipsed in the 7th year of Cambyses.
© - 522
This was 225 N . about 13 days after the solstice of -522; so that the Olympic games must have followed very shortly after the solstice.
275.

Ol. LXIX. 3. The moon eclipsed, in the 20th of Darius Hystaspis.

See 246 N.
344. p. 321, Ol. LXXXVI. 4. Apseudes being Archon, Meton, the son of Pausanias, erected a dial, and made known his cycle of 19 years.

The solstice observed by Meton, while Apseudes was Archon, appears from Ptolemy to have been © -431, 94 days after the vernal equinox: and the Olympic year having begun soon after the solstice of -431, this observation must have been made at the end of the archonship of Apseudes: and we find, in Nabonassar 468, Aristarchus observed the summer solstice at the end of a Calippic year.
394. p. 324, Ol. XCLX. 2. Phanostratus being Archon, an eclipse of the moon in Posideon, and again in Scirrophorion.

The latter was only 10 days before the solstice of -381, which was near the end of this Olympic year: the former about the winter solstice, or the middle of the year. See N. 366.

Olympiadic year.
395.

O1. XCIX. 3. Menander or Evander being Archon. An eclipse of the moon in Posideon.

## About midwinter. See N, 367.

413. p. 326, Ol. CIV. 1. An eclipse of the sun.
¢-363
414. Ol. CIV. 3. Tachos, king of Egypt, went through Arabia to meet Artaxerxes, who died this year, after a reign of 43 years.
415. Ol. CV. 1. The reign of Philip began; it lasted 24 years.
$\stackrel{\odot}{3}-359$
416. Ol. CV.4. Alexander born. Some say a year later.
¢-356
417. p. 327, O1. CVII. 3. Nebtanebos, king of Egypt, abdicates, and flies into Ethiopia. Artaxerxes conquers the whole of Egypt.
418. p. 238, Ol. CXI. 1. Philip is killed, having reigned 24 years.
419. Ol. CXI. 2. Alexander crosses into Asia.
?
420. p. 329, Ol. CXII. 2. Alexandria founded; an eclipse of the moon; battle of Arbela; beginning of the periods of Calippus of Cyzicum.
¢-330
421. 

Ol. CXIII. 4. Alexander marries Statira.
© -324
453. Ol. CXIV. 1. Alexander issues a proclamation before the opening of the Olympic games, for the return of all the Grecian fugitives. He dies in Babylon, having reigned 12 years and 7 months. Diogenes, the cynic, died the same day. See N. 552.

- -323

The proclamation was probably issued after the king's actual death.
[467. Phil. Tr. 1811. Mr. Baily makes the eclipse of Agathocles, mentioned by Diodorus,
602. p. 333, O1. CLI. 2. An eclipse of the moon, in the 7th year of Philometor.

$$
\odot-174
$$

Nab. 574. $\odot \sim-173^{y}+37.51^{\mathrm{d}}$; of course before the solstice -173. The 7th of Philometor began about the autumnal equinox -174 .
692. p. 335, Ol. CLXXIII. 4. Troy taken by Sylla, 1100 years after its capture by the Greeks.
$\stackrel{\odot}{9}-84$

729. p. 337, Ol. CLXXXIII. 1. Battle of Pharsalia. Siege of Alexandria. Epoch of Cæsar's empire, and of the era of the Antiochians.
731. Ol. CLXXXIII. 3. End of the History of Diodorus. Cæsar corrects the Roman year.

Ol. CLXXXIV. 3. Battle of Philippi.
$\qquad$
737. Ol. CLXXXV. 1. Herod called king of the Jews.
$\stackrel{\odot}{8}-39$
746. Ol. CLXXXVII. 2. Battle of Actium, " towards the middle of the Olympiad," that is, towards the end of the year.
747.
748.

Ol. CLXXXVII. 3. Antony kills himself.

4. Octavius triumphs over

Egypt.

$$
\odot-28
$$

771. Ol. CXCIII. 3. Herod dies, and Arehelaus succeeds him.

$$
\odot-5
$$

789. p. 338, Ol. CXCVIII. 1. Augustus dies.

$$
\stackrel{\odot}{\sim}+13
$$

308. p. 339, O1. CCII. 4. Passion of our Saviour Christ. $\underset{\sim}{\odot}+32$
309. Ol. CCIV. 1. Death of Tiberius. $\quad \underset{\sim}{\odot}+40$
310. p. 340, Ol. CCIX. 3. Nero puts to death Agrippina. An eclipse of the sun, during which the stars are seen. $\stackrel{\ominus}{\mathrm{\gamma}}+59$
311. O1. CCXI. 4. Nero destroys himself, and is succeeded by Galba.

$$
\stackrel{\odot}{\odot}+68
$$

855. Ol. CCXIV. 3. Vespasian succeeded by Titus. Herculaneum and Pompeii destroyed by an eruption of $V$ esuvius.
856. p. 341, Ol. CCXIX. 4. End of the Chronicle of Justus of Tiberias, which begins with Moses.

$$
\stackrel{\odot}{\odot}+100
$$

892. Ol. CCXXIII. 4. Trajan dies, after a reign of 191 $\frac{1}{2}$ years. His bones are deposited in his column. $\stackrel{\odot}{\sim}+116$
893. p. 342, Ol. CCXXIX. 4. So far the Olympiads were written by Phlegon of Tralles, a freedman of Adrian, in 16 books.
olympiadic

year $\quad$| Solstitial date of |
| :---: |
| the beginning. |

979. p. 343, O1. CCXLV. 3. Secular games celebrated. $\underset{\sim}{\underset{\sim}{~}}+203$
980. Ol. CCXLIX. Heliodorus conquers in the $\underset{\underset{\sim}{\odot}+216}{\underset{\sim}{e}+2}$

Date of the Letter of Manumission. Hier. 46.
"Constantius Augustus VII.; and Constantius the most Illustrious.Cæsar III. Tybi 17; the XIII Indiction."
1130. p. 282. Epitome of Chronology. Ol. CCLXXIII. " 3 :" or, in the margin, 2. Constantius Augustus "IX." and Constans Cæsar III. Indiction XII.

$$
\odot+354
$$

The numbers are greatly confused, but this seems to be the year intended: the consuls for the next are Arbetion and Lollianus; and in the Catalogue of Idatius, p. 31, these names are preceded by Constantius VII. and Constantius III. The Indictions of Constantine beginning in September, it is very possible that the number 12 in the catalogues belongs to the earlier part of the year, and 13 to the later.

The catalogue in Dodwell's Diss. Cypr. (p. 103), has Constantius VII., Constantius Cæsar III., in the year 354. And the common school books exhibit the same date.

In p. 260, the first year of the Indiction is marked Ol. CLXXXIII. 2; in the margin, CLXXXIV. 3: " the 6th year of Cleopatra, the 1st of Julius Cæsar: the Antiochians began their era on the 12th of Artemisius, and the Indiction began the 1st of Gorpiaeus." See 729 O.

In p. 279, the 1st Indiction of Constantine is marked Ol. CCLXXIII. 2; in the margin CCLXXIII. 1. The year 1828 is now called the 1st Indiction; and $1828-15 \times 125=-47$; agreeing with the catalogue of Olympiads.

## ENCHORIAL NUMBERS．

Chiefly from Chaimpollion，in Kosegarten，Plate H，$I$ ．

N．Additional Reforences．Hienatio Days．Encherial Days．Common Hieratic．Common Enchorial．

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| 5．1729 | 23 | 23 | 3，7，7 | 1 |
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| 15. | 23） | $23 /$ |  |  |
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H31 L12, the same.

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In Mr. Tomard's cubit, $\frac{1}{2}$ is $\Rightarrow$, and $\frac{1}{3}$ : Obeing pe, ashere'.

## EGYPTLAN MONTHS.



Champollion in Kosegarten PC.D, E, F. SeeE." P.38.

## ENCHORIAL DATES.

## MEMNON? PSADIMETICHUS .


A. Champollion 2 de Litre P.ōg. Pl. IX. From a Papyrus of receipts at Turin. Supposed to be In the reign of Memnon, year XIV, Pharmuthi 10

Fig. 1.
$-132 . B$


Fig. 3.
Fig .4.
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Fig. 5.
$-7.2$
Fig. 6.

- 川, 2
B. Champollion 2 de Lettre P.g. PI. XV. From the Roll of receipts at Turin: supposed to denote the Years I to VI of King Thuoris or Ramses the tenth: and, without doubt, belonging to a very early reign, so as to exemplify the progress of the characters.

> Ur
C. Champollion in Mai.N.23.P.25. From a fragment of papyrus at Turin: "The year XII, Menhir 12 , of PSAMMETICHUS". The first year of Psammetichus wow probably the 84 th of Nabonassar: the 72 th the 95 Nab.
 LT.


D. Dates of a manuscript of the museum at Turin, in the character commonty called Hieratic, copied and obligingly communicated by Mr: Champotlion. Li 7. The year XLIV, or XLD, Menhir or Phamenoth 28, of King psammetichus. I, 5: The yearxliv, of King'PaMETI ch us ? L75. The year XIIV, Mechir 28, of King PSAmmetichus . .. everliving.

This 44th year of Psammetichus, the 127 th of Nabonassar, or the 5 th of Nabo polassar, begin $\stackrel{\odot}{\gamma}-620^{3}-61$, that is 61 days before the true vernal equinox 2449 years anterior to that of 782 g : it was remarkable for a lunar eclipse observed at Babylon.
LI.

 LS.

E. Dates of a papyrus with accounts, communicated by Mr. Champollion. L. The year XLV, Tybi 8 . of King PSAMMETICHUS . LS. The year XXX, Pharmuthi 6 of King PSAMMETICHUS.

## 

F. Date of a papyruis at Turin, of which a tracing was obligingly sent by Mr. San Quintino, and a copy by Mr. Champollion. The year V.Pharmuthi 8 , of King DARIUS : It is.declared. . . . .

The name DARIUS is said to begin with $\mathbf{N}$ in the Zendish, its orthography is corfirmed by an Inscription near Cosseir; published at CAIRO! in the Excerpta Hieroglyphica of Mr. James Burton, 1828. Pl.ITI.N).


The 1st. year of Darius was the 227th. of Nabonassar.
G. A papyrus brought by Mr. Cailliaud to the Muspum at Paris, traced and communicuted by Mr. Champollion: dated The year VI, Tybi, of King darius .
H. Date of a papyrus copied at Turin by Mr. Champollion, containing. a deed of sale: The year XV, Pharmuthi, of King Darius ...


1. Date of a papyrus at Turin; from a tracing sent by Mr. San Quinlino, and a copy by Mr. Champollion: The year XVI, Paophi'7! of King darius...
K. Date of a papyrus at Turin : The year XXXI, Mechir' 7? of King DARIUS. Firm a tracing sent by Mr: San Quintino, and a copy by Mr. Champollion.

L. Dale of a papyrnes at Turin: copied by Mr. Champollion. The year XXXV, Phamenoth , of King Darius ...
 M. A papyrus at Paris, dated... of ALEXANDER.: traced by diredion of Mr. Champollion.
 :

 5ovarradersinv20)
2. Preamble of a papyrus ab Paris, traced by direction of Mr: Champollion. The year Xxi Epiphi, of King PTOLEMY, Son of PTOLEMY and ARSINUE, gods Fraternal, 'alexicrates? Son of diogenes being priest of AlexANDER and the Fraternal gods, and the gods Beneficent: berenice daughter of CLEONICUS being basket bearer of AR SIN OE, the Brother loving. It is declared . . . . . . Thisappearsto be a deed of sale, dated at Thebes.




P. Papyrus of the Vatican, copied by Mr: Champollion, dated The year III, 'Pybi 7 "or 'Pachon? of King PTOLEMY Son of PTOLEMY and BKRKNICE, gods Beneficent, DEMFTTRUS Son of 'APELLA? being priest of Alexander and of the Fraternal gods, of the gods Beneficent, and of the Father loving gods : the basket bearer of ARSINOE the Brother loving . . It is declared ... See Champollion in Mai. P24.

Q. Papyrus at Paris, traced by direction of Mr. Champollion; dated The year VII, Epiphi, of King PTolemy Son of PTolemy and bernice, gods Beneficent : AETUS Son of AETUS being priest of ALEXANDER and the Fraternal gods, the gods Beneticent, the gods Father loving: PHLLESIA daughter of DEMETRIUS being basket bearer of ARSINOE the Brother loving ...

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& \text { — }
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R. Papyrus at Paris, Journ. As."I": traced also by direction of Mr. Champollion. Date: The year VIII, Pharmuthi, of King PTOLEMY, S on of PTOLEMY andArsinoe the gods [Fath rloving] : the priest of ALEXANDER and the Fraternal gods, the gods Beneficent, and the Father loving gods, and of King ptolemy the Illustrious, being Demetrius the Son of 'SitALTHES? and AREA the daughter of DIOGENES being the prize bearer of BERENICE the Beneficent: NESAFA the daughter of ADEla (2) being the basket bearer of Arsing the Brother lovingilirene the daughter of PTOLEMY being the priestess of ARSINOE the Father loving. It is declared....

Le.

The year VI, Mechir, of the King evediving.
R.L 3, $A$
L4.
L4.
L6, 7.
$L 7$.





R. $L$ 3, 7. 'The year viII, Pharmuthi, of the King everliving.

Registereat at Memphis.

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\left.\left\{t s_{0}\right)\right\}
$$









 S. Pillar of Raselta. Hi Li. [The year IX,] the Egyptians month Mechir 18, of the young King, who has received the dominion of the country from his father, Lord of the diadems, great in glory, who has established Egypt, just, beneficent, pious towards the gods, superior to his adversaries, who has corrected the lives of men, Lond of the feasts of 30 years, like Vulcan the great king, like the Sun the great king of the upper and lower countries, Son of the Fatherloving gods, approved by Vulcan, to whom the Sun has given the victory, the living image of Jove, the son of the Sun: ptolemy the everliving, beloved by Phthah, the Illustrious and Munificent, Son of PTOLEMY and ARSINOE the Father loving gods: the priest of ALEXANDER, and the Saviour gods, and the Beneficent gods, aud the Father loving gods, and of King PTOLEMY the god Illustrious and Munificent, being aETUS .



 the Son of AFTUS:PYRRHA the daughter of PHILINUS being the prize bearer of BERENICE the Beneficent:AREA the daughter of DIOGENES being the basket bearer of ARSIN OE the Brother loving: HIRENE the daughter of PTOLEMY being the priestess of ARSINOE the Father loving: on that day'and year? It was decreed . . . .

L8. For a long time; many years.
Lg. Portions. Anomoipaz.
NK—yy_ry

.<2:1

$\ln 36 \frac{1}{2}$
L25. Ten diadems.
L27. Mesore 30.
L28. Mechir ' 17 ?
The 30 and 17 '?
Ling. Annually, Thoth 1 , for 5 days.

 ,

 $0 \sqrt{2} 三 \mathrm{Z}$ (2)



T. Papyrus at Paris, traced by direction of Mr. Champollion: formerly belonging to Mr. Thódenat. Tourn.Astat. "II". Preamble: The year XXI, Paophi '9? of King PTOLEMY Son of PTOLEMY and ARSINOE the Father loving gods : the priest of ALEXANDER and the Fraternal gods, and the gods Beneficent and the Father loving gods and the 'Saviour? gods being ptolemy the Son of PTOLEMY Son of 'CHRYSARMUS? TRYPHAENA, daughter of "MENAPION?? being prize bearer of BERENICE* the Beneficent: DEMETRIA daughter of PHILINDS being basket bearer of ARSINOE the Brother loving: HIRENE daughter of PTOLEMY being priestess of ARSINOE the Father loving It is declared. . . .

L7. The year' xXI ? Paophi 19 , of the King everliving.



U. Papyrus at Berlin 41.b.Koseg. Pl. XII. The year XXIII, Choeac 19, of King PTOLEMY, Son of 'PTOLEMY and ARSINOE, the gods Father loving, and the priest of ALEXANDER and the Fraternal gods, the gods Beneficent. . .

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& \text { (ix }
\end{aligned}
$$

I. Papyrus at Berlin 47. Koseg. PC. XIII. The year vI, Tybi 20, of King PTOLEMY, Son of PTOLEMY and CLeopatra the gods Illustrious, and the priest of AL EXANDER . . . The year VI, Tybi 20, of King PTOLEMY . . .



I. H34 Grey A, Z, Grey B; A', B', Triplicates of Z, at Paris, Inced by direction of Mr: Champollion. Preamble: The year XxviI, Pachon 18,ófKin§ PTOLEMY and CLEOPATRA.



Y, $\%$, His wife, son and daughter of PTOLEMY and CLEOPATRA, gods Illustrious. Z, Living for ever.


$d^{\prime} . f^{\prime}$. His sister and wife, offspring of PTOL_EMI and CLEOPATRA, godsIlustrious.



I, $1^{\prime}, B^{\prime}$. And the priest of ALEXAND ER , the Saviour gods, the gods Eraternal, the gods.


 $Y, A^{\prime}, B^{\prime}$. Beneficent, the Father loving gods, the gods Illustrious, the gods.
 : 5 San m的
 $Y, A^{\prime}, B^{\prime}$. Mother loving; and the prize bearer of BERENICE .


 $Y, A^{\prime}, B^{\prime}$. The Beneficent, and the basket bearer of ARSINOE .


 $Y, A^{\prime}, B^{\prime}$. The Brother loving and the priest of AR SINOE the Fatherloving.
:

 $Y, A^{\prime}, B^{\prime}$ ' Appointed? in the metropolis [Racotis]; and in the Royal city.
 ai] «!
 $Y, A$ ', $B$ '. The 'noble? priest of PTOLEMY SOTER, and the priest.


 $Y, A^{\prime}, B^{\prime}$. Of PTOLEMY the Mother loving, and the priest of PTOLEMY.

 (1) $\because$ :
$Y, A^{\prime}, B^{\prime}$. The Brother loving, and the priest of PTOLEMY the Beneficent, and the priest.


 $Y, A^{\prime}, B$ ．＇Of PTOLEMY the Fatherloving，and the epriestofPTouFMY thegodillustrious．


 $Y, A^{\prime}, B^{\prime}$ ．That is the Munificent，and the priest of the Queen CLEOPATRA， and the priest．

ア丂ア「生 \＆ 1 生

$\boldsymbol{Y}, A^{\prime}, B$＇．Of CLEOPATRA the＇Mother Isis？Illustrious，and the basket bearer．


 Y，$A^{\prime}, B^{\prime}$＇Of ARsine the Brother loving．．．It is declared．．．


Y, $Z, A^{\prime}, B^{\prime}$ Year XXVIII, Pachon 18, of the King ever living.



C' Pap. Berl.38 a. Koseg.Pl.XII. The year XXXI, Tybi 4, of King PTOLEMY and CLEOPATRA his sister 'children? of PTOLEMY and CLEOPATRA, gods Illustrious : and the priest of ALEXANDER and the Saviour gods . . .




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5,1+1<4-3-6,1,32, N) \$ 1(s)
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D' 'H35, Grey C. The year XXXV.. 29 of King Ptolemy and Cleopatra his sister, Son and daughter of Ptolemy and cleopatra gods Illustrious : and the priest of ALEXANDER and the Saviour gods, the gods Fraternal, the gods Beneficent, the gods [Father] loving, the gods Illustrious, the god Defender of his Father, and. the gods Mother loving: and the prize bearer of BERENICE the Beneficent, and the basket bearer of ARSINOE the Brother loving and the priest of ARSINOE the.. Father loving in the metropolis being .. It is declared...

L22. The priests of AMONRASONTHER and the 'Fraternal? gods, the gods Beneficent, the gods Father loving, and the gods Illustrious, the god Defender of his father, and the gods Mother loving. Amen.
E.' H31. Papyrus of Cassatt, at Paris. Writing dated y wi? ${ }^{\circ}$ ? $E^{\prime}$

 E'Pap.Berl.36. E,' F.' The year Xxxv,Athyr 18, of King PTOLEMY.


$E^{\prime}, F^{\prime}$ And Cleopatra his sister, son and daughter of PTOLEMY.


$E^{\prime} F^{\prime}$ 'And Cleopatra the gods... Illustrious, and

 $E_{,}^{\prime}, F^{\prime}$ 'The priest of Alexander and the Saviour gods, the gods Illustrious

 E,F'. The gods Beneficent, the gods Fatherloving, the gods Illustrious, the god

 $E^{\prime} F^{\prime}$ ' ' 'Defender of ? his father and the gods Mother loving: and the bearer of $^{\text {g }}$


E.'F.' Prizes of BERENICE the Beneficent, and the bearer of. \& (
 *E'. ${ }^{\prime} F^{\prime}$ Baskets of ARSIN OE the Brother loving, and the priest of AR SINOE

 E.'F.' The Fatherloving appointed in the metropolis : andin the Royal city

 E.'F.' The 'noble? priest of PTOLEMY S OTER

 $E^{\prime} \cdot F^{\prime}$ 'And the priest of PTOL EMY the Fatherloving : and the priest 2โиाル
 $E^{\prime} \cdot F^{\prime}$ Of PTOLEMY the Brotherloving, and the priest of PTOLEMY


E.' E.' The Bemefirent, and the priest of PTOLEMIY. E.'The Motherloving F.' The'Fatherlownig ?

Qifanuryamid $\}_{i}$
F' And the priest of PTOLEMY the god Defender of his father; and the priest afPToLevy.


E.F. And the priestess of the Queen C1،EOPATRA.E.And the priestess of CLEOPATRA.
$E \cdot$ Theking's daughter. E.'F.' And the priestess of CLEOPATRA the'MotherIsis?
$E^{\prime \prime} F^{\prime}$ 'The goddess Illustrious, and the basket bearer of AR SINOE .

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\begin{gathered}
5 \\
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\end{gathered}
$$

E.'F' The Brother loving . . . It is declared . . . .

LIZ.

 $E E^{\prime} F^{\prime}$ The year XXXVI, A thar, of the King everliving.



The priests of anonrasonther and the Fraternal gods, the gods Beneficent: the gods


 gods Motherloving Amen.

Lin, 38 .

Signed witnesses $16 \ldots . .$. ...... The 16 .

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& \text { था }
\end{aligned}
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G!' Pap. Bert. 45. Koseg. Pl. XIII. The.yearXXIX'Mesore 14? of King PTOLEMY the Beneficent, Son of PTOLEMY and Queen CLEOPATRA and CLEOPATRA his wife . and the priest of ALEXANDER and the Saviour gods. This was the Eth. year of Physcon's separate reign,ors years later than the 36th of Philometor.



H.' Pap. Berl. 74. b. Koseg. Pl. XIII. The year XXXIV (K.) Tybi 2, of King pTolemy the god Beneficent, son of PTOLEMY and CLeOPATRA gods Illustrious, and Queen CLEOPATRA his sister, and Queen CLEOPATRA his wife, gods Beneficent, and the priest of ALEXANDER...





1.' Papyrus at Paris traced by direction of Mr. Champollion. (1) The year XLV', Tybi? 14 , of King PTOLEMY the god Beneficent, son of PTOLEMY; (2) and Queen CLEOPATRA his wife, gods Beneficent: and the priest of ALEXANDER (3) and the Saviour gods, the gods Father loving, the gods...'Beneficent? ... (4) the gods Beneficent and the basket bearer (5) of ARSINOE the Brother loving being in the Metropolis, and in the Royal city ... It is declared. . LO 10.

Year XIx 'T yb? of the King everliving.


$K^{\prime \prime}$. Pap. Bert. 12 a. Bóseg. Pl.XII.L'. Pap. Berl.76. Koseg. Pl XII, continued from a copy by Mr. Champollion. The year XITIT, Pay ni 20, of king PTOLEMY the god Beneficent, son of


$K^{\prime}, L^{\prime}$ P PTOLEMY and CLEOPATRA, godsLllustrious, and Queen


$K^{\prime}, L^{\prime} \cdot$ CLEOPATRA his sister, and Queen CLEOPATRA his wife.


$K, L!^{\prime}$ The gods Beneficent, and the priest of ALEXANDER. $L$ Ch. And the gods.

$L^{\prime}$. Saviours, the gods Fraternal, the gods Beneficent, the gods Father loving.
 $t^{\prime}$.' The gods 5 flu अК
L! Beneficent, and the prize bearer of BERENICE .

$L^{\prime}$. The Beneficent, and the basket bearer of ARSINOE.

$L^{\prime}$. The Brother loving, and the priestess of ARSINOE the Father loving.


L'. Appointed in the metropolis: and the 'moble priest'... It is declared.. In this enumeration the reigning king seems tobe twice named, first as Eupator, and immediately afterwand's as one of the gods Beneficent, or, Everyetes.

I', A Papyrus atBerlin partly copied by Mr.Champollion,probably the same as K!' I'.

Lio.

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& \text { S-MrM:"ambailat }
\end{aligned}
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M'. H336. SaltsPapyrus, registered apparently XLVII, but possiblyXIIIII. The dates here copied from the text are quite clear, out they may have related io an earlier transaction. TheyearXLIIL,Phamenoth, of the King everliving .



$\Lambda^{\prime \prime}$.Pap.Berl.37b.Koseg.Pl.XII. The year LII, Pachon3, of KingPTorEmy the god Beneficent, son of PTONEMY; and Queen CLEOPATRA his sister, and Queen CLEOPATRA hiswife,gods Beneficent: and the priest of AIEXANDER ... The date of theyear is $N B$ intheRegistry $K$.

20102103

O' Pap.Berl.48. Koseg. Pl XIII. The year LII, Thoth 19, of King PTOLEMY everliving [Horus son of Horus and Senpoeris] has declared. The name of one of the parties here precedes the wool declare, is in the pillar of Rosella.



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\text { Bin? C. } 6 ?
$$

P.' Pap.Berl. 39. Mosey. Pl. XII. The year XI, Mechir' 12 ?' of Queen CLEOPara and King PTOLEMY surname AliFXANDER, and the priest of ALEXANDER and the Saviour gods, and the gods... It was probably later in this year that a second dante, ITII, was added.

м


Q.'Pap.Berl. 40. Kaseg. Pl. XII. The year XIV, which is the year XI, Phamenoth 18,ofQueen CLEOPATRA' Isis? the Widow? the Beneficent, and King PTOLEMY summed ALEXANDER her Son the Saviour gods...






R'. Papyrus at Turin, copied by Mr Champollion. The year XVI, Choeac '8? of King PTOLEMY surname ALEXANDER and Queen'BERENTCE? his sister, gods 'Mother ?loving, and the priest of AIEEXANDER and. the Saviour gods, the gods 'Fraternal? the gods Beneficent, the gods 'Father? loving, the gods Illustrious, the god 'SoTER? the gods Mother loving, the god 'Defender? the gods Beneficent, the gods Mother loving, appointed in the Metropolis, and in the Great city... It is declared. . .



S'. Pap.Berl. 43 a. Koseg. Pl. XII. The yearXXVL,Choeac 19, of King PTOLEMY surname ALEXANDER, and Queen BERENICE his sister, gods' Mother ? loving ; and the priest of ALEXANDER . . . Perhaps this may be a duplicate of the Inst manuscript, and they may both be of the yon XXII; for liner seems to hair been no your XFI of Alexander without his mother.


T'H79. Chalk tablet with 28 stars, from Sacchara. The year XXX, Thoth 22, of King PTOLemy son of PTOLEMY, the god [M:R:N] ever living. There is none of the later Ptolemies, except Lathurus, that reckoned a year $X X V$ : and this inscription is evidently not of an early reign: we may therefore. infer that the unknown epithet $[M: R: N]$ must have belonged to Lathurus.

U.'H 75. Tablet from Sacchana.L7. Year IX,'Epiphi? 9, of the great King PTOLEMY, the god 'NEUS? DIONYSUS ... ever living'.

Mッ nt? Hz Li.

L29. The great King PTOLEMY the god 'Neut ? dionysus everliving. The tablet is of a later reign, but these titles belong to Auletes, the young Bacchus; not Dionysius or Denys, as he is sometimes called.

34 ENCHORIAL DATES. TRYPHAENA. CAESAR.

 Sqlaciz
X'. Paries at Paris, mace by deration of Mr. Champollion. I.I. The year VIII, Fhamenoth 29, of King PTOLEMY and Queen CLEOPATRA, sumaned tryphaena gods Father loving and Mother loving; and the priest of 'the great King? . . . It is declared.

 L 2,3.
何以

L2.3 Monclartly. The year VIE, Phamenoth 29 of the 'great? King PTOLEMy, and CLEOPATRRA smmamed TRYPHAENA, gods Father loving and. Mother loving, everliving. It is uncertain who these sovereigns were.


Y.'H71B. Tablet firm Sachem, with lg stars. Year XIX of the King the great good "N EUS ?? PTOLEMY" the warlike, beloved boy Phthah and Isis?? . . Cleopatra and Caesar being afterwards mentioned in the inscription. it is pmbable that this Ptolemy must have been Autetes.

Le 3,6 .
$L j, b$. The year VII of Queen CLEOPATRA "NEOTERA??
L4.6. The year IX.

Y'. 174 B. L. $5, a$. The year XX? . . [to CAESAR]

The battle of Actium, bo which this passage sears to never, wow in XXI Cleop.
L. S. 6
 The year.... of CAESAR" AUGUSTUS ??

L6,6. The year vil of CAESAR, Paophi $28.22 / 3133$ trill <lllli* 230 Forthementh, see $X^{\prime}$.



Z'. HA. I. Ia. The year VI of Queen CleOPATRA 'the munificent? 'Neotera? 'Juno? or' Father loving'? . . .

The year XVII of Queen CLEOPATRA.
L30, an /why
The year XI of Queen CLEOPATRA the 'munificent?

The year XXI of Queen CLEOPATRA 'the munificent?

The year'XXI?.AUTOCRATOR CAESAR' the munificent?

L6, a. The year VI.

A" Hs. Enchorial tablet BR.M. L1. The year XIX, which is IV 'Paÿni 1? of Queen CLEOPATRA.... and King [PTOLEMY] surnamed CAESAR.

L/I. Year XIX, which is year IV.

Ln.YerarXIX, which is year IV ' $\mathrm{P}_{\mathrm{a}} \ddot{\mathrm{yn}}$ ?
L/2. Year XIX, which is year IV.

 iils/2sf/2, i, wilas, 3
Year XIX , which is year IV,Paÿni, ... of King PTOLFMY and Queen Cleopatra. 215
wlementesors):

King PTolemy summed CAESAR.

B.'H 75゙, 76. Cheek tablet. from Sachara. L1... Of King PTOLEMY simnamed CAESAR, the good 'Father loving? and Mother loving, everliving. Caesarion seems to be called Philopator and Philcmetor. as Peyron has already rernarked, in the Greek inscription of the Pillar of Turin, which. must have been at. first indistinctly and carelessly engraved, and is now much defrocked.

## 


B." ${ }^{\prime \prime} 76.227 .22$. The year VI? Paÿni` 12 ? of the Queen munificent. and the King PTOLEMY surname CAESAR ever living. We should most naturally read Year VIII; which would be the year after Cleopatra's death.
「2
C." Champollion in Mai.N.72. From Phamenoth 1. to Pharmuthi 1. P. $1 \mathcal{I}$.

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D.' Champollionin Mai. N.13. Year IX, Pharmuthi 1. P.18.
$32 \%$ د 10 थル-10!
E." Pillar at Tienna, oopied by Mr. Champollion. Day of birth, Phamenoth 3d.day, and the end of his life, Pharmuthi 26 day. Mr.Kosegarten would probably huve read. Choeac for Pharmuthi :but the distinct Hieraglyphics are thus; Phamenoth 3... Pharmuthi 26.
F." Pap. Berl.55. Koseg. PIXIV. Year XVI, Choeac 23 of the divine King. Perhaps Auletes.

ARTIFICIAL ALPHABET．

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RUDIMENTS OFA DICTIONARY．

EXPLANATIONS．
LEGIBLE CHARACTERS．

ค，T\＆，母\＆；ANUCLS，Vesta．Champ．Tabl．N．7，8， 52.
AËTOS．$H$ 17，$\dddot{u} \boldsymbol{u}, \ddot{\imath} \ddot{\imath}$ ．

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ALEXICRATES ？ 01.
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ALEXANDROS．MI．
 H76，ii．
 H2O K．Alexanária． にミ2゙れた2）

H31L2．

R7，TI． ．$\omega$（ひ）

See Dates，throughout．
AMMONIUS．$H 35, C 6$ ．
KyIws ANTIGENES ．H32，L35． IF（1）की $14<02$ ， ANTLMACHUS．$H 32, L 35$ ． $1<1 \Gamma_{23}$

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| ApELLA ? P1. | <21/20 |
| Apollonius .If. 32 L29. |  |
| APOLLOS ? R . | v-u3223 |
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| Gave．His di MNATEOHKEN． | Y，u |
| Superior to．H76i．YMEPTEPOY． | トレバ」 |
| Animals．H23．aviu． | 103\％ |

$44(\boldsymbol{\lambda}) \ldots$
Man．From th．$\frac{1}{1}, \frac{q_{2}}{1}$ ．Menand women．Ch．Table． $246 \cdot \mathrm{p}, \mathrm{P}$
H16i．Men．
H37 L70， 11,72 ．His people ．
HRs xxviii．All men．
HIs viii．All other men．
$1 \mu / 2$
$\cdot 2<\mu$
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Regarding．H24 xx．ENTOI乏ANHKOVEIN．

In which ．H29 xcix．
May become．H26xxv．He might make H21 xii．

Things proper．H23xaiii．
They had treated ill．H21 xiii．
H 22 хиї．
Who had；who were．HI iv．
Is kept；when they keep．H2 $28 x$ xii ．
Shall be called ；＇shall men call it？


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| Milk．H32 L13．Epcuf；＂in os dure．＂ | ${ }_{3} \mathrm{~F}_{2}$ |
| H32 L76． | UP3 |
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ships H2oxü ．Repr？See Phabis．
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Everliving H25xxi. AISNOBIRI.
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H35 A 15.
H34 B 13.
D7, 8. Hieratic.


Life. HíGi.
$a$
Living. $H 76 \ddot{u}$.
C)

Hostile ; hostilely. H27xï̈, xiü; H2z xvi.
Attacked. H22 $x v$. EXEIPSIANTO.
16244
(24-Y53)
Obsidional. H21 cxiii.
$144 / 20102$
Strength, or health. H24 xaxi:
Restored. Hzo x. Reps?
Ordered, or fixed them. HIs niü. See LIMIT above.
le, 2


Prize. See 2.
©

48 （B）．．．
$\Longrightarrow(\angle)$
Raskets．H31 L3． $\mathrm{B}_{\mathbf{5}}$ ？Perhaps of goldandsilver H31L6：
$H_{3}+A_{3}$ ．

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| Funerals. H23 xойі. See Busiris. | <2ls |
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| City H21 xiv: $\begin{aligned} & \text { RR\&KS. Whence Thebes. }\end{aligned}$ | F-12S+? |
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| H35 C5. | , +1) |
| $A^{\prime}$. See Dates. | shat ${ }^{5}$ |
| H75Lm. Possibly. | , |
| Lycopolis See $\mu$. | 102:3 |
| Liturgy H37 Lg | $1 .<2$ |
| Worship. H25xaxii -EPAMEYEIN. ФEI, ¢оwer | <31) | See Temple.

ZBENDETES ．H32 L33．

SNACNOMNEUS．$H 3 ? L 25$ ．

SNACNOMES ．$H 32 L 26$ ．
spotes．H3／Lg w－пог－то？Ch．MS．

H31 LII．
$F^{\prime}$＇Koseg．Pl X．
K．＇．．Champ．
ZMINIS．H3I LIO．
H32 L2g wrex？
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CAESAR H51 L2．See Dates．
H74．A6a．Caesaris．
CLEOPATRA．H3AAI．See Dates？

H35C7， 2.

H37L1， 1.

EGYPT．H16i．xルe？

H 18 vi ．
＂NE＂CHTHMONTHES．H31 LIO．

H31 Lio．

H31LI． $\boldsymbol{x} \boldsymbol{\theta}$ ．
$K^{\prime} 6,6$ ．Ch．MS．
CHAPOCRATES ．H． 31 Lg S See Harpocrates．
F．＇Koseg．Pl．XI．
K！＇10．Champ．
K．＇10．Ch．

CHAPOCHONSIS ．F＇．Koseg．Pl．$X$ ．

H31 L\％．
K $^{\prime}$ ．Champ．
k2GCr2L いilれていいいま
 ＋ $1 / 2 \mathrm{r} \%$

いやっく
ปข2
100～s2 forder

ل
furuk
futacl
putug1
ruもっくl
putuel「123s「2 羔ks， Conzzls，

$\mathbf{r}, \mathbf{K}, \mathbf{x}, \sigma$ ？

Land．H21xii．
H27 хї． $\mathrm{K} 8 \mathrm{q}^{s}$ ？
H22．xvi．
Gardens．Hig ix．oor？
Permitted．Нзо $x x x$ ． $\boldsymbol{x} \& \lambda$ ？
Feasting；making sacrifices．H23 xux．$\sigma \lambda_{I} \lambda$ ？
Tranquil H18 vii．X\＆NH？
H21 xie．
Thou к？Champ．Tabl．n． $13 \cdot \square$
doubtave $2<53$

## ＜220S <br> くucts <br> 《山で <br> ： 11 记し112 <br> 7ac <br> トイジィくッ！ <br> ソ2 <br> とて【と

$5!(\boldsymbol{\Gamma}) \ldots$

Shrine and statue．$H 2 G$ cxiw．
H26xxv．

H26xxv．

Affairs：H18＇vii．
Who fought；who defended．Hisvi．
Fighting for．H22 xur．
Fighting．H22． 20.
H25xaxii EnAMYNANTOE．
Laidwaste．H22 ar．

Military $H 20 x$.

ILLEGIBLE．
p2020 $720<2$ $76 ?$ yun会つる

そう
2

72031
$25 x 264$
延
2
とそん12．
2゙るくょc が元いでくない ふくら
Also．Hataix．Ke？if，8s？Champ．T38 y｜＜
H24 xix．外化
y̆u．
$\leqslant$

Bank H27．xu ．$\times \Omega \mathbf{m}$ 人． §ylu

Rod；oecopedic cubit．H34A／2．
H34．A73，Bg．
H35 C8．

H35Cg．
$A^{\prime} 5,6$ ．
$B^{\prime} 6,7$.

810．21．2
（1）化？
y $1.2 \mid 2$


$\mathrm{Hz}+\mathrm{Bg}$ ．
$A^{\prime} 4$.
$B^{\prime} 5$
Military dues？H1я ou ．חposeas $0^{2}$／11


$F^{\prime}$ 3．Koseg．PlX．
$F^{\prime} 3$. Koseg．$P l X$.
K＇4．Champ．Js ．
 1綥行文て


56 ( $\mathbf{\Gamma}$ ).



 M


He has sold him. K'Y. Champ.
Sold thee? $X^{\prime} 2$. Often repeated $\boldsymbol{O} \& \mathbf{K}$ ?

（г）．．．

The rest．H 17 iv．

$A^{\prime} 4$ ． IE 112
$B^{\prime} 6$ ．
なール゙ル
Hence pretty clearly $H 26 \mathrm{VII}$ ，is，as in axaic， 11 ？
and not＂the gods of the country．＂
Collection．H20x．इYス人HWIN．
Collected？Hzoxi，or Insurgents．


See III，F． II1

Seev，$\mu$ ． ＜ला1

Dress．Hŋíw．इTOXIIMON．Dressing．
$2 \longdiv { 0 < 2 }$
H20x．BYEEINRN OOONIRN．Cotton．
15［2）？
H22xvii．BYミ£IN $\Omega M O \theta \ldots \Omega N$ ．
Festival 9 H2 8 ．xoviü．
H74．A5a．Dresses？
Corrected．H24 $x x$ ．חPO $\triangle I \Omega P O \Omega \Sigma \lambda T O$. Re－dressed．

Bestowed．H24．xix．See Gems．
Image．H16 ї．


द्यार くそくし $6{ }^{6} 2$「行艮 1たくて「そくい

$$
\begin{aligned}
& \boldsymbol{\lambda}, \boldsymbol{T}, \boldsymbol{\theta} \text {. } \\
& ?<s^{\prime} b<59 \\
& \text { TBAEAIS. H34B4. } \\
& \text { vi川川< } \\
& \text { Hзн Ag. } \\
& A^{\prime} 3 . \\
& \text { f } \\
& \text { \% } \\
& B^{\prime} 4 \text {. }
\end{aligned}
$$



DIOGENES．$H$ ソ $\begin{gathered}\text { iiz．}\end{gathered}$
$R 1$.
07.

DIONYSUS ．$H 75 L 7$ ．
$H 17 L 79$.
TEEPHIBIS，TEEPHNIS．$H 3+A n$ ．
DEMETRIA．T\％．Probably．
DEMETRIUS．R7．Probably．
$P 7$.
$Q 1$
TRYPHAENA．T7．

$$
X^{\prime} \text { т, 3. A Queen. }
$$


 Llors fof
 aulevirg $\rightarrow$＋1！．
fir）Yuries


（1111）$\%$ マー


（20）1120方

THE．See Dates．T．J；in Jpours．
DAUGHTER？H34 Ag，B3．Rather T，than Tweps．d，＇r，b

THE．$\tau, \theta$ ：the feminine article．See Dates．Bearer， $\boldsymbol{Y}$ ；ri ． THOTH．HR xi．EPMHE，突，工S，E．MSS


OTH．In compounds：rel perhaps Names HAg $x x x$ ．
The list．H 32 LI．
The list of them．$K^{\prime}$ ．Champ．nor curt．
The character answers clearly to cue in AMENOTHES， $1 \leq 2 \sqrt{8}$ So that if Champollion＇s reading $\mathbf{u} \pi$ is correct，the word was probably curl in its original state．It seems to mean a written name，from THOTH the writer；thus

Clerk of the priests．H32 L18．
F' Koseg. Pl Xl.

HORUS．HI8 vi HORSIESI？The initialoughtobeat from its form． $4 \times 5$

$$
\begin{aligned}
& \left.\operatorname{cic}_{2}^{9}\right)\left._{2}^{4}\right|^{3}
\end{aligned}
$$

$$
H 22 x v .
$$

HARSIESIS．H31L1o；also $R, K^{\prime}$ ．
F．Koseg．Pl．X．
H 32 LB．


$51 / \lambda 6$
（ $\lambda$ ）$\ldots$

His progenitor．
Is，being；H37L6．Perhaps TE Who had been；Who has．Hopi．

Wherever may be．H30xxxui．
Which had been．Hg ix．
Rendered．stope？See \＆ As is done．H26xaxiw．

Who had；who were．HI7 $\dot{\mathrm{w}}$ ．
When they keep．Has xxxvii
For the use．See \＆

Making sacrifices．See $\mathbf{L}$
Who were assembled．H22xvi．
What had been done ．H20x． Who said；they said．$H 17 \nu$ ． That．See $b$ ．

Belong to，H27 xxvii．
Feast．H $16 i$ ．
Abundance．H27 xiii．
$<b<61$
1825
（נ）

L
NiL
SHLOCY
Sc
SuD

组 そら川

S少

Minis

Hygix．
H23xviu．
［H34Ag And．
H34Ag．

H31 LI2．
veyryk ヶ，せJ．2）

《 1
《
9u－
011

H34B4．
139
391
$K^{\prime} S$ ．Also in．Ch．$M S$ ．
$K^{\prime} 4$ ．His women．Ch．$M S$ ．
$K^{\prime}$ ．Their wives．Ch．M．S．

The last minelines are inserted here for comparison，out of their order．
All．HIsvi，vï．Тнр，тнрог？ r．p
rı H31 L／2．＂To complete？？

H32 L15．
p＜，
（H）
All．H27xiui．

$$
\begin{aligned}
& \text { Н2үххлї. Тнр? } \\
& \text { F} 25 \text { xxiiii. See Assembly, } \boldsymbol{y} \text {. }
\end{aligned}
$$

$\geqslant$
2
$\%$
（a）．．．
All acts．Hag xx xx．
All．H22axi．
Every month H Hz xxxiii．

A reduplication，from $8, T \mathrm{P}, \mathrm{S}$
We have elsewhere rapporstifor in a proper name．
Munificent．See c．$\overline{\text { 万すき }}$
gurus
Sacred．See cu
row
Honours；ceremonies．H23 xviii．NOMIIOMENSan．$\{$ TU
Granted．H20x．

$$
\geqslant \cos
$$

$H 1 \dot{q} \nu i$. celeb

To him．H24 xxi．Gave him？．
Gave him．HrGiu．可化
Gave ？H74．B4a，b．Gave much to Horus？ xi，24，is


The reading NEPHTHY is very ingeniously deduced by
Champollion from the sacred character；and certainly tends
to confirm the sound which he attributes to $\bigcirc<, T, 103$.
Gave the victory．H74A6a．


To place？H27xaxui．

 Enemies．H26xi．

Upon．H27 exari．
H27 xaxi：
H32L13 In？At？

H32L16．
H78vï．For this ；therefore；on purpose．
＜luk
c．
courn
ほうく
シースく
く入«ー5，

Illustrious． $\mathrm{H}_{7} 6 \ddot{i}$ ．ETI中ANHE．
Honours．H24 xix．TA TIMIA．
H24xix．
H25 天xi．TAYTTAPXONTATIMIA．
H30 xxx．
H24xax．Most honourable．TIMISTATA．
Venerate．H3O xxaxi．
Enter；be sent．Hyiv．we？
H20 2 ü．
Glorious．$H 76 i$ ．METANOAOEOY．
 K行芹 $\omega\}-1 \omega_{2}$ Nたひ丘的 4 ＜ く々そ。

Besiege．H27xiv．
Approaching．H2／rii．
Great．Hibi．SeeBenkets；crlso Dutes．
－2るくとへ
－y＜
い上
$X^{\prime} 2$ ．The great Queen．
Customary？forordination．Higix：See Grue．？ $27275 \cup レ \leq$
Arms．$H 27 x$ xiii．O $17 \lambda \Omega \mathrm{~N}$ ．
H25 xxiü．OTAON NIKHTIKON －fliI2
 $\omega^{+} \downarrow_{11} \leqslant \sqrt{2}$

$R 7$ ． あよひに馀小川之請
From．Hyguiii．Frommen．
Hrgriui．From a time ．
lyy－l｜
H20x．Excused from．
H23xvï．From the temples．
（15，
Arura ，H23 xviii．SeeRod，I．
rs，is
Prophets．H7\％iv．\＆OCu ？Akerblad．SeeChimnanaus．$|\leq| | 1\rangle$

Patrimonial？revenues．IIIg vï̈，nPOEOLOYE， $\mid\left\{\sum\right\}$
Eupator？H3／L4．Philopater？See U． ヶイミ1．4に

H31 I．2．Defender？
H32 L18．


H35C3．

$$
y_{N}(\vdots) \cdots<1 \leq f
$$

H35C23．Defender of his Father？
$2 N 12 \pi=6 n$
2
2050
（ $\boldsymbol{\Delta}$ ）

Foot；private．H13 viï．OヘヘO玉．
H2O 天ニ̈̈．NEIIKAI．
$1<2$
H27 xú nexovi．
$1<2$
H22xvi．People．
H3O xxxi ．IAISTAIL．
K2ip3
Assembled．H22 avi：өcuоrт？See тнотн YくくS
 H32L76：


F＇Koseg．PlX？＂Phrecages＂
 They said．Hy，axi．日\＆\＆Ele？ 351 Itis declared． $\operatorname{H34}$ A8，B3．See Dates．

乡

H34 A10．TUYKN
H34 B6．
$B^{\prime} 5$ ．

H51L2．
H51 L17．
H 75 LI ．
Нү6 L22．


Surname．$X^{\prime}$ ，Fem．C for $\mathcal{C}$ ．

## X＇2．Tryphaena．See Dates．

Against．H2oxiü．E nt．
H27．хӥ．EMT．
For．$H 2 / \mathfrak{x}$ iv．

Most conspicuous．H25xxxuii．See Illustrious．42 $1 \checkmark$ Gave？Hyp Bsa．

H7A B6a．To the Sanctuaries．
Which are placed．H27xxyi．
Belonging to．Ito ix．KıOHKOYइ人之．
Authors；causes．H28xxvü̈．$\triangle$ PXH「OI．
Going out．Hz6xxv．
To keep．Нзо xxx xi．
That he might render．H19vä．
Because；whereas．H28xavvii．

$$
H_{1} v_{v}
$$

Past，which had been．Hzoxi．
Grandfathers．H25xxxii．
Predecessor；cause；past．H25xxcui；f times．
－
3
1
－
اركط
bic． s
Yb
4－
－

sTAIR
My
（ $\boldsymbol{\lambda}$ ）

That；for that．II／8 vii．
Habicarv．

ubr 4らく」

ソートくいッ
kro

H2O．x．EYARHWIN．See Collecting促

H28 2ii． pも选 H20x．Sujject． H22 covi．
 H2Y curvi．
 H28xaviiu． H28 xoxviii．
 H30xax．Priesthood $\mu$ E TorHB．2，ๆU1上／2

SIS OIS . See uy. Ill seems the onty distinctletter.
Order. H20x.
H20xi.
H21xii.

H24xix.
H24xx. Not in order. \& $\downarrow$ ?
Hzaxax. . Decorously.
In; into . H2g xxx.
Many. See Numerals. Hundreds?
TO? H17v; È ? Champ.T.n. $6 \|$ "Hieratic.
Being. Hフォvi. YחApX $\Omega$ N. OI?
And.H16ii. With.H2bxxv.
Hrtoii. H31L1.Champollion. LP "\&rcu" VII
H16i.
H32LI6.
H75L1.possibly.
Adversaries. H16i.
n!
4
$\int_{321}^{101}$

To．Hzax．TeAlexandria．
Temples．HIJiv．
Country？H76i．Fields and houses？
Those under．Hydvi．
House；temple．H2txix．
In？Dwelling in？H34 An．
In；to for H78 vï．
His vii：under．
H22 xui；to．

Hasxexi；in．
H2Sakeriu；in．
$H 37 L_{1} Q_{i}$ in．
H37L6，7；in？H34 A7，B7；in．
H7g vüi；yearly．
Illustrious．H37L2．Epiphanes；phor：
H31L2．See Dates．
H3 4 A7．
H34A2．
H34A7：
yp入
トーリ゙ミに
112 2
$1 \lambda 22 ?$
1A12？
1xly
12）
（20）
W 入2
$\lambda_{2}$
$\lambda \lambda_{2}$
入2
入人＜
lunt
ASirdo
心アバ心
บ．．7hav

11 1－1／x）
$72(\mathrm{H})$
Walls．H21xiv．
Lower．H78．
Chapel？HIYv．At Memphis．Perhaps simply into．
H27 axui．
Place．H2ociu．

H25 xxüi．

H3O xaxi．Habitations；united houses？

H32．Lis．rorcoy．
H32 LIG：
Perithebaic．H37Lg．
Whole field or piece？H3＋A73，B10：H35 C10，ו1．See Cubit．19／15 2
Money；stores．H18vi．See 川
H23 xvii．EITOY TE KAIAPPYPIOY．C／J入，V
In the names of the months this character always answers
 greatly resembles it，seems tobe THY，in THYNABUNUN，and elserwhere， being perhaps related to eunc，burial：thus

 $K^{\prime} \mathcal{S}, 5,6, \%$ Champ．$M S$ ．
 ，－a3

L̇UBAIS．$H 34$ Ag， $10, B 5$ ．

H34 B3．
sincer．
1． 73

Child．H16i．\＆Nor？

Sacrifices．H28 xxxix．OYEIAE raisITONAAE． H2gxxxx；Hisin？On the altars？

Feast．H2gxxix．इTE中ANH\＄OPH乏OYミIN．
Dates？H2g．x．x．XPHMATIEMOY天．
Descriptions？H31Lg．ONOM入rrd．

$$
11^{2}=x / 0
$$

74 II．

WITNESSES．H32L2o．ueөpe．Kasegarten．
1，1／53
H32L21．

$$
1,2 / \leq 32
$$

MUTHES．H31Lg．Greek doubtful；mightbePASES orMASESS．

F．Koseg．Pl．X．
MAESIS．Hı̇̇LL34．

MIRSIS．H32L34，MIRRSIS？
Who has or is H7bi．
In．Hraxix：its place \＆e．Ch．T．35．

Diadems．Hıti．rop？
H27xax．
Same place．H3Oxxxui．Perhaps rather thanes．
Besides．H2g．xax．

そく」 18V 536

s） Uا اك

八人cilu
 vinesad


U

Moveover．H2oxi：$\Delta \varepsilon_{k \lambda 1}$ ．See And， $\mathbf{c}$ ．
rev，
さルย


$$
\leqslant 4,45,3
$$

Received？？H34A12，B1g．
411． 3

(II)...
$32 \sim 375$

Lycopolis. H27 xiii. SIOUTH.
1)2• 3

This might be orcurus T $\boldsymbol{B}_{2} \mathrm{KJ}$; the initial is something like or on, in Honnophris, Debtor: though a debt is more like or on, coming again, than or oe, eating, to which oraurw may be referred.

Contributions; impositions. H18 vii. See 3
Expending. H21.xï.
Money. H24 Xix.
Gems. H24 xix.
Munificent? Hy4A1a. Cleopatra.
Having inquired. H24xax.
Ornamented.H24xx. See Illustrious.
Exhibition? H13 xvii urNs? ff
Solemn? Haw. Procession.
Restraining. H21.xiv.
Debts. Higviï. Debtors; guilty; captive .
H18 vii, vii. oran.
Higix, ix. Tributary; was due.
H18 vii. Tribute; fixed debt. See Gold.
-1\%/63
S ms
ul एлノ /ending YeA
$3, \leq 2$
40,2)
23䦽, $1: 3$
$1: 3$

76（II）．．．

Add；manner．H25xxi．ETIXYミEIN．

Parents H2Fxxaï． $\qquad$
 h26 xxiv．Placed．пムPATIOENA1 \＆$\mu$（́ひ H2s oxxouï．Held．ミYNTEAEIN．
sk sko H2gxaxix．Held．ATEIN．
$\qquad$ ＇ डに H 3o xxxi．Held．इYNTE AOVGYA之 H27 axuri．Placed．EnIQEINAI． をn／わ H2Yxxvï．Placed．
 H3O xoxex．Called．npozaroperrinn． 25に
 H25xaxiu．Placed．$\sum$ ThさNI． ぐかった Hзо хжхсіi．Placed． H2baxiv．Carried．IYNEEOAEYEIN．TB $1<0$
 H3Oxax．Placed iAPYEzOA！．
 H26xaxii．Placed．iapy iaroxi． $241+n 10$ H27orxu．Put over．EIKEIEOAI．JUCY A＇O

Wore in state．H2Yeximi．The only past tense．个5，you

Shall be written．H2gocax．K人th×תpiइA．
Which shall beloug？H2g axx．


They should remain．H2O．xü．

## 

It shall be done．Hzo xoxai．


Day．OG．leep？Chumpolionreads goor．

Hyiv．This day and year？

H26axu．This day．
Hzogxic．Five days．
Hzs xucuï．Both days？
H25xxiii．Each day．THE HMEPAE．
Hz木．x．iv．Daily；quotidian．NTE？
H2s axcoiiu．Birth day．
$r \geq 1$ les
icsu
Mlis
110
los
yíll－sz
Hes
2s）
H24xx．In his days．
20\％
H23xviii．To the day；until． HIgix．
ros，ren
以ת

78 （II）．．．
－Db 3

From Hoax．The time．

The year and day aforesaid？X＇, 10.
Justice H2oxi．TOAlkNION Q2J ？


Loving．See Dates．le EI？seenpe？？$\mp$ ？ $\boldsymbol{R}^{\boldsymbol{R}}$ ？

We have $\vec{b}=M, R 1$ ，making in $R 3$ ，
 which seems to be a feminine title of honour：
as

Philopator．H／6 $\ddot{u}$. Plur．


Tr．Pl．

和 516

むTSL40
$1-[\{ \} 402$
－ $\boldsymbol{r}_{4} 4 \%$

山夕化々○？




Philopator．R2 Fem．
$X^{\prime} \prime$ ．

Philometor．H31L3．Plur．
H34 A3．
H34A5．Mase．

X＇，Tryphacna．

$$
X^{\prime} 3
$$

Philadelphus．Hyw．Fem．
H31 L3．Fem．
H31L． 6.
H3AA4．Fem．
H34 A6．Masc．








ぶ你， ＋i，\％Or Po

H34 A8：very commonly towards theend of deeds．

30 N . .m
IN;OF H7Ci.ì: of
HI7 í.ON,FROM. HIs viii.IN .
HIgix. FROM. $\qquad$

H20x. FROM.
 NYSLA? R7.
(2n)
AMIN ; JOVE. HIbaxi. AlOE. 路. FT.
 XNOV B15, of the amulets and of an inscription; the two forms if M corfirming the phonctic reading": whence the enchoriul chavacters seem to have been employed for M N instead of NO which was appanently their most natural sound.

Hз4A7. Juno? нpac
H34 B75. Juno?

$$
\mathrm{NH}_{2}
$$

AMENOTHES. H34A10, B5. Amunthothesi 9 See Thoth. $\geq 13$

AMONORYTIUS . H32 L33. Amunhor.

AMONRASONTHER. H32L18.



amonrasonther. Pi/hr of Turin,s. S Y, filfo F,f?
In the Grak L3, wetut'e ...NPAEQNONP.LTS,MEN TOYE LEPEIE EK EKAHPOY AIOOY.L3O.TO AE VH -IIMA ANATPAWAI EIE इTHAHN AIOTNHNTOIE TE EANKNIXOIX KAI ETXRPIOIE PPAMMAEI. L 37.. THE KPHKIAOE TOY AYTOY IEPOY EIL AIDIAN

MNHMOE YNHN. This was therefore a bitinguar Inscription; and the language is again called not DENHOTIC but ENCHORIAL.

$\pi \Delta \pi$

The figure of a deity with a humanhead is behween these two inscriptions: the figure with a hawk's head and a disc is lumed the otherway: and its inscripfion is less distinct than this, but seems to be nearly the same. The head dresses have doublepturnes. See Champ.TA 366, 36g.

CHIMNARAUS. H32L32.
1FP-132







Health．H24 ax．

Of：belonging to．Hig viiu．People of Egypt．
H2g xaxc．To the temples．
Hyg vï̈．Those under．
H24xax．Whenefore．

H2Y，xacvi．Rites；according to law． $420 \rightarrow$
H2P xaxix．Rites．NOMIXOMENA．

水
$\Xi$
$\omega$ $\stackrel{y}{5}$

H3O xaxü̈．MOMIMON．

H20xi．TAEIOITMENA．
Saviours．H16ii．Nog re？See Dates．
H25 axxü.

H34A． 2.

H35C2．

C＇＇．Koseg．Pl XII．
The rest．See（r）
دت

ノノコココ

350，
引ろむった
15
$1 \pi$
Shall be honoured．See（e2）
Sacred．H27 xiii．TAIEPA
H23 20viii．Honours ．
H27 xavi．When he celebrated．

च
से1र
रi2k
2.45

Consecrated．H24 xx．

Others．Higix．O
H23 xix.

Aforesaid．H34A18，78；B 17，18．See $\mathbf{H}$.
That．HIgix．
H20xi．That；orpossibly AnENEIMEN．
H2O Xi．Took care that？
Hz $x i$ ．
H18 vii．

$$
\text { H } 27 x i \ddot{0} .
$$

Fig wo．That they should do．
H19 ix．That they should not．
Parents；predecessors．H25 axoui．
Gold．H24 xix．＂ NR ，Nor？？
H2G，ax iv．Golden．
H26，ax xiv．Golden．


The distinct character appears to be form representing in Mr．Champollion＇s opinion＂the cloth used in washing gold dust＂：he has found it H26 VIII，thus In．In the same line there is，which somewhat approaches to the Enchorial character．
su（II）．．．

Gold．Hrei ix．Topay．
Hz2avi．Money due？
H74Aja．Gold，silver，gems？
H $7+B 6 a$ ：Gold，siter，much．
H7＋BEA．Gold，gems，all？

## Bought？H31L12．

H32 L14．Sold？
H32 L17．
H34A14．

マのL

天まごい？
以烟定
？
VRっテMik

 になった

O,P.
O,Y.See Autocrator. Tryphaena. 9,r,9. Ch.T15 ""119, ons of plurals. 9, or $\tau$ of participles??

Field. H23xviu. IEPAさ rhi.

Hlgix. Gardens. TAPA $\triangle E I \Sigma \Omega N$.
Higix. Vineyards. s\&qdiods?
H2zaiü. Vineyards. AMTENITIDOE. H34.A13. Bare ground. H34 B10.
$A^{\prime} 4$. $B^{\prime}$.
IIIk

 $1 \%$ w 1812 1 \& .n? 水 on mislı
Emorfpl

86 П ，事。
そ 4 2

PHABIS H32LIS．
F.'Koseg. Pl.XI.

FOOT．See $\boldsymbol{\lambda}$ ．Perhaps あдт．
pTOLOMEUS．Hi6 $u$ iu，$i$ ．
Hig iii．
H31 L1．
H34A7．
Нз 34 В
H34A7．
R1．See Dates．
PHILINUS．H77 iiu．
$T 7$.
PHILESIA？Q2．
PYRRHA．HI7 $\dddot{u}$ ．
pyrrhius．H35C6．
H35 C6．
PANAS．H 32 L3 37.
PORTIS．H $32 L 2 S$ ．

$\mathrm{wrin} \mathrm{LL}^{4}$
$1<2$

いく12ाบ $[/<2$ 2）
frin


kilantw $1 / 2$
 トいつい先北に
Fcurachent
，Suffiry，21
r． $3 / 2$
$\sin >/ 2$
$\sin \operatorname{ss} / 2$
1F204
－ない

PHANRES．H32L22．P．H．N．R．S？

H34A24．

H34 B27．
$A^{\prime} 7$ ．
$B^{\prime} g$.
osiris．H18vi． F b ， Fob ． H 18 vi ．See Petosiris．

「er）utir
rancir
\｜his）
（1，20）
$r .2$ $\mathrm{r}, 2$
「号f，上

OSOROERIS．H37LJo．See OrHP，B．
CTres


The second 0 ，as well as the eye of the distinct Hieroglyphic， rather favours Rossi＇s etymology of ous ropg．

ISIS．Hisvi．：t MCS？Possibly relatedio qeucc，a throne． 7,2 H32L3A．In Maesis ：perhapp a synonym．

H34AIY．CERES？AhMhTJe $\sigma$ ．
H34 187.
$A^{\prime} \sigma$ ．
B＇خ．Possibly Synonyms．

ヶそしゝ？
226\％
．．．．$\sqrt{ }$ S
punds

88 II．

PET．Champ．Tabl．$n$ g， 10,11 ．

PETEUTEMIS． $432 L 13$ ．

H32 L15．

H32L23．

Hi L L 30 ．
$F^{\prime}$ Koseg．PlX．
Pliz．

$$
\begin{aligned}
& \text { 「rítr2/u } \\
& \text { 「にこちにい。 } \\
& \text { Su而十爫 }
\end{aligned}
$$

$$
\begin{aligned}
& \text { Prisulu }
\end{aligned}
$$


H34B5．

$A^{\prime} 3$.
$B^{\prime} 4$ ．
$\boldsymbol{K}^{\prime} \boldsymbol{\prime}$ Ch．MS． $\mathrm{Cl}_{2}+\mathrm{l}+$

K＇o．Ch．MS．
f． 2 定 +12
PETEARTRES．H32 L23．PETEARPRES？Ch．「ónulu


PETEURIS．H32L25．

PETEHARPOCHRATES H32L24．
PETECHONSIS．H32 L 13.
H32 L 76 ．

ごった唯 Subuéulu frezlu r－alu

PETEMESTUS．H31L70．
H32L2g．
F＇Koseg．PZX．
K＇YCh．MS．Petemnestus．
PETOSIRIS．H32 L3 3 ．

PETOPHOIS．H32L36．
PECHyTES．H35C7．Petchytes？
PACHEMIS．H32L37．

PHIBIS ；PHIVIS．H32L27．See Teephibis．
PSAMMETICHUS．DI．See Dates．
PSENCHONSIS．H32L26．
psenamunis．H35C6．
P4．Champ．in Mai．P24．

Crtoraln rostrilu fareflu
 Fそとし （2）12－y行 rasems ［皆 fimsu飞象毞「123tro

34 fizitu

To whom ．H25xxxïi．

In it？On it ．H2үxarii，axiui．
Put．H21aiv．Guards．
Came．Hyiv．Who had come．
Hrg viii．Which amounted to．
H2o．xii．TOYEEMENQONTAE．
H22xuii．Which amounted to．
Month．Hi6i．See Months．
$H_{27}$ xxix．Monthly．
Corn．Hzsit．
HIg viii．

Hyg viï；H24．xwx．
そここ
H27 citiv 天phmatan mangol．

Ceramium ；pot．H23xviï．


领
Baskets．H31 I 3，Perhaps of silver．See Dates．


II． $\mathbf{I}^{\text {．}}$

$$
\frac{1}{2} 3 \hat{2}_{91}
$$

Temples．Hī iv．Epđes，II？


Approved．Higii．EAOKIMAEEN．

$$
4 \leqslant 4
$$



$$
1 \sqrt{x}<3
$$

$$
15043
$$

HRYaxui：

$$
1 \pi+3
$$

$$
\text { ,..J J, L } \left.\hat{z}_{2}^{\prime}\right)^{2}
$$



R 3.
Jrazeluzzow

R，registry．

$$
\text { Jr,ja }{ }^{3}
$$


$X^{\prime} g$ ．Inhabitant of Memphis．

$$
\int \mu \overline{2} 3,=
$$

нү4．A．6．
Vr玉z

н7нB6a．

$$
d \Gamma \sqrt{2}
$$


Which shall be placed．H25 caxxiui．
Tllustrious．$R /$ ．
し
Decently．F 18 vïu．

$$
C^{+} L_{11} \leqslant \cup \cup \bigcup^{-1}
$$




BEARER；WEARER；LORD．$H 16 i$ ¢\＆1．
HIJ ïi．Bearer．Akerblad．
H32 L13．Masc．
$\left.1-x_{2}\right) \| \%$
H32 LIG．
1きノ゙り」
H34 A3．Fem．
$2 \pi 11 y$

H32A3．

то нІм．H24．xxi．pog？
PHTHAR．Hı6i．Vulcan＂罗血＂Ch．T．ts．T．T．q．
न／Gïi．Approved by PHTBAB．See $\bar{z}$
HiGii．Loved by PHTHAH．

To．H27 acaviǐ．Belong to
Going out．H26axa
Going into．H2\％exari．Singular．
GOOD．直．r，r．Mg，Norcal Seemsto be syllabic．$\overline{2}$ r
Beneficent．H24 Ner．EyEPTETIKON $1+\sqrt{2}$

Hrs．xi．HIGiu．
Hクy iii．Fom eympretinoz．
H31L3 Fcm．
H31L5．MI
H32L78 Plur．
$1134 A 2 \mathrm{Fl}$ ．
H34 A3 F
$R / P l$

B．F．Fem．
Pious．H7Gi．EYEEBOVE．
H16e．
H16i．These three together：

$$
\therefore \sqrt{1} 1 r \leq 2 . \sqrt{12}<2
$$ T？

くりったさん
 $1.40-\mathrm{S} 2$

＜．） 1 1r尺2 2
11282
1价曻 23 yur？
4252？
4ど7
 H18vi．Both together．

反1，2

94 （CI）

Munificent． H 79 v なる
H23xviii．EA』 pheato．
H25 axü．

1734．A．7．Also ？
$F^{\prime}$ Koseg．PlIX．
Granted．H／Siz．EYEPTETHKEN
Corrected；improved．H76i．
May prosper．H1g $2 \ddot{u}$ ．EN EVOHNIAI תEIN Approved；resolved．H25xxi，EAOEEN．See Piousd团？
Nuf？Apparently a name of Phthah，in Memphis．See 3，3．$\overline{2}$
CHON S．In PETECHONSIS，PSENCHONSIS．See Phibis， 123
Champollion makes fin cHONS．Tabl．n．1g6；but そss is a fan，and scarcely a sieve．See G．
（），Good，norgs；also G，B，V．See Memphis，Phiris 子

## P

－－ $1 / 95$

TO HIM．See G．EPOG．See Arsinoe．Alexander：
95
PART．See Numerals．DE．
y
SONOF．HzıLg，70，II．H32L22．Fory．yhps．
EVERY．H2ךxaxiii．THP？
WITNESSES．H32LTO． $\mathrm{HE日P}$ E．Kosegarten．
H32L21．See Muthes．
Asp bearing．H2y xari．
（4）

Ditches；canals．H27 xiv．TA\＄POIE．sop？
23／＜つット
Year．See Dates．7．pours．
J． 1
Years；Time．H1g viii．
by
Hzox．
154
H22x0．ENOMITSZ XPONSS＇e＇EYIYY＿6／
HY\＆B4a．Many years．
A pillar．Hzoxaxä̈．［

ル＂リー」之
－
soter．H37L4．Champ．
Y/r/<r.4 E

H34A5．See Dates．
r/r/<r4u

PRICE H32Lif．TCOREN？SeeSold（T）

H34 L． 76.

H34A18．

H34 BIg．
$A^{\prime} 4$ ．

$$
5-1 \nu \varepsilon_{2} / 4 \prime
$$ 5014 \％

く争ヶ4．そ 5er 4－5

H35C7\％

H． $37 L 8$ ．Have sold．
H34．A72．

H34B8，9．
H35 C7．
F2．V．Darius．

H3．XI．Darius．for L3 M3．

$$
\begin{array}{r}
5 \sim-2 \sim b 1+\} .4 \\
-?)+5.4
\end{array}
$$ H23 xuii．TAE TIMAE．



$$
214
$$



Bare ground？H32L13．Possibly amm tosforaण，Tov P\｜1Y＜て H32L16．Or winou toriov．

$$
\Gamma_{\cdots 1 .}<9.2
$$

Fixed．HIgix．MENEIN EnIX $\Omega$ PAE．Perhapsy．$\sim \lambda_{1} Y</ 2 \wedge$／ Established．Higi．kataetheamenor．

$$
4<1124
$$

H／foiz．kataztheazoal．

$$
y<112 y
$$

Hzhxix：AIATETHPHKEN． 40／245
MRAZOXZ MENOYEHE．

$$
461124
$$

Hissoxviix．It is estrblished？
Collections．$H .37 L \delta$ ．Norをle．

H37 LI2．

H31 L12．

H32Lit3．

H．32 LI4．

H：32L15．
$F^{\prime}$ Koseg．PlX．
$F^{\prime}$
$F^{\prime}$
rix）＂11
1145311
$1.4 \varepsilon 11$
1.4 gen

1 靿ハ
$1,4, \ldots 2+2$
2
1010，11 $2+2$

Ornaments ．H26xaxiv IEPONKOEMON．

Conspicuous．H26．axer．EYEHMOI． $2 / 3 \Gamma 4$

H30xaxil TNSPIMON．

$$
3=2 / 3 \Gamma \cdot y
$$

（1）
Sitalthes？RI．Or．Clitus？GI\＆んNノび SISOIS．H34A10．Perhaps for $\mathcal{1}$ ．

H34B6．
$A^{\prime} 4$ ．

$$
B^{\prime} 4
$$

Their．H23 xviü． SルIIに： －S \＆IIII
 ＜ 1.

Came．H22xvi．ye？
H26xxv．Going out．
Without；not．Hzox．
To be paid？HIg viii．Or levied？
Sea；water．See $\boldsymbol{\lambda}$ ．

$$
\rho<
$$

G．．．
 1,92 Hay L2．Possibly however $\rho^{\rho}$

$$
3
$$

H34A7．His sister．TEGCWNs．

ISIS．See JT．
4.2

Likewise．H2Oxi OMOIREAEKAI．
りそれてい
H23 xiuii．
$4>4.10$
$y \geq 40$
$50 \%$

H22xv．

H24 xix．AKONOVORE．

H26xxiv．KA＠A．

H30 xoxxii．As．
24
H2Yoxaviii．As is customary．
The same；the like ？H23 xouï．
42 ン 4 4才乏

Contributed to．H 24 xix．

Horsemen; horse. H2o xii InnikAl.

## H27 xí. |mielz.

Everliving . See $\mathbf{B}$.
今с

In it? H2s axviii, saxiii.
Nas good. H18 vï. חEゆI^ANOPRTHKE.
Approved. See $\boldsymbol{G}$. 920) 4

Mother. See Philometor, $\boldsymbol{\mu}$; Dates.
H31 Ls $s$. His Mother.
H3. L6:
H31LT.unteos.
H37LE.
H32Lig. Philometores.
$I^{\prime}, \quad, 7$. With a flower.
Sacred scribe. Hyyi. Iepotpammateig.
Letters. H 30 oxxaii. c $38 s$ ?
sсахиі.
sxaxii.

$41^{\circ}$
$41^{\circ}$
210
（G）．．．
P．l＇，$Y_{101}$
Secretary．H32 L18 novorpa 中o玉．＂\＄38swry＂Ch 4多－40

$$
1134 A 2 .
$$

4 そ リ
$K^{\prime} 19$.


Written．H3lLl．
y د9pup
Feather bearers．HIT iv．חTE POФOPAI． KハINろな

Named？H32L20．Or Written？A party，Lenommé？｜ 2 p＇
H34A8． 12 ？

H34B8．
12？
H．34All．
$.12\}$
H34 Bg 112 个

H35C7．
，2？
$X^{\prime}$＇r．Feminine？
csp
P 2．Three times．


$2 y \leq 131^{\circ}$
Written and engraved？H76 Li28．
－．See Ptotemy，Cleopatra，Autocrator：
GREEK．H3o，xxxaii．Oreisss．Ionian．
God；godlike．H18vi．©EOE．岀or，glory．
Hiovi．A goddess．
HI6i．Lord．KYpior．
H16ii．Gods；plural．
H16ii．；H2g axx．The god．Tr．
Hisvi．

R1．God and goddess．
Ro．

H34 A9．Goddess．
＜1y

Sacred．．．．H23 axiii．
H26xam．Divine．
H30 xxxaii．Characters．
osiris．Also Deceased．See $\pi$ ．
H37L8. nuv ve kgav

ISIS ？H37L6．Deceased．
$1-2 \sqrt{2}$
（ifo
化W
「． 2
$\Gamma .22$
${ }_{5}^{2}$
（W）．．．

The Sun．HIGi．$\$ \mathrm{pH}$ ．
H76ii．

Hフ6ü．
Thoth；Hermes ．See $\boldsymbol{\lambda}$ ．
Apis．H 23 xviiu．
H24 xix．
Mnevis．H23xvïu．

Venerable．H23xoriia．See Father．
King．See $\boldsymbol{\lambda}$ ．
Assumed．HiGi．
Solemnity；feast．$H_{1}$ v．See（r）［1］
H22xovi．
Afsembly H2z COX MANHTYPERN．

そし
r．u
r．v
4 多，Tú
㕸1
［｜2｜
crer
Yilits
0，［4］
Ft
「ETv
＜xaniz
＜ts

H26xACIV．［EOPTAIE KAI TA］NHTYPEEIN．H Pt 212 F＊？
H2Sxaxuii．
位2
H2g xaxix．
forms
H3000xx：
1たで遜て
Decent．H20x．XAOHKOYEAN． $4 y>5+$

Solemnized；Ended．H 32 L1g
F＇Foseg．PL．XI．
H34 A25．
H34 B28．
$A^{\prime} 8$.
$B^{\prime} 9$.
H35 C 23.
H36（77）

Dismissed．Hisvii．Sce（ग）
Hrg ix．Excused．

1rntzu
$1 F,+q u$
1估．70\}
1ro70 7
が）

ift $7 v$－


Taking care．H2Oxi．\＄PONTIZ $\Omega$ N．Muy？

## 2 प（बふ）

そ7「教
alrî́s

17
2．）
2.30

2，7．
＜2．12
く2， 3$\}$
1272
142

HIYiv．Sanctuary AAYTONPriesthouse．دて？？ Hү4 B6．［Ofthe great god of the temple of Memphis］／ $\boldsymbol{\lambda} \cup 7$

Hク4 A5 a．Sanctuary？
＜$\langle\lambda 17$
Hrg ix．Ordination ；inauguration． 2（2．2）

See Dates．H37L4，H34A5．Apeculiar priest in Ptolemais． Nu＝2．7

Portion．Higix．See Numbers．

HISOR．EK．

$\frac{1}{m}$

H37 L7．Son and daughter．
$1 \times 1$

H31 L9．His Sons and daughters．
$\omega 1 / 2$
F＇．Róseg．Ply．
Whar
H34 A7．Son and daughter．
山よ2

H3AB2．
$\downarrow \sim \downarrow$ ？
R1；T1， 1.
－
BT＇SIRIS．H27 xiii．Scarcely Br owsps．
と $11!$
SENCHONSIS．H34A川．See Pseuchonsis，Petechonsis．न1ん？
H37B7．
$A^{\prime} 4$ ．
f1み2ハね？
Fir 3ss？
Frosss
r2＜t？
Senamunis．H34 A1o；B6．See Psenameris．
liz13＜t？
H34B4．Wants／
$A^{\prime} 3$ ．

forts sis 3
$B^{\prime} 4$ ．
funses

SENOSORPHIBIS．H34A10．Tirsurz\％N4l？


$B^{\prime} 5$.
F.n) 川रिい3si

SENPOERIS．H37L7．
Cㅜㅏ신
H31LS． $r \simeq \nu<1 ?$

H37 LII． などメくて？

H34A74．- L ハくも？
H34 A76．$\quad 1$ Cllı
H34B8．And elsewhere frequently．F～UIS？
K＇3．Ch．MS．See ormp．B．
reusk
DAUGHTER．HIフiü．weps．

| Hyiu． |  |
| :--- | :--- |
| Hyy． |  |
| R2．2． |  |
| M\％．Probably． | 2 |

TAXES．HIg vïi．इYNTAEEI乏．
トリルノリ矣ご

103 $(\underline{y}) \ldots x$ ？

々2 $1+t$
Birth day． H2 8 axaiiii．윻．
十1心
Burials．H23 vaiii．See Busiris．

Times．H25xxiü тpIs． $\operatorname{Cot} \overline{\mathrm{r}}$

Artaba．H 23 xuiia．
b $\frac{1}{2}$
队
An Egyption cubic foot，according to Capellus，holding 101 pounds of water，or 10 Imperiat gallons．

South．H34 A13．See ふ
Hy
North．H34 B10．See ふ
入しろり
रेश
Younger．F＇Koseg．PLX ${ }^{3}$ ．
PlX 4．See \＆Aror．
H22xu Little? 0ヘIrsi?

Rites．$S_{e e}=\mu$ ．
Great．Hzoxi omeras kai meras．
Greatest．H25xaxiï，кYpistatos．

## C゙ル び

ジニひモ゙
Much；many things．H7ovi．See Numbers．we．
$111 \%$
Stone？H3о xxxxii．Possibly hard．
$\chi$ ？See Crime．s．
々२
ㄱ Father．H36iii．H34A2．Rather $\Delta m$ than Tors．See Phitopator． $\boldsymbol{S}, \Sigma$


$R^{\prime}$＇．

herieus．H32 L22．
$\operatorname{\Gamma ir} / \lambda$

R 2 ．
$\therefore 0 / 20$
T2．
$+2) / \rho$
AXE ？Hierogh． 4 上 $21 ?$ Champ．Tn． 38 ．See $\Sigma$
4，上
 TOWARDS．H34Bro．3A．Blowing NORTH．リリアN゙，bo


110 ね

Towards． 134 A8．The South．乌\＆PHC？
H34 B72．
$A^{\prime} 5$.
$B^{\prime} 6$ ．

H34 B73．
$A^{\prime} 5$.
$B^{\prime} 6$ ．

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