PAPERS.

I. *The Chronology of Star Catalogues.* By E. B. Knobel, Esq.

The History of Star Catalogues is a branch of Astronomy on which English literature appears to be very deficient. I have therefore reduced the following researches into a form available for reference, in the hope that they might to some extent fill up the gap that exists, and give more complete information on this department of Sidereal Astronomy.

The Table of 530 Star Catalogues which is appended, I have endeavoured to make exhaustive of the labours of Astronomers in this direction. I cannot suppose it to be perfect; but the omissions will, I trust, be found few and unimportant.

No Catalogue is inserted in the Table, with very few exceptions, which has not been personally examined. The exceptions consist entirely of Ancient and Oriental Catalogues either untranslated or which are not to be found in our Public Libraries; these are marked with an asterisk.

Following the Table of Catalogues of the Positions of Stars will be found a List of 29 Catalogues of Proper Motions of Stars.

The Memoir which follows, consists mainly of notes on some of the less well-known Catalogues; the No. of the paragraph is that under which the particular Catalogue is referred to in the Table.

1. The earliest observations of Stars, undertaken for the purpose of identifying their relative positions, appear to have been made by Eudoxus, a disciple of Plato, about the period B.C. 368 to 352. He is said to have introduced Astronomy into Greece from Egypt. His observations were recorded by Aratus, from whom we derive all our information of them. Riccioli* gives the N.P.D. of 25 Stars, and Tycho Brahe † the N.P.D. of

* *Astronomiæ Reformatæ*, tom. i. p. 204.

† *Historia Cœlestis*, tom. i. p. vii.

47 Stars determined by EUDOXUS, extracted from the Astronomical Poem of ARATUS, B.C. 281.

2. The next Catalogue of Stars (by which we understand, properly speaking, a list of stars, showing their relative positions with respect to some known or assumed great circle) was made by ARISTILLUS and TIMOCHARIS about B.C. 300. All we know of these Astronomers we derive from PTOLEMY'S *Almagest*, enough to show us how valuable their observations proved to their successors. MONTUCLA says*: "They appear to have been the first Astronomers to determine the position of fixed stars with respect to the Zodiac, marking their positions by longitude and latitude, and if we can judge from a considerable number of their observations noticed by PTOLEMY, they were the first to entertain the idea of forming a Catalogue of Stars." They did not confine themselves to the Zodiac, as may be seen in PTOLEMY. The *Almagest*† contains the Declinations of 18 Stars observed by them for the Epoch B.C. 283. They observed for 26 years from B.C. 295, the date of their first known observation.

For more than 100 years we have no record of observations for determining the position of stars. ARATUS, to whom we owe our knowledge of the observations of EUDOXUS, was probably not an Astronomer at all.‡

3. HIPPARCHUS, B.C. 160 to 125, was the most celebrated Astronomer among the Greeks. The sudden apparition of a new star§ induced him, as a similar phenomenon did TYCHO BRAHE many centuries later, to enumerate the visible stars, so as to know whether they appeared and disappeared. He is said to have constructed his Catalogue by the method of alineations,‖ indicating those that are in the same apparent straight line. Our knowledge of it is derived mainly from PTOLEMY, but there appears to be a doubt how it was originally formed. It is said¶ he first used Right Ascensions and Declinations for the positions of stars, which he afterwards abandoned in favour of longitudes and latitudes. HUMBOLDT says:** "In HIPPARCHUS' *Commentary* all positions are referred to the Equator by Right Ascension

* *Histoire des Mathématiques*, vol. i. p. 217.
† PTOLEMY, *Almagest* (*Halma*), vol. ii. p. 16.
‡ CAUSSIN, *Notices et Extraits des MSS.*, vol. xii. p. 239.
§ PLINY, bk. ii. ch. xxiv.
‖ DRAPER, *Religion and Science*, p. 29.
¶ *Penny Cycl.*, vol. ii. p. 531.
** *Cosmos. Phy. Description of Heavens*, p. 92.

and Declination." MONTUCLA conjectures* that "HIPPARCHUS described the Constellations with their stars on a solid globe, and that he placed this sphere in the school of Alexandria; for PTOLEMY, desiring to prove that the relative position of the stars had not changed since HIPPARCHUS, requests that they may be compared with the positions on the solid globe of that Astronomer."

The Catalogue of HIPPARCHUS is supposed to have contained the positions of 1080 stars for the Epoch B.C. 128. ACHILLES TATIUS (A.D. 400) in his work, designated by PETAVIUS† under the title *Ad Arati Phænomena qui liber falso Eratostheni tribuitur*, says: "Stellas omnes HIPPARCHUS asserit esse 1080 quæ nimirum constellationes apparentes efficiunt."

4. MENELAUS, at the period A.D. 97, according to M. J. J. SÉDILLOT,‡ constructed a Catalogue of Stars from that of HIPPARCHUS, and PTOLEMY founded his Catalogue upon that of MENELAUS. DELAMBRE says:§ "STADIUS appears to have thought that MENELAUS made a Catalogue at Rome 99 years after J.C.—'Post natum Christum uti ex Ptolemæo colligitur annos 99 stellas fixas observavit.'"‖ This fact is not mentioned by Mr. BAILY in his Preface to PTOLEMY'S Catalogue¶; indeed, he there remarks: "After the death of HIPPARCHUS . . . . no successor arose worthy of the name of an Astronomer till the time of PTOLEMY." But the statement of SÉDILLOT is based probably upon a passage in the *Preface to the Description of the Stars*, by the Persian Astronomer ABD-AL-RAHMAN AL-SÛFI. Professor SCHJELLERUP'S translation of this work has been recently published at St. Petersburg, from which I extract the following paragraph. AL-SÛFI writes in his Preface:—**

"Quant aux lieux des étoiles par rapport aux signes du Zodiaque, j'ai trouvé que PTOLEMÉE s'est appuyé sur les observations de MÉNÉLAUS, faites l'an 845 de NABONASSAR, et qu'il a marqué dans son livre les positions des étoiles fixes pour la première année d'ANTONIN, c'est à dire l'an 886 de NABONASSAR. L'intervalle entre l'observation de MÉNÉLAUS et l'époque de

* *Histoire des Mathématiques*, vol. i. p. 264.
† *Uranologion*, p. 262. VI.
‡ *Traité des Instruments Astronomiques des Arabes*, p. 4.
§ *Hist. de l'Astronomie, Moy. Age*, p. 448.
‖ STADIUS, *Tabulæ Bergenses, Coloniæ Agrippinæ* 1560, p. 187.
¶ *Memoirs Royal Astronomical Society*, vol. xiii.
** AL-SÛFI (SCHJELLERUP), *Description des Étoiles Fixes*, St. Pétersbourg, 1874, p. 42.

PTOLEMÉE est donc de quarante et un ans." Further on he says:—" Si nous en retranchons 25′, l'addition faite par PTOLEMÉE à chaque étoile," &c.

On this point DELAMBRE remarks:* " We do not see, either in STADIUS or PTOLEMY, that the Catalogue of PTOLEMY was that of MILLÆUS or MENELAUS, reduced by the addition of 25′ to all the longitudes. RICCIUS, who tells us this story, took it from an Arabian author that I have not been able to identify."

There can be little doubt that the Arabian author cited by RICCIUS, and unknown to DELAMBRE was ABD-AL-RAHMAN AL-SÛFI.

The following passage in ALBATEGNIUS (*De Scientia Stellarum*, Norimberg, 1537, p. 79) bears upon this question:—

" Ipsarum autem loca secundum longum et latum in PTOLEMÆI libro anno primo regis ANTONINI, qui est annus 886 a rege NABUCHODONOSOR invenimus in una illarum observationum per quas PTOLEMÆUS opeartus (sic) est fuit observatio MENELAI, qua usus est anno 842 à NABUCHODONOSOR rege."

The Epoch of MENELAUS is here given three years earlier than by AL-SÛFI. But the general accuracy of ALBATEGNIUS, or AL-BATTANI, is severely questioned by AL-SÛFI, who says:† " When AL-BATTANI wishes to make us believe that he knows the mansions of the Moon and the stars according to the method of the Arabs, and occupies himself with matters foreign to his subject, he only displays his ignorance."

We are subsequently told by AL-SÛFI, that the Epoch of his Catalogue is the year 1276 of ALEXANDER (which corresponds to the beginning of the year A.D. 964), and that this was 866 years after the observation of MENELAUS. The year 886 of NABONASSAR began July 20, A.D. 138. The Epoch, therefore, of PTOLEMY, according to AL-SÛFI, is A.D. 138. LALANDE‡ gives the first year of ANTONINUS as the 885th of NABONASSAR = July 20, A.D. 137; but the researches of LEPSIUS and DELAMBRE seem to have definitely settled the correct Epoch of PTOLEMY's Catalogue to be A.D. 138.

5. BODE, in his *Beobachtung und Beschreibung der Gestirne*, has investigated the question of the Epoch of PTOLEMY's Catalogue of Stars, and, on

* *Hist. de l'Ast. Moy. Age*, p. 449.
† AL-SÛFI (SCHJELLERUP), p. 37.
‡ *Mémoires de l'Academie des Sciences*, Paris, 1766, p. 466.

the assumption that it was reduced from HIPPARCHUS with an erroneous Precessional Constant, he assigned the year A.D. 63 as the more correct Epoch of the Longitudes in the *Almagest.*

After the period of PTOLEMY a long gap of six centuries ensued, during which we have no record of Astronomical Observations at all, with the exception of a few unimportant ones by THIUS, of Athens, A.D. 500.*

Our knowledge of Arabian Astronomy, which began to rise in the latter part of the 8th Century, is by no means so complete as it should be. Several libraries in Europe are remarkably rich in Arabic and Persian MSS. which are still untranslated. In the year 1684, Dr. EDWARD BERNARD, the Savilian Professor at Oxford, wrote as follows, in a letter published in the Philosophical Transactions for that year:—†

"The Astronomy of the Orientals is interesting to us for many reasons: for the serenity of the regions where they observed; the size and accuracy of their instruments, such as we can hardly credit; the multitude of observers and chroniclers, ten times greater than among the Greeks and Latins; and for the number of princes who aided Astronomy with their protection and munificence. One cannot describe adequately in a letter all that the Arabian Astronomers found to reform in PTOLEMY, and their labours for that purpose: the pains they took to measure time by clepsydras of water, by immense sundials, and—what is more surprising—by pendulum vibrations; likewise the industry and exactness they displayed in conducting such delicate investigations."

In this communication Dr. BERNARD called attention to the richness of the University of Oxford‡ in Arabic and Persian MSS. on Astronomy and gave extracts from eleven Oriental Star Catalogues in that collection. From that time it does not appear that more than three of the works quoted have been translated to the improvement of our knowledge of Oriental Astronomy.

6. ALBATEGNIUS, or AL-BATTANI, was the earliest Arabian Astronomer of eminence. He observed from A.D. 877 to 918, and to him we owe the Sabeian Tables, containing a Catalogue of Stars for the Epoch A.D. 879. A

* *Penny Cycl.*, vol. ii. p. 532.

† *Phil. Trans.*, 1684, p. 567.

‡ Merton College is said to possess 40 MSS. (not 400 MSS., as given by MONTUCLA, *Hist. des Mathém.*, vol. i. p. 369).

second edition of his Tables gives the longitudes of stars for the Epoch A.D. 911.* The book, *De Scientia Stellarum*, of AL-BATTANI was translated by REGIOMONTANUS, from an Arabic work entitled *Zig Sabi* (Sabeian Tables), but it does not include the Catalogue of Stars.

8. ALI ABOUL CASSIM made a Catalogue of Stars, but our knowledge of it is confined to Dr. BERNARD's extract from the Oxford MSS., giving the places of 20 stars for the Epoch A.D. 938. I have been unable to separate the identity of this Astronomer from "IBN AL-AALAM," who comes next but one in the Table. IBN JUNIS speaks of "ABOUL CASSIM BEN AMADJOUR" as an Astronomer who lived about his time, and who published some Astronomical Tables;† and CASIRI‡ mentions a Geometer and Arithmetician of Antioch named "ABUL-CASSEM ALI BEN AHMAD," who died A.D. 986. Possibly one of these may be the Astronomer quoted by the Savilian Professor.

There is considerable difficulty in identifying Oriental names, which is much increased by the want of a uniform system of orthography in translating them.

9. The splendid work of Professor SCHJELLERUP, to which reference has already been made, makes us well acquainted with the Catalogue of ABD-AL-RAHMAN AL-SÛFI.§ This book, entitled *Description of the Fixed Stars*, contains a Catalogue of Stars based upon PTOLEMY, the longitudes of the *Almagest* being increased by a fixed quantity of 12° 42′, to bring them up to the Epoch A.D. 964; but all the stars were carefully re-examined by the author, and the magnitudes determined with much greater precision. SCHJELLERUP says: "AL-SÛFI has given us a description of the starry heavens superior to his model, which for nine centuries had been without rival, and that the equal of it is only to be found in the *Uranometria Nova* of ARGELANDER.‖ He remarks also that AL-SÛFI gives us PTOLEMY's Catalogue more perfect than we had ever possessed it before.

In his own preface, SCHJELLERUP¶ discusses and in a great measure dis-

* CAUSSIN, *Notices et Extraits des MSS. de la Bibliothèque du Roi*, vol. vii.

† SÉDILLOT, *Prolegomènes des Tables Astronomiques d'Oloug Beg*, 1847, p. xlii.

‡ CASIRI, *Bibliotheca Arabico-Hispana Escurialensis*, vol. i. p. 411.

§ A translation of AL-SÛFI's Preface is given by CAUSSIN in *Notices et Extraits des MSS.*, vol. xii. In the same volume, at p. 239, CAUSSIN states that CAZWINI's *Book on the Constellations* is merely an extract from AL-SÛFI.

‖ *Description des Étoiles Fixes*, p. 4.

¶ *Ibid.*, p. 25.

proves, from internal evidence in AL-SÛFI, the assertion that has been made so repeatedly, on the authority of PTOLEMY, that *Sirius* formerly shone as a *Red* Star, whereas at the present day it is unquestionably free from any ruddy colour. He does not think it probable that the old copies of the *Almagest* described *Sirius* as "Red," for in comparing AL-SÛFI's designation of stars in his Catalogue with those given by PTOLEMY, a perfect accordance is found, which must have originally existed between the oldest Arabic translations of the *Almagest* and the original Greek. Moreover the ancient Red colour of *Sirius* becomes more than suspicious, inasmuch as we do not find in AL-SÛFI, in speaking of *Sirius*, any Arabic translation of the word ὑπόκιρρος, which is used in the later editions of PTOLEMY.

HUMBOLDT remarks:* "Perhaps SÉDILLOT, or other philologists conversant with Arabian and Persian Astronomy, may succeed in discovering in the intervals from EL-BATTANI and EL-FERGANI to ABDURRAHMAN SÛFI and EBN JUNIS, and from EBN JUNIS to NASSIR EDDIN and ULUGH BEIGH, some evidence respecting the colour of *Sirius* at that time. EL-FERGANI does not include *Sirius* in the Red Stars he mentions. If *Sirius* had then ceased to be a Red Star it would seem strange that EL-FERGANI, who follows PTOLEMY throughout, should not have pointed out the change of colour in a star of such note."

SCHJELLERUP remarks that AL-BATTANI, who was well acquainted with all the Arabic translations of the *Almagest*, mentions only five Red Stars, whilst the Greek *Almagest* gives six.

The following abstract of a passage in LE GENTIL's memoir, "*Remarques sur les Étoiles Nébuleuses*,"† is interesting to us as bearing on the Catalogue under consideration. Speaking of the discovery of the Nebula in *Andromeda*, by SIMON MARIUS, Dec. 15, 1612, he says, "BULLIALDUS remarks that M. DE THOU brought from Holland a MS. on a skin of parchment, containing a Catalogue of Fixed Stars, with figures of the Constellations. A recent note written on the MS. remarked that to reduce the Catalogue to the time of ALPHONSUS it would be necessary to add 6° to the longitudes. The Nebula in *Andromeda* was marked in both the Catalogue and the

* *Cosmos. Physical Description of Heavens*, p. 113.
† *Mémoires de l'Académie des Sciences*, 1759, pp. 456–459.

figures. The figures of the Constellations gave three representations of *Andromeda*; the first a single figure of a woman, the second a figure of a woman with two fish attached to her girdle, and the third showing the woman with one fish on one foot, and the other fish on the other. Comparing the longitudes of stars in the Catalogue with the longitudes of those stars in his time, BULLIALDUS found that the Epoch of the Catalogue must have been about A.D. 995 or 985, whence it is easy to conclude that the Nebula in *Andromeda* was seen long before SIMON MARIUS. Neither BULLIALDUS nor LE GENTIL make any surmise as to the author of this Catalogue.

Now AL-SÛFI's Catalogue is interesting as containing figures of the Constellations, and SCHJELLERUP calls especial attention to the fact that it mentions the Nebula in *Andromeda*. AL-SÛFI represents the Constellation *Andromeda* by three figures; the first a single figure of a woman, the second a woman with two fish attached to her girdle, and the third a woman with a fish across her feet—almost identical with the description by BULLIALDUS of the Holland MS.

LE GENTIL's notice of the passage in BULLIALDUS seems to have escaped the attention of SCHJELLERUP, SÉDILLOT, and other Oriental scholars; but there can be no doubt, first from the Catalogue containing the Nebula in *Andromeda*; secondly the peculiar representations of the Constellation *Andromeda*, and thirdly the Epoch of it—the longitudes being about A.D. 964—that M. DE THOU's MS. was a copy (we are not told in what language) of AL SÛFI.

10. IBN AL-AALAM, mentioned by CASIRI* under the name "ALI BEN ALHASSAN ABUL-CASSEM ALIDA, *vulgo* EBN LALAM," was a renowned Astronomer, who constructed some Astronomical Tables, of which SÉDILLOT says we possess only the Title.† His Catalogue of Stars is, however, quoted by Dr. BERNARD from an Oxford MS., and given for the Epoch A.D. 980. IBN AL-AALAM determined the amount of Precession with particular care, and stated it to be 51″·4 annually, and he was much praised by his successor, IBN JUNIS, for the exactness of his observations, which he made with instruments of his own construction.

11. IBN JUNIS, one of the most celebrated Arabian Astronomers,

* *Bibliotheca Arabico-Hispana Escurialensis*, vol. i. p. 411.

† *Prolegomènes des Tables Astronomiques d'Oloug Beg*, 1847, p. xlii.

constructed some Tables from original observations during the reign of the Caliph Hakem, A.D. 996 to 1021, hence called "The Hakemite Tables." They contain a Catalogue of Stars which we gather from Dr. BERNARD were reduced to the Epoch A.D. 996. In 1804 M. CAUSSIN examined the Leyden MS. of IBN JUNIS. The Hakemite Tables consisted altogether of 81 chapters, of which only 22 are to be found in the Leyden MS. CAUSSIN translated *in extenso* chapters 4, 5, and 6,* which treat of "Eclipses," "Conjunctions of the Planets," and "Motions of the Planets," and gave the titles only of the remaining chapters, published in vol. 7 of the *Notices et Extraits des MSS. de la Bibliothèque du Roi.* The remaining chapters of these Tables were subsequently translated by SÉDILLOT, who submitted his MS. to DELAMBRE to use in his *History of Astronomy*, but I cannot ascertain whether SÉDILLOT's translation was ever published. The value attached to these Tables was proved by later Astronomers, NASSIR EDDIN and ULUGH BEIGH having derived their Tables from them.† LAPLACE also used them in his discussion of the Obliquity of the Ecliptic and the greater Inequalities of *Jupiter* and *Saturn.*

The date of the last observation in them is Nov. 7, A.D. 1007.‡

13. ARZACHEL, we are told, was a Spanish Moor who lived A.D. 1080, and was the author of the "Toledo Tables" (*Tabulæ Toletanæ*).

I have examined four MSS. of the 13th and 14th centuries, which purport to be copies of the *Tabulæ Toletanæ*—three of them at the British Museum, and the remaining one in the Library of the Royal Astronomical Society. From DELAMBRE's description, they agree with the two MSS. of these Tables which he examined in the Paris "Bibliothèque du Roi."

They contain a Catalogue of 35 Stars (obviously reduced from PTOLEMY, the latitudes being identical), giving Longitudes, Latitudes, Declinations, and Right Ascensions for the Epoch "Ann. Arabum 577 = Anno Christi 1181, mens. 4. die. 5," this date being given in all the MSS.

* *Notices et Extraits des MSS.*, vol. vii. p. 238. The statement in the *Encyclopædia Britannica*, 9th ed., art. "Astronomy," p. 751, leads one erroneously to suppose that CAUSSIN translated the whole of the Hakemite Tables.

† SÉDILLOT, *Prolegomènes*, 1853.

‡ It is doubtful whether an original copy of all these Tables is in existence. The chapters of which the Leyden MS. was deficient, were translated by SÉDILLOT from an abstract of the Tables attributed to IBN SCHATIR, who flourished nearly 500 years later, and may therefore possibly be copied from his Damascus Tables.

If ARZACHEL be really the author of these Tables, and lived A.D. 1080, it is very singular the Epoch of the Catalogue should be 100 years later. This fact alone would seem to throw some doubt on the authorship, though the MSS. generally agree in adopting the title *Canones Arzachelis*. M. L. A. SÉDILLOT says,* "Quant à ARZACHEL, on lui attribue *à tort* les Tables Toledanes." He gives no authority for this statement, but the fact I have mentioned with regard to the Epoch supports his opinion.

On the other hand, we have the Alfonsine Tables, constructed at Toledo, and containing PTOLEMY's Catalogue reduced to A.D. 1252, the longitudes of which are 2° 1′ more than those of the Toledo Tables of Epoch 1181. This would give an annual Precession of 103″, which is quite out of the question. But in investigating the Alfonsine Tables, I find the longitudes of the *Almagest* have been increased by a fixed annual Precessional Constant of 55″·3, which is likewise the identical quantity employed by the Persian Astronomer AL-SÛFI in reducing PTOLEMY's Catalogue to his Epoch A.D. 964.

Adopting this Constant for ARZACHEL's Catalogue, we arrive at the Epoch A.D. 1121 for the longitudes given in the *Tabulæ Toletanæ*, and the difference then of 2° 1′ between these longitudes and those of the Alfonsine Tables is exactly what it should be on this hypothesis ; ex. gr.

ALDEBARAN.

Long. PTOLEMY, Epoch 137†.	Long. *Tabulæ Toletanæ*.	Long. Alfonsine Tables, Epoch 1252.
1^s 12° 40′	1^s 27° 47′	1^s 29° 48′

Difference Long. PTOLEMY and *Tabulæ Toletanæ* = 15° 7′ ÷ 55″·3 = 984

Difference Long. *Tabulæ Toletanæ* and Alfonsine Tables = 2° 1′ ÷ 55″·3 = 131

Difference Epoch PTOLEMY, 137, and Alfonsine Tables, 1252 = 1115

∴ Epoch *Tabulæ Toletanæ* = 137 + 984 = A.D. 1121.

Therefore, from the examination of these MSS. we are led to the conclusion that the Epoch of ARZACHEL's Toledo Tables is Anno Arabum 514 = Anno Christi 1121, and, consequently, it is probable they were constructed by him; and further, as far as this evidence goes, SÉDILLOT is in error.

* *Matériaux pour servir à l'Histoire comparée des Sciences Mathématiques chez les Grecs et les Orientaux*, Paris, 1845, p. 78.

† This Epoch would seem to be that generally adopted for PTOLEMY's Catalogue up to the commencement of the present century.

12. BULLIALDUS, at the end of his *Astronomia Philolaica*, gives a Catalogue of the Longitudes and Latitudes of 25 Stars for the Epoch A.D. 1115, translated by a Greek physician named GEORGE CHRYSOCOCCA, from some Persian Tables.* The places are from PTOLEMY, reduced to the Epoch given.

These Tables appear to have been anonymous, for neither CHRYSOCOCCA, TYCHO BRAHE, nor BULLIALDUS mention the author's name, who was also unknown to DELAMBRE. SÉDILLOT gives† "COTHB-EDDIN SCHIRAZI" as "the anonymous Persian author of CHRYSOCOCCA," but does not mention his authority. ‡ There would seem to be some doubt on this point, for we find in D'HERBELOT § a disciple of NASSIR-EDDIN named "COTHB-EDDIN MAHMOUD SCHIRAZI," who wrote many books—among others, one on the *Astronomy of the Sphere*—who died A.D 1311, or nearly 200 years after the Epoch of CHRYSOCOCCA's author. The British Museum possesses at least four Astronomical MSS. by "KUTB-AL-DIN AL-SHIRAZI," who died in the year 710 of the Hegira, A.D. 1311. SHERBURNE says || CHRYSOCOCCA lived about A.D. 1240.

14. NASSIR-EDDIN AL-TUSI began to build the Observatory at Meragha A.D. 1259, where he constructed the *Ilkhanic Tables*, which were published A.D. 1270. His Tables are divided into four books, the last of which treats of the Fixed Stars, and gives a Catalogue of the Longitudes and Latitudes of certain Stars. Dr. BERNARD in the paper previously cited, gives a brief extract from the MSS. of NASSIR-EDDIN's Tables at Oxford, reduced to the Epoch A.D. 1233. The Observatory was built about A.D. 1259, and the Tables were published in A.D. 1270; consequently, as the observations were made between those periods, it is difficult to understand how the Epoch of the Catalogue can be of a prior date, A.D. 1233. M. JOURDAIN's Memoir on the Observatory at Meragha does not throw any light on this point.

* DELAMBRE gives this Catalogue in his *Histoire de l'Astronomie Moy. Age*, but two of the latitudes differ from BULLIALDUS. See, further on, note to Star 3, ABOUL HHASSAN's Catalogue of 240 Stars.

† *Prolegomènes des Tables Astronomiques d'Oloug Beg*, Paris, 1853, p. 289.

‡ "In 1645, Bullialdus published at Paris, from a MS. in the *Bibliothèque du Roi*, an extract from the Tables of CHRYSOCOCCA as a production of Persian astronomy. He was far from suspecting that these Tables were those of EBN JUNIS, constructed at Cairo in 1000, and reduced to the meridian of Tovin in 1079 to serve for a new Persian Calendar of Gemal-Eddin Melik-Schah." SÉDILLOT, *Matériaux*, p. 80.

§ *Bibliothèque Orientale*, Paris, 1697, p. 788.

|| *The Sphere of Marcus Manilius, with Annotations*, by E. SHERBURNE, London, 1675, p. 32.

17. ABD-AL-JALIL AL-SIJAZI made a Catalogue of Stars for the Epoch A.D. 1261, as we know from Dr. BERNARD'S extracts; but he does not appear to have been well known as an Astronomer, and his works have remained untranslated.

18. Of ABOUL HHASSAN, whose proper name is "ABOUL HHASSAN ALI, of Morocco," we possess a very valuable *Treatise on the Astronomical Instruments of the Arabs,* which has been most ably translated by M. J. J. SÉDILLOT. This work contains three Catalogues of Stars possessing a good deal of interest.

The first is a Catalogue of the Longitudes and Latitudes of 240 Stars reduced to the Epoch of the beginning of the Hegira, July 15, A.D. 622. The second gives the Declinations of 180 Stars, and the third the Co-ascendants of 210 Stars, both for the Epoch A.D. 1282. Unfortunately the author gives us no idea how these Catalogues were made; moreover, there is considerable doubt as to the period when ABOUL HHASSAN published them. SÉDILLOT says:* "If he did so in 1282, it is strange he makes no mention of the Alfonsine Tables, which appeared in 1252. He gives the obliquity of the Ecliptic as 23° 36′ for the year 680 Hegira, A.D. 1282; but in another passage he says positively that in his time the obliquity was only 23° 35′. This difference, 1′ = 53 Arabic years, would tell us that he wrote about 627 Hegira = A.D. 1230." †

SÉDILLOT gives merely a translation of these Catalogues without note or comment, and says that he was unable to identify the stars by comparison with a modern atlas. This work I have endeavoured to supply, and from careful examination and comparison of the Catalogues, have identified every star contained therein.

The first Catalogue of the Longitudes and Latitudes of 240 Stars contains all the stars in the other two. There is no doubt that the places have been simply reduced from PTOLEMY to the Epoch of the beginning of the Hegira. DELAMBRE, in speaking of it, remarks:‡ "It has seemed to us too inexact to be reproduced; the most ordinary errors are more than one degree. It contains some southern stars which are not to be found in PTOLEMY."

* *Traité des Instruments Astronomiques des Arabes*, Paris, 1834, p. 13.

† A convenient rule for converting years of the Hegira to the Christian Era, is to multiply the year of the Hegira by 0·970203 and add 622·54; the result gives the year and fraction of the year Anno Domini (Old Style).

‡ *Histoire de l'Astronomie, Moy. Age*, p. 187.

Neither of these statements can I confirm. Every star I have identified in PTOLEMY, either in AL-SÛFI, or BAILY's compiled edition in the 13th vol. of the *Memoirs of the Royal Astronomical Society.*

This Catalogue contains several errors which are very interesting and instructive, as tending to throw light upon discrepancies and mistakes which have been discovered in ancient Catalogues. I have therefore incorporated the Catalogue with this paper, appending to each star the common designation of BAYER or FLAMSTEED, and subjoining notes of the errors I have detected.

It is by no means improbable that one who wrote so valuable a treatise on Astronomical Instruments and Calculations, should have made original observations, and consequently it is possible the Catalogue of the Declinations of 180 Stars may have been constructed from observations. In order to show the amount of accuracy it possesses, I have compared ABOUL HHASSAN's Declinations of 36 Principal Stars with the Greenwich 7-year Catalogue reduced to the Epoch 1282.

Star.	Declination ABOUL HHASSAN.	Declination Gr. 7-year Cat.	Difference.
	° ′	° ′	° ′
α Hydræ	− 3 31	− 5 43	+ 2 12
α Aquarii	− 3 46	− 3 41	− 5
α Orionis	+ 6 6	+ 6 59	− 53
α Canis Minoris	+ 6 40	+ 6 49	− 9
α Aquilæ	+ 6 46	+ 7 12	− 26
α Virginis	− 6 48	− 7 19	+ 31
β Orionis	− 9 42	− 9 17	− 25
α Pegasi	+11 17	+11 24	− 7
α Libræ	−12 15	−12 52	+ 37
α Ophiuchi	+13 13	+13 20	− 7
α Capricorni	−14 20	−14 31	+ 11
α Tauri	+14 53	+14 47	+ 6
γ Arietis	+15 35	+15 38	− 3
α Leonis	+15 36	+15 20	+ 16
α Canis Majoris	−15 38	−15 58	+ 20
α Herculis	+15 54	+15 27	+ 27

Star.	Declination ABOUL HHASSAN.	Declination Gr. 7-year Cat.	Difference.
	° ′	° ′	° ′
β Leonis	+18 40	+18 34	+ 6
α Arietis	+19 33	+19 55	− 22
γ Leonis	+23 36	+23 21	+ 15
α Boötis	+23 48	+23 3	+ 45
α Andromedæ	+25 4	+24 57	+ 7
β Cygni	+26 48	+26 39	+ 9
β Tauri	+27 13	+27 40	− 27
β Geminorum	+29 0	+29 28	− 28
α Coronæ	+29 52	+29 19	+ 33
α Geminorum	+32 55	+33 8	− 13
α Piscis Australis	−35* 31	−33 20	− 2 11
α Lyræ	+38 27	+38 18	+ 9
γ Andromedæ	+38 32	+38 44	− 12
12 Canum Venaticorum ...	+42 16	+42 16	0
α Cygni	+42 44	+42 51	− 7
α Aurigæ	+44 25	+44 53	− 28
α Persei	+46 34	+47 1	− 27
α Cassiopeiæ	+52 13	+52 33	− 20
α Ursæ Majoris	+65 35	+65 33	+ 2
β Ursæ Minoris	+77 2	+77 6	− 4

As ABOUL HHASSAN's second Catalogue is the earliest extensive Catalogue of Declinations, so the third is the most ancient Catalogue of Right Ascensions, or Co-ascendants of Stars—the Right Ascensions being reckoned from the Solstitial Colure, the First Point of *Capricornus*.

Nos. 22 and 24 we know of only from the extracts given by Dr. BERNARD in the *Phil. Trans.* 1684. I have altogether failed in obtaining further knowledge of these Catalogues.

23. GASSENDI gives, in a letter at the end of vol. 4 of his works, a Catalogue of 47 Stars from the Arnaldin Codex for the Epoch 1364. The latitudes are taken from PTOLEMY.

* *Vide* Note to Star No. 30, ABOUL HHASSAN's Catalogue of 240 Stars.

† *Opera Omnia*, Lugduni 1658, tom. iv. p. 534; also in *Riccioli: Astronomiæ Reformatæ*, tom. i. p. 216.

25. Ulugh Beigh was the greatest of the Oriental Astronomers, and is therefore the best known to us. His Catalogue of Stars was based upon that of Abd-Al-Rahman Al-Sûfi (they both contain the same 1018 stars and one duplicate), but there is no doubt it was the result of new and original observations.

Ulugh Beigh remarks, in the Preface to his Tables:* "We have re-observed all the stars already determined, with the exception of 27 which are not visible at the latitude of Samarcand—namely, the seven in *Ara*, eight in *Navis* (Nos. 36 to 41, 44 and 45), eleven in *Centaurus* (Nos. 27 to the end), and one (No. 10) in *Lupus*; and we have taken these 27 stars from the book of Abderrahman Soufi, bearing in mind the difference of Epoch of his Catalogue and ours.

"Besides these, there are eight stars mentioned by Abderrahman Soufi in his book, as being given by Ptolemy, but which Abderrahman did not see, and which, in spite of all our researches, we have failed to discover. On this account we have not given these stars in the present Catalogue. These stars of Ptolemy are the 14th of the Herdsman (*Auriga*), the 11th of the Wolf, and the six external stars of the Southern Fish.

"We have given in our Catalogue the places of stars for the commencement of the year 841 of the Hegira, so that for any future time we can ascertain the places of any stars on the supposition that they advance one degree in seventy solar years."

Ulugh Beigh, like Nassir Eddin and Cothb-Eddin Schirazi, adopted the Precessional Constant as determined by Ibn-Al-Aalam, viz. $51''.4$. His Tables were based upon the Hakemite Tables of Ibn Junis, and were prepared mainly by his Astronomers, Ali Cushi and Ali ben Gaiat.†

The question has been discussed whether Ulugh Beigh wrote his works in Turkish, Arabic, or Persian. Sédillot says "no mention has ever been made of a copy of the Tables in Oriental Turkish. We possess two copies in Arabic which present no table differences, and are evidently the work of two translators unknown to each other. On the other hand, the Persian MSS. show a perfect accordance,"—which induces Sédillot to believe they were written originally in that language.‡

26. Cardinal Nicholas, of Cusa, was an original observer, and made a Catalogue of the Longitudes and Latitudes of Stars from his own observations.

* L. A. Sédillot, *Prolegomènes des Tables Astronomiques d'Oloug Beg*, Paris, 1853, p. 198.

† Sédillot, *Prolegomènes*, 1853, p. 289.

‡ *Ibid.*, 1847, p. cxxxvii.

RICCIOLI* gives an extract from this Catalogue reduced to the Epoch A.D. 1440.

27. ALA EDDIN IBN SHATIR published a Catalogue of Stars for the Epoch A.D. 1480, in his "Damascus Tables," which were derived from those of IBN JUNIS.

29. MOHAMMED BEN ABOU-BEKRE AL-TIZINI is known from THOMAS HYDE having given a Catalogue of 300 Stars by him in his translation of ULUGH BEIGH. A curious error has in consequence crept into the works of HUMBOLDT and ARAGO. It is therein stated: "ULUGH BEIGH'S Catalogue contained at first only 1019 positions of stars reduced to the year A.D. 1437. A later commentary furnishes 300 additional stars observed by ABU-BEKRI ALTIZINI in 1533." †

This Catalogue is printed at the end of HYDE'S *Commentary* on ULUGH BEIGH, and gives the Right Ascensions and Declinations of 302 Stars for the Epoch 1534, all of which are to be found in ULUGH BEIGH'S Catalogue of 1019 Stars. Therefore it is certainly neither additional to, nor a commentary on ULUGH BEIGH. The Right Ascensions are reckoned from the First Point of *Capricornus*, the Solstitial Colure, as we find in most of the ancient Catalogues giving this Co-ordinate. We have no information how the Catalogue was formed. To test its accuracy I have compared the Declinations of 20 stars with the Greenwich 12-year Catalogue reduced to the Epoch 1534.

Star.	Declination Al-Tizini.	Declination Gr. 12-year Cat.	Difference.
	° ′	° ′	′
α Aquarii	− 2 21	− 2 36	−15
α Canis Minoris	+ 6 5	+ 6 26	−21
α Aquilæ	+ 7 24	+ 7 37	−13
α Virginis	− 8 29	− 8 44	−15
β Orionis	− 9 13	− 8 43	+30
α Ophiuchi	+13 9	+12 53	+16
α Leonis	+14 8	+14 15	− 7
α Tauri	+15 43	+15 35	+ 8

* *Astronomiæ Reformatæ*, tom. i. p. 217. The work cited by RICCIOLI is, we presume, the following one, mentioned in the Catalogue of the Poulkova Library: "CUSA (DE) N., *Opera*, 2 vol. fol. (*sine loco et anno*).—*Liber anno* 1480 *anterior habendus est.*" The British Museum contains the more recent Basil edition of 1565. On which, see *Appendix*.

† This date is a mistake. The Epoch given by HYDE is "pro *fine* anni Hegiræ purissimæ 940, i. Chr. 1533" (?). The year 940 Hegira began July 23, A.D. 1533, and ended July 12, A.D. 1534, consequently the Epoch of the Catalogue is A.D. 1534.

Star.	Declination Al-Tizini.		Declination Gr. 12-year Cat.		Difference.
	°	′	°	′	′
α Canis Majoris	−15	50	−16	4	−14
γ Arietis	+17	2	+17	1	+ 1
β Leonis	+17	55	+17	11	+44
α Arietis	+21	9	+21	15	− 6
α Boötis	+22	14	+21	36	+38
β Cygni	+27	31	+26	58	+33
β Tauri	+27	43	+28	14	−31
α Lyræ	+38	37	+38	20	+17
α Cygni	+43	50	+43	37	+13
α Aurigæ	+45	0	+45	32	−32
η Ursæ Majoris	+51	29	+51	38	− 9
β Ursæ Minoris	+76	0	+76	4	− 4

AYEEN AKBERY, who lived A.D. 1556—1615, has left no Catalogue of Stars, but gives a list of 221 stars which are to be found in the 28 Lunar Mansions. He has given the following estimate of the apparent diameters of stars :—

	Diameter.
1st Magnitude	7′
2nd „	6′
3rd „	5′
4th „	4′
5th „	3′
6th „	2′
7th „	1′

It is curious he should have classified the visible stars into *seven* magnitudes, which was not suggested by any preceding Astronomer.

33. WILLIAM THE 4TH, Landgrave of Hesse, was the founder of an Observatory, and constructed a Catalogue of Stars from original observations, of which we possess only a portion. The Catalogue known as that of the Landgrave of Hesse consists of 368 stars, and was published by FLAMSTEED in the 3rd volume of the *Historia Cœlestis*, and by HEVELIUS in his *Prodomus Astronomiæ*. But we learn* that during the French occupation of

* *Histoire de l'Académie*, 1761, p. 130.

Cassel, the Duke of Laval, at the request of the Abbé de LACAILLE, searched the Library of the Palace, and made a copy of the MS. observations of the Landgrave WILLIAM which were deposited there. LACAILLE, in his report on these MSS., says that most of the observations made by WILLIAM THE 4TH and his assistants, CHRISTOPHER ROTHMANN, Astronomer, and JUSTUS BYRGIUS, Mechanic, were devoted to making an exact Catalogue of the Principal Stars visible in his latitude. He succeeded in determining the longitudes, latitudes, and magnitudes of more than 900 stars, all observed directly and by different methods. The MSS. were found to contain not only this Catalogue, but likewise the observations themselves, with the details of his methods and the description of his instruments.

In the second volume of TYCHO BRAHE'S *Historia Cœlestis* we have a Catalogue of 1,034 Stars, constructed from the Hessian observations and reduced to the Epoch 1594. This was made at a period when the Tychonic observations were interrupted, upon which TYCHO remarks: "Eum hiatum ut expleremus suffectæ sunt Tichonicis observationes Hassiacæ, et Catalogus fixarum ab Illustrissimo GUILIELMO Hassiæ Langravio pulcherrimo supra fidem ordine eruditis vigiliis opera ROTHMANNI Mathematici aut si mavis Iusti (Justi) Burgii paratus atque digestus."

47. In 1632 PHILIP LANSBERG published his *Tabulæ Motuum Cœlestium perpetuæ*; Middelburgi Zelandiæ, 1632. At page 102 is given a Catalogue of the Longitudes, Latitudes, and Right Ascensions of 25 Stars, said to be determined from his own observations, and reduced to the beginning of the Christian era, A.D. 1.

On comparing LANSBERG'S latitudes of stars with the three Catalogues of PTOLEMY, ULUGH BEIGH, and TYCHO BRAHE, they do not prove to be identical with either of them; but they approximate to PTOLEMY more nearly than to the others. Comparing the differences in longitude of 14 pairs of stars, nine are identical with or very closely approximate to TYCHO'S. LANSBERG assumes the Right Ascension of γ *Arietis* at the Epoch A.D. 1 to be 0° 0′, and longitude, *Aries* 4° 25′; then, strangely enough, he makes differences of the Right Ascensions of Stars equal to their differences of longitude.

The Catalogue is probably correctly stated to be original, though we have no information how it was constructed.*

48. The Catalogue known as that of JACOB BARTSCH, consists of 136 southern stars, reduced by a seaman named PETER THEODORE, from the

* DELAMBRE omits all notice of LANSBERG in his *History of Astronomy*.

observations of certain navigators made at various ports in the Southern Hemisphere. It is interesting to us as being the earliest Catalogue of Southern Stars, and also as having led to the formation of certain Southern Constellations now generally accepted. The places are of course only roughly approximate, and the incorrectness of it was so great as to induce EDMUND HALLEY to go out to St. Helena and make the accurate Catalogue which bears his name, and which has been fully described by Mr. BAILY in his edition of it.

61. Father NOEL'S Catalogue of 225 Southern Stars was made during the Jesuit College expedition to China and the Indies at the latter part of the 17th century. It was in order of date, the third Catalogue of Southern Stars made, but the places are very inaccurate.

The preceding Catalogue, No. 60, was probably constructed by some members of the same expedition.

71. RICCIOLI'S General Catalogue* of 1,450 Stars for the Epoch 1701 ("ad annum Christi completum 1700") consists of stars arranged according to Constellations and subdivided into four classes.

The 1st class contains 110 stars observed by RICCIOLI and GRIMALDI, and includes the *Pleiades* observed by VINCENTIO MUTUS and MICHAEL LANGRENUS.

The 2nd class consists of 958 stars from the Rudolphine Tables.

The 3rd class consists of 246 stars observed by HIPPARCHUS and PTOLEMY, but not by RICCIOLI or TYCHO.

The 4th class contains 136 stars in Southern Constellations observed only by certain navigators (BARTSCH'S Catalogue).

85. The Catalogue of JOANNES JACOBUS MARINONIUS consists of the Right Ascensions of 218 stars arranged in the form of Differences of R.A. by Transit from eight fundamental stars, with their observed altitudes above the horizon of Vienna.

From α Arietis to α Aurigæ	... ...	19 Stars
α Aurigæ to α Canis Majoris	... ...	22 ,,
α Canis Majoris to α Leonis	... ...	23 ,,
α Leonis to α Boötis	... ...	31 ,,
α Boötis to α Scorpii	... ...	30 ,,
α Scorpii to α Lyræ	... ...	22 ,,
α Lyræ to α Piscis Australis	... ...	44 ,,
α Piscis Australis to α Arietis	... ...	27 ,,

* *Astronomiæ Reformatæ*, Bononiæ, 1665, tom. i. p. 265.

108. LACAILLE'S Catalogue of 515 Zodiacal Stars is a fragment of a larger Catalogue of 800 Stars which he had intended making, but was prevented by death from carrying out. The observations were made in 1760 and 1761, and were reduced by M. BAILLY to the Epoch 1765.

355. SANTINI'S Zone Catalogue for 1840 consists of stars to the 9th magnitude, in zones of 2° between the parallels +11° and −11° of Declination. The following are the numbers of stars in each zone :—

Zone	−1°	to	+1°	=	276	Stars	Zone	−1°	to	−3°	=	438	Stars
	+1°	to	+3°	=	286	,,		−3°	to	−5°	=	479	,,
	+3°	to	+5°	=	271	,,		−5°	to	−7°	=	454	,,
	+5°	to	+7°	=	274	,,		−7°	to	−9°	=	474	,,
	+7°	to	+9°	=	312	,,		−9°	to	−11°	=	503	,,
	+9°	to	+11°	=	325	,,							

The other Catalogues are briefly explained in the notes appended to them.

The Table of Star Catalogues has eight columns:—

1. The number of the Catalogue in order of Epoch.

2. The name of the Catalogue, which in almost all cases is the name of the Astronomer who constructed it.

3. The date of publication (printed).

4. The number of stars in the Catalogue.

5. Brief information as to the magnitudes or special peculiarities of the stars.

6. Particulars of the positions of stars and the co-ordinates given in each Catalogue, whether Longitudes, Latitudes, Right Ascensions, Declinations, or Special Zones.

7. The Epoch, which is the basis of the arrangement adopted.

8. Notes on the Catalogues, with references to the works in which they are to be found.

London, January 1876.

Table of Star Catalogues.

No.	Name.	Date Published.	Number of Stars.	Description of Stars.	Mean Places; Co-ordinates.	Epoch.	Notes.
						B.C.	
1	Eudoxus	...	47	Prin. Stars.	Declinations.	368 to 352	Tycho Brahe, "Historia Cœlestis, Augustæ Vindelicorum, 1666," tom. i. p. vii. Extracted from the Astronomical Poem of Aratus.
2	Aristillus and Timocharis	..,	18	Prin, Stars.	Declinations.	283	In Ptolemy, "Almagest" (Halma), vol. ii. p. 16.
3	*Hipparchus	...	1,080	Visible Stars.	Long.; Lat.?	128 ?	Achilles Tatius, "Ad Arati Phœnomena qui liber falso Eratostheni tribuitur." "Stellas omnes Hipparchus asserit esse 1080 quæ nimirum constellationes apparentes efficiunt." Petavius, "Uranologion, Lutetiæ Parisiorum, 1630," p. 262, vi.
						A.D.	
4	*Menelaus	...	...	... ...	... ...	97	Catalogue said to be made from Hipparchus (Sédillot).
5	Ptolemy, Claudius † ...	1515. L. 1528. T. 1538. G. 1712. O. 1786. M. 1816. H. 1843. B.	1,025	Visible Stars.	Long.; Lat.	138	Catalogue contained in Books 7 and 8 of the "Almagest." The principal editions are two Venice editions, in *Latin*, by Liechtenstein (L.) and Trapezuntius (T.), and the following in *Greek*: Basil, Grynæus (G.), Oxford; Halley (O.), in Hudson's "Geographia"; Montignot (M.); Halma (H.); and Baily's compiled edition (B.), in vol. xiii. of the "Memoirs of the Royal Astronomical Society."
	Ptolemy (Bode). See No. 182.						
6	* Albategnius ...	...	...	... ...	Long.; Lat.	879	In the Sabeian Tables, 1st edition.
7	* Albategnius ...	...	...	... ...	Long.; Lat.	911	In the Sabeian Tables, 2nd edition.
8	Ali Aboul Cassim ...	...	20	Prin. Stars.	Long.; Lat.	938	Given by Dr. Bernard, from an Oxford MS., in "Phil. Trans.," 1684, p. 567. Places reduced from Ptolemy.
9	Abd-Al-Rahman Al-Sûfi (Schjellerup).	1874	1,018	Visible Stars.	Long.; Lat.	964	"Description des Étoiles fixes, par l'Astronome Persan Abd-Al-Rahman Al-Sûfi." Translated by Prof. Schjellerup, from the Copenhagen and St. Petersburg MSS. "St.-Pétersbourg, 1874." Places from Ptolemy; star magnitudes newly determined.
10	Ibn Al-Aalam... ...	...	19	Prin. Stars.	Long.; Lat.	980	Given by Dr. Bernard, in his extracts from the Oxford MSS., "Phil. Trans.," 1684. Places from Ptolemy.
11	Ibn-Junis	...	18	Prin. Stars.	Long.; Lat.	996	From the Hakemite Tables. Dr. Bernard's extracts, Oxford MSS., "Phil. Trans.," 1684. Ptolemy's latitudes.

† Translations and reductions of Ptolemy's Catalogue will be found also in the works of Abraham Zacutus, Schöner, Copernicus, Flamsteed, Delambre, and others, but they have not been inserted in the Table.

No.	Name.	Date Published.	Number of Stars.	Description of Stars.	Mean Places; Co-ordinates.	Epoch.	Notes.
						A.D.	
12	Cothb-Eddin Schirazi...	...	25	Prin. Stars.	Long.; Lat.	1115	The Persian Tables given by Chrysococca anonymously (published by Bullialdus, "Astronomia Philolaica") are attributed by Sédillot to this author. Ptolemy's places reduced to the Epoch 1115.
13	Arzachel	...	35	Prin. Stars.	Long.; R.A.; Lat.; & Dec.	1121	"Tabulæ Toletanæ" (British Museum, Harleian MSS. 13 and 3,647). Ptolemy's places reduced to epoch.
14	Nassir-Eddin Al-Tusi...	...	23	Prin. Stars.	Long.; Lat.	1233	From the Ilkhanic Tables. Bernard's extract from Oxford MSS., "Phil. Trans.," 1684. Ptolemy's latitudes.
15	Alfonsine Tables ...	1492	1,022	Visible Stars.	Long.; Lat.	1252·4	"Tabule Tabularum Celestium Motuum Divi Alfonsi Regis Romanorum et Castelle Illustrissimi, Venetiis 1492." Ptolemy's Catalogue reduced to the Epoch 1251 years and 5 months. The first printed edition.
16	Alfonsine Tables ...	1518	1,022	Visible Stars.	Long.; Lat.	1252·4	"Tabule Astronomici Divi Alfonsi Regis Romanorum et Castelle, Liechtenstein Venetiis 1518." 2nd edition.
17	Abd-Al-Jalil	...	22	Prin. Stars.	Long.; Lat.	1261	"Phil. Trans.," 1684. Dr. Bernard's extract from Oxford MSS. Ptolemy's latitudes.
18	Aboul Hhassan Ali (J. J. Sédillot).	1834	240	Visible Stars.	Long.; Lat.	pro. 622·5	"Table des Longitudes et Latitudes de 240 Étoiles pour le commencement de l'Hégire (jeudi, 15 Juillet à midi, 622 de J.-C.)." "Traité des Instruments astronomiques des Arabes (Sédillot), Paris, 1834," p. 140.
19	Aboul Hhassan Ali (J. J. Sédillot).	1834	180	Visible Stars.	Declinations.	1282	"Table de la Déclinaison de 180 Étoiles pour la fin de l'année 680 de l'Hégire." "Traité des Inst. Ast.," p. 191.
20	Aboul Hhassan Ali (J. J. Sédillot).	1834	210	Visible Stars.	Co-ascendants.	1282	"Table des Co-ascendants dans la Sphère droite de 210 Étoiles fixes, à partir de 0° 0′ du *Capricorne*, pour la fin de l'an 680 de l'Hégire." "Traité des Inst. Ast.," p. 276.
21	Sacrobosco	1581	77	Visible Stars.	Long.; Lat.; R.A.; Decl.	...	"Speculum Astrologici," p. 674. Ptolemy's latitudes.
22	Persian Tables (Pembroke).	...	16	Visible Stars.	Long.; Lat.	1346	"Phil. Trans.," 1684, Dr. Bernard's extracts, Oxford MSS. Ptolemy's latitudes.
23	Arnaldin Codex ...	...	47	Visible Stars.	Long.; Lat.	1364	"Gassendi Opera Omnia, Lugduni 1658," tom. iv. p. 534. Quoted in a letter from Gassendi to Wendelinus, July 1636. Ptolemy's latitudes.
24	Shehabeddin of Aleppo	...	23	Visible Stars.	R.A.; Decl.	1436	Presumably from a later edition of the Ilkhanic Tables, "Phil. Trans.," 1684, Dr. Bernard's extracts, Oxf. MSS.

25	Ulugh Beigh	1665. H. 1843. B.	1,018	Visible Stars.	Long.; Lat.	1437	"Tabulæ long. ac lat. Stellarum Fixarum ex observatione Ulugh Beighi, Tamerlanis Magni Nepotis, Oxonii 1665." Made from original observations at Samarcand. Trans. by Thos. Hyde, 1665. New ed. by F. Baily. "Ast. Soc. Roy. Mems.," vol. xiii.
26	Cardinal Nicholas of Cusa	...	9	1st Mag.	Long.; Lat.	1440	In Riccioli, "Astronomiæ Reformatæ," tom. i. p. 217.
27	Ala-Eddin Ibn Shatir	...	22	Prin. Stars.	Long.; R.A.; Decl.	1480	In "The Damascus Tables." Dr. Bernard's extracts, Oxford MSS., "Phil. Trans.," 1684.
28	Alfonsine Tables (Gauricus).	1545	1,022	Visible Stars.	Long.; Lat.	1501·0	"Divi Alphonsi Romanorum et Hispaniarum Regis, Astronomicæ Tabulæ in propriam integritatem restitutæ, Parisiis 1545." Ptolemy's Catalogue, reduced by Gauricus from Alfonsine Tables of Epoch 1252·4.
29	Mohammed Al-Tizini...	1665	302	Prin. Stars.	R.A. from 0° 0′ *Capricornus*; Decl.	1534	"Tabula Stellarum Fixarum secundum motionem Declinationis et Ascensionis, pro fine anni Hegiræ purissimæ 940, i. Chr. 1533." Translated by Hyde, published with his edition of Ulugh Beigh.
30	Appianus	1584	1,022	Visible Stars.	Long.; Lat.	1550	"Cosmographia, Antverpiæ 1584," p. 251. Ptolemy's Catalogue reduced to epoch.
31	Stadius	1560	76	Prin. Stars.	Long.; Lat.; R.A.; Decl.	1558	"Tabulæ Bergenses," p. 215. "Verus ex observatione demonstratus Epilogismus."
32	Tycho Brahe (Schjellerup).	1856	26	Prin. Stars.	R.A.; Decl.	1580·0	"Tycho Brahe's original Observationer benyttede til Banebestemmelse af Cometen 1580," in "Copenhagen Dansk. Vid. Selsk. Skrif.," vol. iv. pt. i. p. 1. Comparison stars used by Tycho Brahe for determining the place of the Comet of 1580. Positions for Epoch 1580·0 reduced by Schjellerup from modern observations, with corrections for reduction to the mean dates of Tycho's observations.
33	William 4th, Landgrave of Hesse.	1666	1,034	Visible Stars.	Long.; Lat.	1594·0	In Tycho Brahe, "Historia Cœlestis," vol. ii., p. 545, reduced from the Hessian observations of the Landgrave of Hesse and Rothmann.
34	William 4th, Landgrave of Hesse.	1725	368	Visible Stars.	Long.; Lat.	1594·0	Flamsteed, "Historia Cœlestis," vol. iii.
35	*William 4th, Landgrave of Hesse.	...	900	Visible Stars.	Long.; Lat.	...	In MSS. examined by Lacaille, "Hist. de l'Acad., 1761," p. 130.
36	Tycho Brahe	1610	777	Visible Stars.	Long.; Lat.	1601·0	"Astronomiæ Instauratæ Progymnasmata, Francofurti, 1610," p. 257. From original observations at Uraniberg.
37	Tycho Brahe	1610	100	Select Stars.	R.A.; Decl.	1601·0 & 1701·0	"Ast. Inst. Progym.," p. 276.
38	Tycho Brahe	1627	1,005	Visible Stars.	Long.; Lat.	1601·0	In Kepler's "Tabulæ Rudolphinæ.' Recent ed. by Baily, "Ast. Soc. Roy. Mems.," vol. xiii.

No.	Name.	Date Published.	Number of Stars.	Description of Stars.	Mean Places; Co-ordinates.	Epoch.	Notes.
						A.D.	
39	Bartsch, James ...	1627	136	Prin. Southern Stars.	Long.; Lat.	...	A Catalogue of Southern Stars, reduced by Peter Theodore from the observations of Amerigo Vespucci and other navigators made in the Southern Hemisphere. In Kepler's "Tabulæ Rudolphinæ."
40	Bayer	1603	1,706	Visible Stars.	Long.; Lat.	...	Stars in Atlas "Uranometria omnium Asterismorum, Augustæ Vindelicorum, 1603."
41	Pagan, Comte de ...	1681	60	1st & 2nd Mags.	Long.; Lat.	1601·0	From Kepler's "Tabulæ Rudolphinæ." In "Tables Astronomiques, Paris, 1681."
42	Kepler, J.	1606	47	Visible Stars.	Long.; Lat.	1604·0	Catalogus quarundam Stellarum in Constellationibus Serpentarii, Serpentis et Scorpionis, quæ a Tychone vel etiam a Ptolemæo omissæ sunt. In "De Stella Nova in pede Serpentarii, Pragæ, 1606," p. 75.
43	Grienbergerus, Chr. ...	1679	1,234	Visible Stars.	...	1612	A Catalogue of Stars from Clavius, Tycho, and Piffero, with co-ordinates for setting off their places in 25 charts. In "Prospectiva Cœlestis Nova Imaginum Cœlestium, Augustæ Vindelicorum, 1679."
44	Origanus, David ...	1599	401	Visible Stars.	R.A.; Decl.	1620·0	"Ephemerides Novæ Annorum 36 incipientes ab anno Christi 1595, Francofurti ad Viadium," p. 94.
45	Olivetanus, Vinc. R. ...	1647	231	Prin. Stars.	Long.; Lat.	1621·0	Places given according to the Tables of Alfonsus, Copernicus, and Tycho. Tabulæ Mediceæ, in "Tabulæ Motuum Cœlestium Universales, Florentinæ, 1647." p. 266.
46	Schiller, Julius ...	1627	360	Prin. Stars.	Long.; Lat.; R.A.; & Decl.	1625·0	"Tabula Canonica præcipuarum Cœli Stellarum Fixarum." In "Cœlum Stellatum Christianum Augustæ Vindelicorum, 1627," p. 131.
47	Lansberg, Philip ...	1632	25	Prin. Stars.	R.A.; Long; Lat.	Pro. A.D. 1	"Catalogus XXV Stellarum Fixarum summa cura a nobis observatarum una cum earum Longitudine et Latitudine ad initium annorum Christi." In "Tabulæ Motuum Cœlestium perpetuæ, Middelburgi Zelandiæ, 1632," p. 102.
48	Bartsch, James ...	1661	1,111	Visible Stars.	Long.; Lat.	1630·0	In "Planisphærium Stellatum." Norimbergæ, 1661. Includes P. Theodore's Southern Stars.
49	Argolius Andrea ...	1659	303	Prin. Stars.	Long.; Lat.; R.A.; Decl.	1640·0	"Ephemerides ab anno 1640 ad annum 1700, Lugduni, 1659."
50	Riccioli, G. B.... ...	1651	70	Prin. Stars.	Long.; Lat.; R.A.; Decl.	1645·0	"Tabula LXX fixarum a nobis observatarum." "Almagestum Novum," vol. i. p. 476.
51	Riccioli, G. B.... ...	1665	127	Prin. Stars.	Declinations.	1661·0	"Astronomiæ Reformatæ," tom. i. p. 249.
52	Riccioli, G. B.... ...	1665	62	Prin. Stars.	Right Ascen.	1661·0	"Astronomiæ Reformatæ," tom. i. p. 253.

53	Riccioli, G. B.... ...	1665	101	Prin. Stars.	Long.; Lat.; R.A.; Decl.	1661·0 & 1701·0	"Astronomiæ Reformatæ," tom. i. p. 260.
54	Hevelius, J.	1690	1,888	Visible Stars.	Long.; Lat.; R.A.; Decl.	1661·0 & 1701·0	Catalogue consists of 950 stars of the Ancients, 603 newly observed by Hevelius, and 335 of Halley's Southern Catalogue. In "Prodomus Astronomiæ, Gedani, 1690," pp. 119, 269.
55	Hevelius, J.	1843	1,564	Visible Stars.	Long.; Lat.; R.A.; Decl.	1661·0	Baily's Ed. in "Ast. Soc. Roy. Mems.," vol. xiii.
56	Goldmayer, And. ...	1661	1,240	Visible Stars.	Long.; Lat.	1661·0	Catalogue made from the observations of Tycho, Kepler, and Christian Severin. In "Praxis Compendiosa."
57	Levera, Franciscus ...	1663	387	Visible Stars.	Long.; Lat.	1661·0	Catalogue from Tycho for stars visible in his latitude, and from Ptolemy for stars invisible to Tycho. In "Prodomus Universæ Astronomiæ Restitutæ, Romæ, 1663," p. 399.
58	Levera, Franciscus ...	1664	380	Visible Stars.	R.A.; Decl.	1661·0	"Tabula Declinationum et Ascentionum Rectarum." In "De Inerrantium Stellarum viribus et excellentia, Romæ, 1664," p. 47.
59	Halley, Edmund, Ast. Roy.	1679	341	Stars to 6 Mag.	Long.; South Lat.	1678·0	Catalogue of Southern Stars, made by Halley at St. Helena, in the years 1676 to 1678. In "Catalogus Stellarum Australium." Recent ed. by Baily in "Ast. Soc. Roy. Mems.," vol. xiii.
60	Chinese Catalogue ...	...	92	Prin. Stars.	R.A.; Decl.; Long.; Lat.	1683	Catalogue of Stars, giving their Chinese names and European synonymes. In "Bentley's Hindu Astronomy," taken from Morrison's Chinese Dictionary.
61	Noel, Father	1729	225	Stars to 6 Mag.	R.A.; South Decl.	About 1689	Catalogue of Southern Stars made at Macao and Rachol by the Jesuit College Expedition to India and China. "Acad. des Sciences Mems.," vol. vii p. 841.
62	Noel, Father	1710	352	To 6 Mag.	R.A.; Decl.	1688·0	"Observationes Mathematicæ et Physicæ in India et China factæ ab anno 1684 usque ad annum 1708, Prague, 1710," p. 44. A Catalogue of all known Southern Stars, observed by the Jesuit College Expedition.
63	Flamsteed, J., Ast. Roy. The British Catalogue	1725	2,934	To 7 Mag.	Long.; Lat.; R.A.; N.P.D.	1690·0	"Stellarum inerrantium Catalogus Britannicus ad annum Christi completum 1689." From observations made at Greenwich in the years 1689–1719, published in vol. ii. of Hist. Cœlest. "Historia Cœlestis Britannicæ, Londini, 1725," vol. iii.
64	Flamsteed, J., Ast. Roy.	1781	2,919	...	Long.; Lat.; R.A.; Decl.	1690·0	"Atlas Cœlestis, 27 maps, London, 1781."
65	Flamsteed (Baily) ...	1835	3,310	To 7 Mag.	R.A.; Decl.	1690·0	Baily's corrected and enlarged edition of the British Catalogue. In "An Account of the Rev. John Flamsteed, the First Astronomer Royal, London, 1835."

No.	Name.	Date Published.	Number of Stars.	Description of Stars.	Mean Places; Co-ordinates.	Epoch.	Notes.
66	Flamsteed (Herschel, Caroline)	1798	561	...	Differences of N.P.D. from Determining Stars.	A.D. 1690·0	"Catalogue of Stars taken from Mr. Flamsteed's observations contained in the 2nd vol. of the 'Historia Cœlestis,' and not inserted in the British Catalogue.' Contains 190 stars of doubtful R.A. and N.P.D., all arranged in the order in which they occur in Flamsteed's observations. London, 1798.
67	Flamsteed (Baily) ..	1831	564	To 7 Mag.	R.A.; Decl.	1690·0	"Catalogue of the positions (in 1690) of 564 Stars observed by Flamsteed but not inserted in his British Catalogue." In "Ast. Soc. Roy. Mems." vol. iv.
68	Maraldi, J. P.... ...	1715	238	Zodiacal Stars.	Long.; Lat.; R.A.; Decl.	1700·0	Catalogue reduced from the observations of Maraldi at the Paris observatory. In "Manfredi (Eust.) Ephemerides Motuum Cœlestium, Bononiæ, 1715."
69	Maraldi, J. P.... ...	1715	25	Extra Zodiacal.	Long.; Lat.; R.A.; Decl.	1700·0	
70	Halley (Hevelius) ...	1690	335	To 6 Mag.	Long.; Lat.	1700·0	Halley's Southern Catalogue reduced to Epoch 1700 by Hevelius. In "Prodomus Astronomiæ,' p. 309.
71	Riccioli, G. B.... ...	1665	1,450	Visible Stars.	Long.; Lat.	1701·0	"Catalogus Fixarum Universalis ad annum Christi 1700 completum." Consists of stars numbered in 4 classes:— 1st Class consists of 110 stars often observed by Riccioli and Grimaldi, and includes the *Pleiades* observed by Vincentio Mutus and Langrenus. 2nd Class: 958 small stars from the Rudolphine Tables. 3rd Class: 246 small stars observed by Hipparchus and Ptolemy, and not by Riccioli or Tycho. 4th Class: 136 stars in the New (Southern) Constellations observed by navigators. In "Astronomiæ Reformatæ."
72	Hire, Phillipe de la ...	1727	64	Prin. Stars.	R.A.; Decl.	1701·0	"Tabulæ Astronomicæ Ludovici Magni. 2nd ed. by De la Hire, Parisiis, 1727," p. 13.
73	Hire, Phillipe de la ...	1727	17	Prin. Stars.	Long.; Lat.	1701·0	"Tabulæ Astronomicæ Ludovici Magni. 2nd ed. by De la Hire, Parisiis, 1727," p. 13.
74	Halley, Edmund, Ast. Roy.	1752	140	Prin. Stars.	Long.; Lat.	1720 0	"Astronomical Tables, with Precepts for computing the places of the Sun &c., London, 1752."
75	Halley (Sharp, Abr.)...	1725	265	Visible Stars.	Long.; Lat.; R.A.; South Decl.	1726·0	Halley's Southern Stars brought up to the later epoch by Abraham Sharp. Flamsteed. "Historia Cœlestis," vol. iii.
76	Leadbetter, C.... ...	1728	777	Visible Stars.	Long.; Lat.	1727·0	A Catalogue of 777 Fixed Stars, rectified to the beginning of the year 1727. In "Compleat System of Astronomy, London, 1728," vol. ii. p. 209.
77	Manfredi, E.	1731	14	1st Mag.	Long.; Lat.; R.A.; Decl.	1729·0	In "Commentarii Bononiensi, 1731," vol. i. p. 604.

78	Doppelmaier, J. G. ...	1742	1,870	Visible Stars.	Long.; Lat.; R.A.; Decl.	1731·0	"Atlas Cœlestis in quo Mundus Spectabilis et in eodem stellarum omnium Phænomena Notabilia, Norimbergæ, 1742."
79	La Condamine... ...	1749	6	1st & 2nd Mag.	South Decl.	1738·5	"Declinationes quarumdam Stellarum Australium primæ et secundæ magnitudinis mense Junio 1738." In "Phil. Trans., 1749," p. 139.
80	Cassini, Jacques ...	1740	144	Prin. Stars.	Long.; Lat.; R.A.; Decl.	1740·0	From the observations of Cassini and other Astronomers. In "Tables Astronomiques."
81	Le Monnier	1751	16	1st Mag.	Right Ascen.	1740·0	In "Observations de la Lune, du Soleil, et des Étoiles Fixes, Paris, 1751," livre 1, p. viii.
82	Le Monnier	1754	24	2nd & 3rd Mag. Zodiacal Stars.	Right Ascen.	1740·0	In "Observations de la Lune, du Soleil, et des Étoiles Fixes, Paris, 1754," livre 2, p. xii.
83	Tulenius, Andreas ...	1740	70	To 10 Mag.	Long.; Lat.	1741·0	"Catalogus Stellarum Arietis." In "Dissertatio Astronomica, De Constellatione Arietis, præside A. Celsio, Holmiæ, 1740."
84	Hodel, Laurentius D....	1741	113	To 8 Mag.	Long.; Lat.	1741·0	"Catalogus Stellarum Leonis ad annum Christi 1740 completum deductas." In "Dissertatio Astronomica, De Constellatione Leonis, præside A. Celsio, Upsaliæ, 1741."
85	Marinonius, J. J. ...	1745	218	Prin. Stars.	Right Ascen.	1745·0 et 1760·0	"De Astronomica Specula Domestica et Organico Apparatu Astronomico, Libri Duo, Viennæ Austriæ, 1745." Catalogue of Stars, giving differences of R.A. by transits from 8 fundamental stars, with the observed altitudes above the horizon of Vienna.
86	Le Monnier	1759	373	Zodiacal and other Stars.	Right Ascen.	1750·0	In "Observations de la Lune, du Soleil, et des Étoiles Fixes, Paris, 1759," livre 3. Consists of stars in two classes: zodiacal stars, 189; other stars, 184.
87	Le Monnier	1773	201	Zodiacal Stars.	Right Ascen.	1750·0	In "Observations de la Lune, du Soleil, et des Étoiles Fixes, Paris, 1773," livre 4. Supplement to the Catalogue of 373 Stars.
88	Lacaille, Abbé de ...	1757	398	Prin. Stars to 6 Mag.	R.A.; Decl.	1750.0	Principal Stars in North and South Hemispheres observed at Paris and at the Cape of Good Hope. In "Astronomiæ Fundamenta, Parisiis, 1757."
89	Lacaille (Baily) ...	1833	398	Prin. Stars.	R.A.; Decl.	1750·0	Baily's ed. of the above Catalogue, in "Ast. Soc. Roy. Mems.," vol. v.
90	Lacaille, Abbé de ...	1763	307	Prin. Stars.	R.A.; Decl.	1750·0	"Catalogue des Principales Étoiles du Ciel." Consists of 152 northern stars observed in Paris, and 155 southern stars observed at the Cape of Good Hope. From "Astron. Fund." In "Ephémérides des Mouvements Célestes, 1763."

No.	Name.	Date Published.	Number of Stars.	Description of Stars.	Mean Places; Co-ordinates.	Epoch.	Notes.
						A.D.	
91	Lacaille, Abbé de ...	1763	1,942	To 6 Mag.	R.A.; South Decl.	1750·0	"Cœlum Australe Stelliferum seu observationes ad construendum stellarum Australium Catalogum institutæ in Africa ad Caput Bonæ Spei, Parisiis, 1763."
	Lacaille, Abbé de (British Association Ed.)	1847	9,766	To 7 Mag.	R.A.; South Decl.	1750·0	"A Catalogue of 9,766 Stars in the Southern Hemisphere for the beginning of the year 1750 from the observations of the Abbé de Lacaille, London, 1847." Catalogue reduced by Prof. Henderson from the zone observations published in "Cœlum Australe Stelliferum," made with a telescope of ½-inch aperture and 27 inches focal length, from August 6, 1751, to July 18, 1752.
93	Lacaille (Argelander)...	1869	149	To 7 Mag.	R.A.; South Decl.	1750·0	Corrigirte Positionen in Lacaille's Catalog nach der Ausgabe der British Association, Bonn Ast. Beob. vol. vii. p. 245.
94	* Zanotti	...	414	Zodiacal Stars.	...	1750·0	From observations 1738 to 1750. In Bologna Ephemeris.
95	Lacaille, Abbé de ...	1756	1,935	To 6 Mag.	R.A.; South Decl.	1752	"Tables des Asc. Droites et des Decls. apparentes des Étoiles Australes renfermées dans le Tropique de Capricorne." Includes 41 nebulæ. In "Acad. des Sciences Mems., 1752."
96	Bradley, Ast. Roy. (Bessel)	1818	3,222	To 8 Mag.	R.A.; Decl.	1755·0	From observations by Bradley at Greenwich, 1750 to 1762, reduced by Bessel. "Fundamenta Astronomiæ pro Anno 1755, deducta ex observationibus viri incomparabilis James Bradley. Regiomonti, 1818."
97	Le Monnier	1776	23	The Hyades.	Differences of R.A. and Decl. from α Tauri.	1755·0	Observed by Le Monnier. In "Recueil de Tables Astronomiques," vol. i. p. 203.
98	Le Monnier	1776	38	Pleiades.	Differences of R.A. and Decl. from Alcyone.	1755·0	Observed by Le Monnier. In "Recueil de Tables Astronomiques," vol. i. p. 205.
99	Mayer, Tobias ...	1775	998	Zodiacal Stars to 9 Mag.	R.A.; Decl.	1756·0	"Fixarum Zodiacalium Catalogus Novus, Opera Inedita, Gottingæ, 1775," vol. i. p. 49.
100	Mayer (Delambre) ...	...	998	Zodiacal Stars to 9 Mag.	Long.; Lat.	1756·0	"Conn. des Temps, 1788."
101	Mayer (Baily)... ...	1831	998	Zodiacal Stars to 9 Mag.	R.A.; Decl.	1756·0	"Catalogue of Stars, Corrected and Enlarged; together with a Comparison of the Places of the greater part of them with those given by Bradley." "Ast. Soc. Roy. Mems.," vol. iv.
102	Mayer (Baily)... ...	1831	45	Zodiacal Stars to 9 Mag.	R.A.; Decl.	1756·0	Supplementary Catalogue to above. "Ast. Soc. Roy. Mems.," vol. iv.

103	Bradley, J., Ast. Roy.	1771	387	Prin. Stars.	Long.; Lat.; R.A.; N.P.D.	1760·0	"A Catalogue of the Places of 387 Fixed Stars in R.A., Decl., Long., and Lat.," "Nautical Almanac, 1773," App. p. 25. Reduced by Chas. Mason from Bradley's observations. The R.A.s of 15 of these stars were settled by comparison with the Sun about the Equinoxes from the mean of 1175 observations. These were the radical points by which the R.A.s of the other stars were reduced.
104	Bradley, J., Ast. Roy.	1798	389	Prin. Stars.	R.A.; N.P.D.	1760·0	In "Bradley's Astronomical Observations (Hornsby)," vol. i.
105	Cassini de Thury ...	1767	14	1st Mag.	R.A.; Decl.	1764·0	Made with a 6-ft. mural circle. In "Acad. des. Sciences Mems., 1764,' p. 406.
106	A Complete Catalogue of the Fixed Stars	...	376	To 7 Mag.	R.A.; N.P.D.	1764·0	"A Complete Catalogue of the Fixed Stars, with their respective places in the Heavens, as settled from the latest and most accurate Observations made both at Home and Abroad." In "Miscellanea Scientifica Curiosa, London," no date, No. iv. p. 98, Stars in the Constellation *Aries* (66); No. v. p. 126, ditto *Taurus* (141); No. vi. p. 164, ditto *Gemini* (87); No. vii. p. 188, ditto *Cancer* (82).
107	Bernouilli	1776	110	...	Differences of R.A.	1765·0	"Table de Différences d'Ascension Droite pour 110 Étoiles tirée des Catalogues de M. Lacaille, Bradley, Mayer, et Le Monnier, Recueil pour les Astronomes," tome iii. p. 122.
108	Lacaille (Bailly) ...	1763	515	Zodiacal Stars	R.A.; Decl.	1765·0	Lacaille's Observations, reduced by M. Bailly. In "Ephémérides des Mouvements Célestes, 1763."
109	Maskelyne, N. Ast. Roy. (Hertzsprung)	1865	231	6 to 11 Mag.	R.A.; N.P.D.(Approx.)	1770·0	"Reduction af Maskelyne's Iagttagelser af Smaa Stjerner, anstillede I Aarene fra 1765 til 1787, Kjøbenhavn, 1865." In "Copenhagen Dansk. Vid. Selsk. Skrif.," vol. vi.
110	Maskelyne, N. Ast. Roy.	1774	34	Prin. Stars.	R.A.; N.P.D.	1770·0	"Tables for computing the Apparent Places of the Fixt Stars, London, 1774," p. 5. The R.A.s from observations in 1765 to 1769 of differences of R.A. with α *Aquilæ*; N.P.D.s from observations in 1765.
111	Bernouilli	1772 1776	51	Circumpolar Stars.	R.A.; Decl.	1772·0	"Tables d'Étoiles Circonpolaires." In "Recueil pour les Astronomes," tomes ii. p. 75, and iii. p. 1.
112	Maskelyne, N. Ast. Roy. (Main, R.)	...	36	Prin. Stars.	Right Ascen.	1765·0 to 1772·0 1779·0 to 1785·0 1796·0 to 1801·0 1803·0 to 1807·0	"Catalogues of the Concluded Mean Right Ascensions of Stars compared with α *Aquilæ*, arranged by the Rev. R. Main." In "Greenwich Observations, 1851," Appendix ii. "Maskelyne's Ledgers of Stars."
113	Mayer, Christian ...	1779	72	Double Stars.	R.A.; Decl.	1777·0	"De Novis in Cœlo Sidereo Phœnomenis, Mannheim, 1779," p. 127. Tabula Nova Stellarum Duplicium ex Observationibus in Specula Electorali Mannheimensi factis, Quadrante Murali Birdii VIII Pedum. The First Catalogue of Double Stars. Does not give Distances or Position Angles.

No.	Name.	Date Publish ed.	Number of Stars.	Description of Stars.	Mean Places; Co-ordinates.	Epoch.	Notes.
						A.D.	
114	Mayer, Christian ...	1781	80	Double Stars.	R.A.; Decl.	1777·0	In "Berlin Ast. Jahrb., 1784," from C. Mayer's observations at Mannheim.
115	Darquier, M.	1782	270	To 7 Mag.	R.A. 12^h to 19^h; Dec. $+20°$ to $+34°$	1780·0	"Observations Astronomiques faites à Toulouse, Paris, 1782." A Supplement to the British Catalogue for the Constellations *Coma*, *Boötes*, *Corona*, *Hercules*, and *Lyra* contains only 49 stars of Flamsteed.
116	Bode, J. E.	1782	5,058	To 7 Mag.	R.A.; Decl.	1780·0	"Représentation des Astres sur 34 Planches." Berlin and Stralsund, 1782.
117	Bode, J. E.	1782	280	Prin. Stars.	R.A.; Decl.	1780·0	
118	Lalande, J.	1778	258	Prin. Stars.	Long.; Lat.	1781·0	Table of the Aberration and Nutation in R.A. and Decl. of 258 Principal Stars. In "Conn. des Temps 1781," p. 223.
119	Lacaille, Abbé de ...	1782	...	...	R.A.; Decl.	1784·0	Catalogue of Lacaille's Stars, not in Flamsteed's British Catalogue. In "Conn. des Temps, 1785."
120	Flamsteed (Jeaurat) ...	1782	2,934	To 7 Mag.	R.A.; Decl.	1784·0	Flamsteed's British Catalogue, reduced by Jeaurat to 1784·0. In "Conn. des Temps, 1785," p. 182.
121	Jeaurat	...	64	*Pleiades.*	R.A.; Decl.	1786·0	Catalogue of Stars in the *Pleiades*. "Acad. des. Sciences Mems., 1779," p. 519.
122	Pigott, Edw.	1786	50	Variable Stars.	R.A.; Decl.	1786·0	"Phil. Trans., 1786," p. 189.
123	Montignot	1786	1,022	Visible Stars.	Long.; Lat.	1786·0	Ptolemy's Catalogue reduced to Epoch 1786. "État des Étoiles Fixes au Sécond Siècle par Claude Ptolemée, comparé à la position des mêmes étoiles en 1786, Nancy, 1786."
124	Montignot	1786	18	Prin. Stars.	Declinations.	1786·0	Ptolemy's stars reduced and compared with places observed in 1786. In ditto.
125	Cassini...	...	138	Prin. Stars.	Declinations.	1788·0	From observations with the 6-foot quadrant of the Paris Observatory; stars arranged according to Bayer's letters. "Acad. des Sciences Mems., 1789," p. 139 (includes previous Catalogues in Mems. de l'Acad., 1784 to 1788).
126	Lacaille (Delambre) ...	...	400	Visible Stars.	R.A.; Decl.	1788·0	Lacaille's Stars, with the Annual Variations in R.A. and Decl. brought up to later epoch. "Conn. des Temps., 1788."
127	Pond, J., Ast. Roy. ...	...	36	Prin. Stars.	Right Ascen.	1788·0	R.A.s computed for the year 1788 by interpolation, compared with positions obtained for the same year by actual observation. "Greenwich Observations," 1820–1822.
128	Maskelyne, N., Ast. Roy.	1789	36	Prin. Stars.	Right Ascen.	1790·0	In "Wollaston's Specimen of a General Catalogue, London, 1789."

129	Maskelyne, N., Ast. Roy.	1798	36	Prin. Stars.	R.A.; N.P.D.	1790·0	
130	Wollaston, Francis ...	1789	7,620	Stars, Nebulæ, and Clusters.	R.A.; N.P.D. +90° to −90°	1790·0	"A General Catalogue of Stars, Nebulæ, and Clusters of Stars whose positions have been ascertained; arranged in the order of R.A. in their respective Zones of N.P.D." Consists of stars from the British Catalogue, Lacaille's three Catalogues, T. Mayer's Zodiacal Stars and Bradley's 380 stars from Naut. Alm. 1773, Nebulæ and Clusters from Messier ("Conn. des Temps. 1784") and Herschel. In "Specimen of a General Catalogue, London, 1789."
131	Wollaston, Francis ...	1789	4,881	To 7 Mag.	R.A.; N.P.D.	1790·0	"Flamsteed's British Catalogue, and Lacaille's Southern Catalogue, arranged in order of R.A.," includes 80 circumpolar stars from Hevelius, omitted by Flamsteed. "Specimen of a General Catalogue."
132	Wollaston, Francis ...	1789	2,069	Zodiacal Stars.	Long.; Lat.	1790·0	"Catalogue of Zodiacal Stars within 9° of Latitude on each side of the Ecliptic, arranged in the order of Longitude," from Flamsteed, Lacaille, Bradley, and Mayer. "Specimen of a General Catalogue."
133	Lalande	...	34	Prin. Stars.	Declinations.	1790·0	In "Conn. des Temps, 1793."
134	Lalande	...	350	Prin. Stars.	Declinations.	1790·0	Made with the mural circle at the École Militaire, Paris. "Conn. des Temps, 1794."
135	Lalande, Jerome de ...	...	1,063	Visible Stars.	Declinations.	1790·0	Made with the $7\frac{1}{2}$ feet mural circle at the École Militaire. "Conn. des Temps, 1795."
136	Lalande	...	17	Prin. Stars.	Right Ascen.	1790·0	The R.A.s were determined with the greatest precision. "Conn. des Temps, 1794.'
137	Lalande	...	139	Northern Stars.	Right Ascen.	1790·0	"Conn. des Temps, 1795."
138	Lalande	...	1,000	Circumpolar Stars.	Right Ascen.	1790·0	"Conn. des Temps, 1797."
139	Lalande, M. L. ...	...	150	Prin. Stars.	Right Ascen.	1790·0	Fundamental stars for Lalande's Zone Catalogue of 45,000 Stars. "Conn. des Temps, 1798."
140	Cassini...	...	33	Prin. Stars.	Declinations.	1790·0	"Conn. des Temps, 1795."
141	C. Lefrançais	...	34	Prin. Stars.	Right Ascen.	1790·0	"Determined with the greatest precision." "Conn. des Temps, 1797."
142	Lalande	...	...	Stars to 10 Mag.	...	1790·0	Zone Catalogue contained in "Conn. des Temps, 1799 to 1805."
143	Lalande, M. F. ...	...	240	Prin. Stars.	Right Ascen.	1790·0	"Conn. des Temps, 1800."
144	Lalande (Federenko J.)	1854	4,673	To 9 Mag.	R.A.; Decl.	1790·0	"Positions Moyennes pour l'Époque de 1790·0 des Étoiles Circompolaires dont les observations ont été publiées par Jerome Lalande dans les 'Mémoires de l'Acad. de Paris de 1789 et 1790.'" A supplementary Catalogue of 339 Stars is appended. St.-Pétersbourg, 1854. (For corrections to this Catalogue see "Argelander, Bonner Beobachtungen," vol. vi. p. 22.)
145	Lalande (Federenko J.)	1854	339	To 9 Mag.	R.A.; Decl.	1790·0	

No.	Name.	Date Published.	Number of Stars.	Description of Stars.	Mean Places; Co-ordinates.	Epoch.	Notes.
						A.D.	
146	Lalande (Oeltzen W.)...	...	193	...	R.A. Hours VI. to XXIII. Decl. +70° to Pole.	1790·0	"Ergänzungen zur Histoire Celeste Française und einigen andern Sternkatalogen, Vienna Acad. Sitzber.," vol. xii. p. 911.
147	Le Monnier	...	31	Præsepe.	R.A.; Decl.	1790·0	Catalogue of Stars in Præsepe. In "Acad. des Sciences Mems., 1789," p. 610.
148	Vidal (Flaugergues) ...	1804	24	Circumpolar to 9 Mag.	R.A.; Decl.	1790·0	"Catalogue d'Étoiles Circompolaires observées par M. Vidal et reduite par M. Flaugergues." "Conn. des Temps, an. 15, 1807," p. 238.
149	Mayer, T. (Vince) ...	1797	992	Zodiacal Stars.	R.A.; Decl.	1790·0	Reduced by S. Vince from the Gottingen observations, 1756 to 1761. "Vince's Astronomy," vol. ii.
150	Zach, Baron de ...	1795	39	...	Declinations.	1792·0	Reduced from Piazzi's observations. In "Berlin Jahrbuch, Supp. II., 1795," p. 111.
151	Perny, C.	...	14	Prin. Stars.	Declinations.	1795·0	"Conn. des Temps, 1796."
152	Messier, C.	1807	23	Small Stars.	R.A.; Decl.	1795·0	Stars near the nebula 31 Messier, Andromedæ. In "Acad. des Sciences Mems., 1807."
153	Piazzi, G.	...	34	Prin. Stars.	Declinations.	1795·0	"Palermo Observations," vol. v. p. 207.
154	Lalande, C.	1796	9	...	Long.; Lat.	1798·0	Stars from Maskelyne and Lalande.
155	Vidal, Jacques ...	...	887	...	R.A.; Decl. −30° to −45°.	1799·0	Catalogue of Southern Stars observed at Mirepoix, reduced to 12 Nivose An. 7. In "Conn. des Temps, 1802."
156	Mougin, C.	...	1,588	...	...	...	Catalogue of Precessions. "Conn. des Temps, 1802."
157	Mougin, C.	...	600	Prin. Stars.	...	1799·7 & 1899·7	Catalogue of the Annual Variations of 600 Stars. "Conn. des Temps, 1803."
158	Zach, Baron de ...	...	354	Zodiacal Stars.	Right Ascen.	1800·0	"Conn. des Temps, 1800."
159	Zach, Baron de ...	1792	381	Prin. Stars.	Right Ascen.	1800·0	"Tabulæ Motuum Solis Novæ, Fixarum Præcipuarum Catalogus Novus, Gothæ, 1792." Catalogue of Stars made from observations at Gotha, 1787 to 1790.
160	Zach, Baron de ...	1792	162	Prin. Stars.	Declinations.	1800·0	"Tabulæ Motuum Solis Novæ, Gothæ."
161	Zach, Baron de ...	1806	1,827	Zodiacal Stars.	Right Ascen.	1800·0	"Stellarum Zodiacalium Catalogus Novus: ex Observationibus in Specula Astronomica Ernestina in Monte Seeberg factis exhibens." Stars arranged in order of Signs. In "Tabulæ Speciales Aberrationis, Gothæ, 1806," vol. i.
162	Zach, Baron de ...	1822	33	Red Stars.	R.A.; Decl.	1800·0	"Zach, Corresp.," vol. vii. p. 298.
163	Zach, Baron de ...	1806	1,826	Zodiacal Stars.	Declinations.	1800·0	"Stell. Zod. Cat. Nov. ex Observationibus in Specula Electorali Mannhemensi factis exhibens." Stars arranged in order of Signs. In "Tabulæ Speciales Aberrationis," vol. i.

164	Zach, Baron de ...	1822	28	Variable Stars.	R.A.; Decl.	1800·0	"Observations on Changeable Stars and Stars of Different Colours." "Edinburgh Phil. Jour.," vol. ix. "Zach Corresp.," vol. vii.
165	Lalande, Jerome de (British Association).	1847	47,390	To 10 Mag.	R.A.; Decl.	1800·0	"A Catalogue of those Stars in the 'Histoire Céleste Française' of Jérôme De Lalande for which Tables of Reduction to the Epoch 1800 have been published by Prof. Schumacher," reduced by Baily at the expense of the British Association, London, 1847.
166	Lalande (Argelander)...	1869	3,082	...	R.A.; N.P.D.	1800·0	"Corrigirte Positionen in Lalande's Catalog nach der Ausgabe der British Association." In "Bonn. Ast. Beob.," vol. vii. p. 213.
167	Cagnoli, A.	1803	473	Prin. Stars.	R.A.; North Decl.	1800·0	"Catalogo di Stelle Boreali, Modena, 1803." Northern stars. In "Modena Soc. Ital. Mem.," vol. x. p. 687.
168	Cagnoli, A.	1803	28	Prin. Stars.	R.A.; South Decl.	1800·0	Southern stars. In "Modena Soc. Ital. Mem.," vol. x. p. 687. (Supplement containing corrections to the above. "Modena Soc. Ital. Mem., 1804," vol. xi. p. 676.)
169	Agelet, Le Paute D' (Gould)	1866	2,907	To 9 Mag.	R.A.; Decl. +50° to −35° 30′	1800·0	"Reduction of the Observations of Fixed Stars made by Joseph Le Paute D'Agelet, at Paris, in 1783–1785, by B. A. Gould, Washington, 1866." In "Washington National Acad. Mems.," vol. i.
170	Groombridge, S. ...	...	38	Prin. Stars.	N.P.D.	1800·0	"Comparison of the N.P.D.s of 38 Principal Fixed Stars on the 1st of January 1800, as determined by observations made at Greenwich, Armagh, Palermo, Westbury, Dublin, and Blackheath." In "Edinburgh Soc. Roy. Trans.," vol. vii.
171	Lalande, J. de (Labaume, B.)	1822	1,504	To 9 Mag.	R.A. hour 0; Decl.	1800·0	"Catalogue des Étoiles de l'Hist. Cel. Fran. de M. J. Le Français, De Lalande, calculé pour l'an 1800 par Bérenger Labaume." Does not include any of Piazzi's stars. In "Zach Corresp.," vol. vii.
172	Wollaston, Francis ...	1800	259	Circumpolar Stars.	R.A.; N.P.D. 0° to 24° in zones.	1800·0	"Fasciculus Astronomicus, containing observations of the Northern Circumpolar Region &c., London, 1800."
173	Piazzi, G.	1803	6,748	To 8 Mag.	R.A.; Decl.	1800·0	"Præcipuarum Stellarum inerrantium Positiones Mediæ Ineunte Sæculo XIX ex observationibus habitis in Specula Panormitana ab anno 1792 ad annum 1802. Panormi, 1803." Consists of a Catalogue of 6,354 Stars, arranged in separate catalogues for each hour of R.A., and a Supplementary Catalogue of 740 Stars, of which 394 are not found in the previous catalogue.
174	Piazzi, G.	1814	7,646	To 9 Mag.	R.A.; Decl.	1800·0	"Præcip. Stell. inerr. Pos. Med. ineunte sæculo XIX ex observationibus habitis in Specula Panormitana ab anno 1792 ad annum 1813, Panormi, 1814." Stars numbered for each hour R.A. (For the original observations see "Annalen der K. K. Sternwarte der Wien," vols. iv. to xii., 2nd series.

No.	Name.	Date Published.	Number of Stars.	Description of Stars.	Mean Places; Co-ordinates.	Epoch.	Notes.
						A.D.	
175	Piazzi, G.	...	28	*Pleiades.*	R.A.; Decl.	1800·0	In "Berlin Jahrbuch, 1817," p. 223.
176	Bode, J. E.	1805	5,505	To 7 Mag.	R.A.; Decl.	1800·0	"Catalogue de l'Ascension Droite et de la Declinaison de 5,505 Étoiles, d'après les observations de M. le Dr. Piazzi à Palerme, Berlin, 1805." Contains also a Catalogue of 372 Nebulæ and Clusters, from the observations of Herschel, Messier, Mechain, and others.
177	Henry, Abbé	1801	12	Prin. Stars. Circumpolar.	Declinations	1800·0	"Observations de quelques Étoiles," made with the mural quadrant at the Observatory, St. Petersburg, in 1797 and 1798. The declinations presuppose the instrumental error to be nil, and the latitude of the observatory to be known exactly. In "Nova Acta Petropolitanæ," vol. xii. p. 456.
178	Harding, K. L. ...	1822 1st ed., 1856 2nd ed.	60,000	To 9 Mag.	R.A.; Decl. +90° to −30°.	1800·0	"Neuer Himmelsatlas von 27 Tafeln, enhaltend die bis jetzt zwischen dem Nordpol und dem 30 Grade sudlicher Abweichung beobachteten Sterne, Halle a. S. 1856."
179	Harding	...	91	Stars 6 to 8 Mag.	R.A.; Decl.	1800·0	"Stern Verzeichniss." In "Zach. Monat. Corresp.," vol. xxviii. p. 310.
180	Berlin Academy Star Catalogue and Charts	1859	40,059	To 9 Mag.	R.A.; Decl. +15° to −15°.	1800·0	"Cataloge zu den 24 Stunden der Akademischen Sternkarten, Berlin, 1859." Contains catalogues for each hour R.A. by different observers, arranged in order of R.A. Hora 0 — 1,356 Stars — Luther. „ 1 — 1,299 „ — Olufsen. „ 2 — 1,447 „ — Morstadt. „ 3 — 1,427 „ — D'Arrest. „ 4 — 1,720 „ — Knorre. „ 5 — 2,095 „ — Argelander and Schmidt. „ 6 — 2,559 „ — Bremiker. „ 7 — 2,373 „ — Fellöcker. „ 8 — 2,045 „ — Wolfers. „ 9 — 1,599 „ — Bremiker. „ 10 — 1,680 „ — Göbel. „ 11 — 1,304 „ — Boguslawski.

							Hora 12 1,286 Stars Steinheil.
							,, 13 1,370 ,, Bremiker.
							,, 14 1,445 ,, Hussey.
							,, 15 1,557 ,, Harding.
							,, 16 1,422 ,, Wolfers.
							,, 17 1,642 ,, Bremiker.
							,, 18 2,036 ,, Inghirami and Capocci.
							,, 19 1,970 ,, Wolfers.
							,, 20 1,847 ,, Hencke.
							,, 21 1,644 ,, Bremiker.
							,, 22 1,436 ,, Argelander.
							,, 23 1,500 ,, Harding.
181	Ptolemy (Bode) ...	1795	1,022	Visible Stars.	Long.; Lat.	138 & 1800·0	Ptolemy's Catalogue reduced to 1800 and compared with recent observations. In "Beobachtung und Beschreibung der himmlischen Sphäre, Berlin und Stettin, 1795," p. 90.
182	Ptolemy (Bode) ...	1795	35	Prin. Stars.	Longitudes.	63 & 1800	Ptolemy's longitudes reduced to 1800 and compared with Mayer's Catalogue, assuming the places in the "Almagest" to be for Epoch A.D. 63. In "Beobachtung und Beschreibung der himmlischen Sphäre, Berlin und Stettin, 1795," p. 235.
183	"Catalogue of 1,800 Zodiacal Stars" (uncompleted)	1821–23	789	To 8 Mag.	R.A. 0° to 134°; Decl.	1800·0	"A Catalogue of 1800 Zodiacal Stars for the Epoch of Jan. 1, 1800, from the works of Piazzi, Bode, and others, by a Member of the Astronomical Society of London." In "Tilloch's Phil. Mag. and Jour.," vol. lviii. pp. 114, 367, vol. lxii. p. 47.
184	Inghirami, G.	1829	2,039	To 9 Mag.	R.A., Hora XVIII.; Decl. +15° to −15° in zones.	1800·0	"Mappa Uranographica, Firenze, 1829." Berlin Acad. Catalogue for Hora XVIII., arranged in zones, made at the Florence Observatory.
185	Labaume, B.	1831	195	Double Stars.	R.A.; Decl.	1800·0	"A Catalogue of 195 Double Stars taken from the 'Histoire Céleste' of M. F. Lalande." In "Ast. Soc. Roy. Mems.," vol. iv. Gives places only, no measurements.
186	Pond, J., Ast. Roy. ...	1806	29	Prin. Stars.	N.P.D.	1800·0	From observations at Greenwich between 1800 and 1802, compared with observations at Palermo and Westbury during the same period, and observations at Armagh in 1797. "Phil. Trans., 1806," p. 453.

No.	Name.	Date Published.	Number of Stars.	Description of Stars.	Mean Places; Co-ordinates.	Epoch.	Notes.
						A.D.	
187	Oltmanns	1808	84	Zodiacal to 5 Mag.	Long.; Lat.	1800·0	"Verzeichniss der Längen und Breiten einiger Sterne fur den Anfang des Jahres 1800." Zodiacal stars liable to occultation. In "Berlin Jahrb. Supp. 1808," p. 224.
188	Oltmanns	1808	878	To 8 Mag.	R.A.; Decl.	1800·0	"Erstes Supplement zu Herrn D. Piazzi's Stern Verzeichniss, zusammengetragen von Herrn Jabbo Oltmanns. In "Berlin Jahrb. Supp., 1808," p. 167.
189	Bode, J. E.	1801	17,240	Stars to 8 Mag. and Nebulæ.	R.A.; Decl.	1801·0	"Description et Connoissance générale des Constellations, Berlin, 1801." (French and German). Contains catalogues of 14,470 fixed stars, 421 double stars, 1,802 nebulæ, 212 clusters, and 335 double stars of doubtful position. Separate catalogues of the stars and nebulæ in each constellation.
190	Maskelyne, N., Ast. Roy.	1805	36	Prin. Stars.	R.A.; N.P.D.	1802·0	"The Mean R.A.s and N.P.D.s of 36 Principal Fixed Stars for the beginning of the year 1802." In "Greenwich Observations, 1802," and Zach, "Tabulæ Aberrationis." Catalogue of fundamental stars, with a table of corrections of the R.A.s in time to every 10th day of the year. To serve from 1800 to 1850, or even through the century.
191	Oltmanns, J.	1810	36	Prin. Stars.	R.A.; N.P.D.	1802·0	"Recueil d'Observations Astronomiques, par A. de Humboldt, Paris, 1810," vol. i. p. 9. Catalogue reduced by Oltmanns from Greenwich observations made in 1801 and 1802.
192	Chabrol, G. M. ...	...	600	Prin. Stars.	Long.; Lat.	1802·0	In "Conn. des Temp., 1803."
193	Cacciatore (Auwers) ...	1865	46	Fund Stars.	Right Ascen.	1805·0	"Rectascensionen der Fundamentalsterne für 1805." New determination of the R.A.s of fundamental stars, from observations at Palermo, 1803 to 1805. In "Ast. Gesell. Pub." No. V. and "Ast. Nach.," No. 1,504.
194	Palermo Catalogue ...	1806	120	Prin. Stars.	R.A.; Decl.	1805·0	"Del Reale Osservatorio di Palermo." Lib. Sesto. Palermo, 1806.
195	Palermo Catalogue ...	1806	100	Prin. Stars.	R.A.; Decl.	1805·0	"Del Reale Osservatorio di Palermo." Lib. Sesto. Palermo, 1806.
196	Palermo Catalogue ...	1806	210	Prin. Stars.	R.A.; Decl.	1805·0	"Del Reale Osservatorio di Palermo." Lib. Sesto. Palermo, 1806.
197	Bode, J. E.	1808	210	To 8 Mag.	R.A.; Decl.	1805·0	"Zweites Supplement aus der Herrn D. Piazzi's Del Reale Osservatorio di Palermo Lib. VI. von mir entlehnt. (S. Astron. Jahrb. 1810, Seite 268)." In "Berlin Jahrb. Supp. 1808," p. 190.
198	Nautical Almanac ...	...	9	Prin. Stars.	Long.; Lat.	1809·0	"Catalogue of the Longitudes of 9 Principal Fixed Stars to the beginning of 1809, and their Latitudes to the Middle of the Year." "Nautical Almanac, 1813," p. 162.

199	Lalande, J.	...	33	Red Stars.	R.A.	...	"Conn. des Temps. an 15, 1807," p. 378.
200	Groombridge, S. (Airy)	1838	4,243	To 9 Mag. Circumpolar.	R.A.; Decl.	1810·0	"Catalogue of 4,243 Circumpolar Stars, deduced from the Observations of Stephen Groombridge; Edited by G. B. Airy, Ast. Roy., London, 1838."
201	Vecchi, Domenico de ...	1810	43	Prin. Stars.	R.A.; Decl.	1810·0	"Catalogo di 43 Stelle prossime al Zenit dell' Osservatorio, Florence, 1810." In "Annali del Museo Imperiale," vol. ii.
202	Oriani, B.	1814	30	Prin. Stars. Circumpolar.	Declinations	1811·0	Made from observations with a 3-foot circle at the Milan Observatory. In "Effem. Ast., Milano, 1815," Appendix.
203	Oriani, B.	1816	40	Prin. Stars.	Declinations.	1811·0	From mural circle observations at Milan. In "Effem. Ast., Milano, 1817," Appendix.
204	Brinkley, J.	1815	47	Prin. Stars.	N.P.D.	1813·0	"A Catalogue of N.P.D.s of 47 Principal Fixed Stars, from recent Observations." In "Irish Acad. Roy. Trans.," vol. xii.
205	Pond, J., Ast. Roy. ...	1813	44	Prin. Stars.	N.P.D.	1813·0	From observations at Greenwich with the mural circle in 1812. "Phil. Trans., 1813," p. 76.
206	Pond, J., Ast. Roy. ...	1813	84	Prin. Stars.	N.P.D.	1813·0	From observations at Greenwich in 1813. In "Phil. Trans., 1813," p. 282.
207	Pond, J., Ast. Roy. ..	1815	30	Prin. Stars.	N.P.D.	1813·0	Standard Greenwich Catalogue, from observations with the mural circle in 1814. In "Phil. Trans., 1815," p. 386.
208	Wollaston, Francis ...	1811	...	Stars to 6 Mag. and Nebulæ.	...	...	"A Portraiture of the Heavens as they appear to the Naked Eye, London, 1811." Ten maps without catalogue.
209	Struve, F. G. W. ...	1817	192	Prin. Stars.	Right Ascen.	1814·0	Stars between 45° and 75° Decl. In "Dorpat Observations, 1814 to 1815," vol. i. p. 45.
210	Struve, F. G. W. ...	1817	90	Prin. Stars.	Right Ascen.	1815·0	In "Dorpat Observations," vol. i. p. 65.
211	Pond, J., Ast. Roy. ...	...	36	Prin. Stars.	Right Ascen.	1815·0	Catalogue reduced by Pond from the latest observations of Maskelyne. In "Greenwich Observations, 1811–1813."
212	Pond, J., Ast. Roy. ...	...	44	Prin. Stars.	N.P.D.	1815·0	From observations at Greenwich with the mural circle in 1812 and 1813. In "Greenwich Observations, 1811–1813."
213	Pond, J., Ast. Roy. ...	...	400	Prin. Stars.	N.P.D.	1815·0	From observations at Greenwich, 1814 to 1816. In "Greenwich Observations, 1814–1816."
214	Bessel, F. W.	1818	36	Prin. Stars.	Right Ascen.	1815·0	From observations at Königsberg, 1814 to 1818. In "Berlin Acad. Abhand., 1818–1819," and "Edinburgh Phil. Jour.," vol. i.
215	Littrow	1817	23	Fund. Stars.	N.P.D.	1815·0	"Mittlere Poldistanzen für den Anfang des Jahres, 1815." Lindenau. Zeitschrift, vol. iv. p. 85. N.P.D.s by Bessel, Piazzi, Pond, and Oriani.
216	"Companion to the Transit"	1815	...	1st to 4th Mag.	R.A.; Decl.	1815·0	London, 1815.

No.	Name.	Date Published.	Number of Stars.	Description of Stars.	Mean Places; Co-ordinates.	Epoch.	Notes.
217	Pond, J., Ast. Roy. ...	1818	400	Prin. Stars.	R.A.; N.P.D. 40° to 120°	A.D. 1817·0	"Greenwich Observations, 1814–1816."
218	Pond, J., Ast. Roy. ...	...	37	Prin. Stars.	N.P.D.	1813·0 to 1818·0	Catalogue corrected by a comparison of observations made in 1822 with those of 1812 and 1813. In "Greenwich Observations, 1820–1822."
219	Pond, J., Ast. Roy. ...	...	...	Prin. Stars.	N.P.D.	1818·0	Observed N.P.D.s reduced to the beginning of 1818, interpolated from observations 1812 to 1823. In "Greenwich Observations, 1820-1822."
220	Pond, J., Ast. Roy. ...	...	37	Prin. Stars.	N.P.D.	1818·0 to 1823·0	In "Greenwich Observations, 1820–1822."
221	Pond, J., Ast. Roy. ...	...	36	Prin. Stars.	Right Ascen.	1819·0	From five years' observations with the new transit, 1817 to 1821, compared with Maskelyne's Catalogue of 1805, reduced to same period. In "Greenwich Observations, 1820–1822."
222	Pond, J., Ast. Roy. ...	...	36	Prin. Stars.	R.A.	1820·0	In "Greenwich Observations, 1817–1819."
223	Pond, J., Ast. Roy. ...	...	36	Prin. Stars.	R.A.	1766–1784 1802–1820	In "Greenwich Observations, 1820–1822."
224	Bessel, F. W.	...	59	Prin. Stars.	N.P.D.	1820·0	In "Königsberg Observations," vol. vii. p. xxiv.
225	Bessel, F. W.	...	36	Prin. Stars.	Decl.	1820·0	In "Edinburgh Phil. Jour.," vol. vii.
226	Bessel (Döllen, W.) ...	1853	59	Prin. Stars.	N.P.D.	1820·0	"Neue Reduction der Königsberger Declinationen, 1820," St.-Pétersbourg, 1853. "Acad. Imp. Méms. Mat. et Phy., 1853," vol. vii.
227	Bessel (Döllen, W.) ...	1853	45	Prin. Stars.	Decl.	1820·0	
228	Bessel (Wurm) ...	1825	13	*Pleiades.*	Long.; Lat.	1820·0	From Bessel's Observations. In "Ast. Nach.," No. 61.
229	Inghirami, G.	1826	3,396	Zodiacal Stars to 8 Mag.	R.A.; Decl.	1820·0	"Metodo e Tavole per construire un Efemeride di Occultazioni delle Fisse sotto la Luna, Firenze, 1826."
230	Brioschi, C.	1824–1826	32	Fund. Stars.	Decl.	1820·0	"Comentari Astronomici della Specola Reale di Napoli, Napoli, 1824–1826," vol. i. Catalogue made from 2,198 observations.
231	Caturegli	1819	519	Zodiacal Stars to 6 Mag.	Long. Lat. +7° to −7°	1800·0 & 1820·0	Places from the New Palermo Catalogue. In "Ephemerides Motuum Cœlestium, 1817 to 1822, Bologna, 1819."
232	Caturegli	1822	36	*Pleiades.*	Long.; Lat; R.A.; Decl.	1820·0 & 1800·0	Places from the observations of Caturegli and Piazzi. In "Ephemerides Motuum Cœlestium, 1823 to 1828, Bologna, 1822," Appendix.
233	Struve, F. G. W. ...	1822	67	Prin. Stars.	R.A.; Decl.	1820·0	Approximate places from Piazzi. In "Dorpat Observations," vol. iii. p. viii.

234	Struve, F. G. W. ...	1822	800	Double Stars.	R.A.; Decl.	1820·0	"Catalogus Stellarum Duplicium a 20° Decl. Austr. ad 90° Decl. Bor." Catalogue of approximate positions. No measurements. In "Dorpat Observations," vol. iii. p. xv.
235	South, J.	1822	477	Double Stars.	R.A.; Decl.	1821·0	"Observations on the Best Mode of Examining the Double and Compound Stars, together with a Catalogue of those whose Places have been identified." Arranged from Bode's Cat., published 1801. Gives measurements of distance. In "Ast. Soc. Roy. Mems.," vol. i.
236	Pond, J., Ast. Roy. ...	...	38	Prin. Stars.	N.P.D.	1822·0	Four Catalogues of N.P.D.s deduced by the following methods:— 1. Computed in the usual manner by direct measurement from the Pole. 2. By the angular distance of the stars from their reflected images in an artificial horizon. 3. Computed in the same manner as 2, but from observations with two microscopes only. 4. Computed from observations with two microscopes in the same manner as No. 1. In "Greenwich Observations, 1820–1822."
237	Pond, J., Ast. Roy. ...	...	37	Prin. Stars.	N.P.D.	1822·0	From observations at Greenwich, Nov. 1, 1821, to June 1, 1822. In "Greenwich Observations, 1820–1822."
238	Baily, Francis... ...	1822	64	*Pleiades.*	R.A.; Decl.	1822·0	In "Astronomical Tables and Remarks for the year 1822, London, 1822."
239	Baily, Francis.. ...	1822	504	Stars to 4·5 Mag.	R.A.; Decl.	1822·0	Stars observed by Bradley and Piazzi. In "Astronomical Tables and Remarks for the year 1822, London, 1822."
240	Baily, Francis... ...	1822	...	...	R.A.; Decl.	1822·0	All stars in preceding Catalogue within 30° of Equator. In "Astronomical Tables and Remarks for the year 1822, London, 1822."
241	Pond, J., Ast. Roy. ...	...	72	Prin. Stars.	R.A.; N.P.D.	1823·0	Subsidiary Catalogue. In "Greenwich Observations, 1823."
242	Pond, J., Ast. Roy. ...	...	134	Prin. Stars.	R.A.; N.P.D.	1823·0	Result of observations from the beginning of September 1821 to the end of 1823. In "Greenwich Observations, 1823."
243	Pond, J., Ast. Roy. ...	...	60	Prin. Stars.	R.A.; N.P.D.	1823·0	In "Greenwich Observations, 1823."
244	Pond, J., Ast. Roy. ...	1823	45	Prin. Stars.	R.A.; N.P.D.	1823·0	General Catalogue. In "Phil. Trans., 1823," p. 68, and "Greenwich Observations, 1820–1822."
245	Pond, J., Ast. Roy. ...	1823	37	Prin. Stars.	N.P.D.	1823·0	In "Phil. Trans., 1823," p. 61.
246	Brinkley, J.	1824	43	Prin. Stars.	N.P.D.	1813·0 & 1823·0	In "Phil. Trans., 1824," p. 80.
247	Rümker, C.	1827	20	Prin. Stars.	S.P.D.	1823·0	From observations at Paramatta. In "Ast. Nach.," No. 102.
248	Rümker, C.	1826	63	Prin. Stars.	S.P.D.	1823·0	Includes 10 Fundamental Stars. In "Ast. Nach.," No. 82.

No.	Name.	Date Published.	Number of Stars.	Description of Stars.	Mean Places; Co-ordinates.	Epoch.	Notes.
						A.D.	
249	Brinkley, J.	1826	46	Prin. Stars.	R.A.	1824·0	"A Catalogue in R.A. of 46 Principal Stars, deduced from Observations made at the Observatory, Trinity College, Dublin, in 1823 and 1824." In "Ast. Nach.," No. 78. "Edinburgh Phil. Jour.," vol. xiv.
250	Fallows, Fearon ...	1824	273	Prin. Stars.	R.A.; S. Decl.	1824·0	"A Catalogue of nearly all the Principal Fixed Stars between the Zenith of Cape Town, C.G.H., and the South Pole." In "Phil. Trans., 1824," p. 465. "All the Declinations must be diminished 4 seconds" (note by F. Fallows to Catalogue).
251	Struve, F. G. W., ...	1830	35	Fund. Stars.	Decl.	1824·0	Compared with Bessel. In "Dorpat Observations," vol. vi. p. lvii.
252	Struve, F. G. W. ...	1852	42	Double Stars.	Declinations.	1824·0	"Declinationes Mediæ Stellarum Circumpolarium pro 1824·0." In "Stell. Fix. Dup. et Mult. Pos. Med.," p. xxxiv.
253	Struve, F. G. W. ...	1852	32	Fund. Stars.	Declinations.	1824·0	"Declinationes Stellarum 32 Fundamentalium." In "Stell. Fix. Dup. et Mult. Pos. Med.," p. xxxix.
254	Struve, F. G. W. ...	1852	68	Prin. Stars.	Right Ascen.	1824·0	"Ascensiones Mediæ Stellarum Circumpolarium." In "Stell. Fix. Dup. et Mult. Pos. Med.," p. xxxxiii.
255	Struve, F. G. W. ...	1852	109	Prin. Stars.	R.A.; Decl.	1824·0	"Stellarum Primariarum 109 et Fundamentalium et borealium Positiones Mediæ pro Epocha, 1824·0." In "Stell. Fix. Dup. et Mult. Pos. Med.," p. xxxxviii.
256	Struve, F. G. W. ...	1852	35	Fund. Stars.	Right Ascen.	1825·0	"Catalogus Ascensionum Rectarum Stellarum Fundamentalium ad justas et aberrationes et nutationes emendatarum." In "Stell. Fix. Dup. et Mult. Pos. Med.," p. xxxxi.
257	Bessel (Weisse) ...	1846	31,085	To 9 Mag.	R.A.; Dec. −15° to +15°	1825·0	"Positiones Mediæ Stellarum Fixarum in Zonis Regiomontanis a Besselio, Petropoli, 1846." Stars arranged and numbered in hours of R.A. Reduced from the Königsberg Zone Observations, 1821 to 1831.
258	Bessel (Weisse) ...	1863	31,445	To 9 Mag.	R.A.; Dec. +15° to +45°	1825·0	"Positiones Mediæ Stellarum Fixarum, Petropoli, 1863." Continuation of Bessel's Königsberg Zone Observations, 1821 to 1831.
259	Paramatta Catalogue (Brisbane).	1835	7,385	To 9 Mag.	R.A.; Decl.	1825·0	"A Catalogue of 7,385 Stars, chiefly in the Southern Hemisphere, prepared from Observations made in the Years 1822–1826, at Sir Thomas Brisbane's Observatory at Paramatta." Observations reduced by W. Richardson, London, 1835.
260	Bessel, F. W. ...	1826	36	Fund. Stars.	R.A.	1825·0	"Neuester Fundamental Catalog," Fundamental Stars. In "Ast. Nach." No. 78.

261	Brinkley, J.	1828	48	Prin. Stars.	R.A.; N.P.D.	1825·0	"On the quantity of the Precession of the Equinoxes as determined by certain Stars that appear to have no Proper Motion." In "Irish Acad. Roy. Trans.," vol. xv.
262	Bessel, F. W.	1823	194	Small Stars.	R.A.; XX Hr. to III Hr.; Decl.	1825 0	Reduced from the Königsberg Zones. In "Ast. Nach.," No. 17.
263	Bessel, F. W.	1841	27	*Pleiades.*	R.A.; Decl.	1825 0	In "Ast. Nach.," No. 387, and "Ast. Unters."
264	Bessel, F. W.	...	257	Double Stars.	R.A.; Decl.	1825 0	Verzeichniss von 257 auf der Königsberg Sternwarte beobachteten Doppelsternen. Gives measurements of distances. In "Ast. Nach.," No. 88.
265	Plana, G.	1828	46	Fund. Stars.	Declinations.	1825·0	From Turin observations with the Reichenbach 3-foot circle in the years 1822 to 1825. In "Turin Acad. R. Mem." vol. xxxii. p. 464.
266	Pond, J., Ast. Roy. ...	...	40	Prin. Stars.	N.P.D.	1825 0	"First Approximation to a Standard Catalogue of 40 Stars observed Feb. 1, 1825, to Feb. 28, 1826." In "Greenwich Observations, 1825."
267	Pond, J., Ast. Roy. ...	1827	36	Prin. Stars.	R.A.	1825 0	From observations at Greenwich, 1817 to 1826. In "Ast. Nach.," No. 119.
268	Struve, F. G. W. ..	1830	35	Fund. Stars.	R.A.	1825·0	Compared with Bessel. In "Dorpat Observations," vol. vi. p. lxviii.
269	Herschel, J. F. W. ...	1826	321	Double Stars.	R.A.; N.P.D.	1825·0	"Account of some Observations made with a 20-feet Reflecting Telescope." Gives measurements of distances. In "Ast. Soc. Roy. Mems.," vol. ii.
270	Herschel, J. F. W., and South, J.	1825	380	Double Stars.	R.A.; Decl.	...	"Observations of the Apparent Distances and Positions of 380 Double and Triple Stars, made in the years 1821–23." In "Phil. Trans., 1824," part 3.
271	South, J.	1826	458 43	Double Stars. Double Stars.	R.A.; Decl.	...	"Observations of the Apparent Distances and Positions of 458 Double and Triple Stars made 1823–25, with a re-examination of 43 Stars." Made at Passy, near Paris. In "Phil. Trans., 1826."
272	Pond, J., Ast. Roy. ...	...	40	Prin. Stars.	N.P.D.	1826·0	Catalogue constructed from observed altitudes only, April 1, 1825, to March 1, 1827. In "Greenwich Observations, 1827."
273	Pond, J., Ast. Roy. ...	...	45	Prin. Stars.	R.A.; N.P.D.	1826·0	In "Greenwich Observations, 1825."
274	Pond, J., Ast. Roy. ...	...	60	Prin. Stars.	R.A.; N.P.D.	1826·0	The R.A.s from the Greenwich Catalogue of 1820. In "Greenwich Observations, 1826."
275	Pond, J., Ast. Roy. ...	...	64	Prin. Stars.	N.P.D.	1826·0	Final Catalogue, from observations with mural circles in the years 1825 to 1827. In "Greenwich Observations, 1826."
276	Pond, J., Ast. Roy. ...	...	63	Prin. Stars.	R.A.; N.P.D.	1826·0	The N.P.D.s from observations with the mural circles, March 1825 to March 1828. In "Greenwich Observations, 1828," part 4.
277	Pond, J., Ast. Roy. ...	...	45	Prin. Stars.	N.P.D.	1756. 1760 1770. 1780 1790. 1800 1810. 1813 1820. 1826	Catalogue of interpolated N.P.D.s of 45 Principal Stars between the observed places 1756 and 1826. In "Greenwich Observations, 1828."

No.	Name.	Date published.	Number of Stars.	Description of Stars.	Mean Places; Co-ordinates.	Epochs.	Notes.
						A.D.	
278	Pond, J., Ast. Roy. ...	1827	40	Fund. Stars.	N.P.D.	1826·0	Standard Catalogue from mural circle observations, 1825 to 1826. Appended are 21 additional stars, the N.P.D.s of which are not so exact. "In Ast. Nach.," No. 119. "Greenwich Observations, 1826."
279	Pond, J., Ast. Roy. ...	...	62	Prin. Stars.	R.A.; N.P.D.	1826·0	In "Ast. Nach.," No. 119. "Greenwich Observations, 1826."
280	Struve, F. G. W. ... (Dorpat Catalogue)	1827	3,063	Double Stars.	R.A.; Decl.	1826·0	"Catalogus Novus Stellarum Duplicium et Multiplicium, Dorpati, 1827." Gives no measurements.
281	Struve, F. G. W. ...	1837	3,134	Double Stars.	R.A.; Decl.	1826·0	"Stellarum Duplicium et Multiplicium Mensuræ Micrometricæ per Magnum Fraunhoferi Tubum Annis a 1824 ad 1837, in Specula Dorpatensi institutæ, Petropoli, 1837." A Catalogue of Double Stars arranged in 8 orders of distances, each order further subdivided into "Lucidæ" and "Reliquæ." Order 1 Dist 0″ to 1″ / Order 5 Dist. 8″ to 12″ ; Order 2 „ 1″ to 2″ / „ 6 „ 12″ to 16″ ; Order 3 „ 2″ to 4″ / „ 7 „ 16″ to 24″ ; Order 4 „ 4″ to 8″ / „ 8 „ 24″ to 32″. Also Catalogues of Double Stars more than 32″ in distance, and between 32″ and 7′. Gives measurements of distance and position.
282	Struve, F. G. W. ...	1841	45	Double Stars.	R.A.; Decl.	...	"Additamentum in Mens. Micr." "St. Petersb. Acad. Mems. Mat. et Phy.," vol. iv., 1841.
283	Herschel, J. F. W. ...	1833	364	Double Stars.	R.A.; N.P.D.	1826·0	"Micrometrical Measures of 364 Double Stars, with a 7-feet Equatorial Achromatic Telescope, taken at Slough in the years 1828 to 1830." Gives position and distance. In "Ast. Soc. Roy. Mems.," vol. v.
284	Herschel, J. F. W. ...	1835	146	Double Stars.	R.A.; N.P.D.	1826·0	"A Second Series of Micrometrical Measures of Double Stars, chiefly performed with the 7-feet Equatorial at Slough in the years 1831–1833." Gives position and distance. In "Ast. Soc. Roy. Mems.," vol. viii.
285	Rümker, C.	1832	632	To 7 Mag.	R.A.; South Decl.	1827·0	"Preliminary Catalogue of Fixed Stars intended for a Prospectus of a Catalogue of the Stars in the Southern Hemisphere included within the Tropic of Capricorn, Hamburgh, 1832."
286	Dunlop, J.	1829	253	Double Stars.	R.A.; South Decl.	1827·0	"Approximate Places of Double Stars in the Southern Hemisphere, observed at Paramatta, in New South Wales." Gives position and distance. In "Ast. Soc. Roy. Mems.," vol. iii.

287	Schwerd (Oeltzen) ...	1855	1,397	To 9 Mag. Circumpolar.	R.A.; Decl. +70° to Pole.	1828·0	Schwerd's "Beobachtungen von Circumpolarsternen in Mittleren Positionen 1828·0." In "Vienna Acad. Denkschriften, 1855."
288	Herschel, J. F. W. ...	1829	384	Double Stars.	R.A.; N.P.D.	1828·0	"Observations with a 20-ft. Reflecting Telescope, 3rd Series." Gives position and distance. In "Ast. Soc. Roy. Mems.," vol. iii.
289	Bianchi, G.	1829	36	Prin. Stars.	Decl.	1828·0	"Effemeridi Astronomiche di Milano per l'anno 1830, Milano, 1829," p. 113. Made with the meridian circle of the Royal Observatory at Modena.
290	Bianchi, G.	1829	65	Prin. Stars. Circumpolar.	Decl.,	1828·0	In "Effemeridi Astronomiche di Milano per l'anno 1830, Milano, 1829," p. 114.
291	Mayer, L.	1830	46	Prin. Stars.	N.P.D.	1829·0	Fund. Stars observed in 1828 at Vienna Observatory. In "Annalen der K. K. Sternwarte der Wien," vol. x. 1st Ser. p. lii.
292	Mayer, L.	1830	48	Prin. Stars.	R.A.; N.P.D.	1829·0	Fund. Stars observed in 1828 at Vienna Observatory. In "Annalen der K. K. Sternwarte der Wien," vol. x. 1st Ser. p. lii.
293	Littrow, J. J.	1831	45	Fund. Stars.	N.P.D.	1829·0	From observations with the Vienna meridian circle in 1827, 1828, and 1829. In "Ast. Soc. Roy. Mems.," vol. iv. p. 328.
294	Astronomical Society's Catalogue.	1827	2 881	Prin. Stars, to 7 Mag.	R.A.; Decl.	1830·0	"Catalogue of 2,881 Principal Fixed Stars, reduced to Jan. 1, 1830, computed at the expense and under the direction of the Ast. Soc. of London, with Tables by F. Baily." Consists of stars from the Catalogues of Bradley, Piazzi, and a few from Lacaille and Zach. (For "Index to the Stars in the A.S.C., giving the numbers according to Constellations," by Lieut. Stratford, see "Ast. Soc. Roy. Mems.," vol. v.)
295	Pond, J., Ast. Roy. ...	1829	720	Prin. Stars.	R.A.; N.P.D.	1830·0	Greenwich Catalogue, in "Greenwich Observations, 1829."
296	Pond, J., Ast. Roy. ...	1833	1.112	To 6 Mag.	R.A.; N.P.D.	1830·0	"A Catalogue of 1,112 Stars reduced from observations made at the Royal Observatory, Greenwich, 1816 to 1833, London, 1833."
297	First Cambridge Catalogue (Airy, G. B., Ast. Roy.)	1839	726	Prin Stars	R.A.; Decl.	1830·0	A Catalogue of Stars observed at Cambridge from 1828–1835. In "Ast. Soc. Roy. Mems.," vol. xi.
298	Argelander, F. G. A....	1835	560	To 8 Mag.	R.A.; Decl.	1830·0	"DLX Stellarum Fixarum Positiones Mediæ ex observationibus Aboæ habitis deduxit, Helsingfors, 1835."
299	Baily, F.	1827	1.202	To 7 Mag.	R.A.; Decl within 10° of Ecliptic.	1830·0	"A Catalogue of all the Stars to the 7th Mag. inclusive, situated within 10° of the Ecliptic, London, 1827." Stars from A.S.C.
300	Fallows, F., (Airy) ...	1851	425	Prin. Stars.	R.A.; N.P.D.	1830·0	"Results of the Observations made by the Rev. F. Fallows at the Royal Observatory, Cape of Good Hope, in the years 1829–1831." In "Ast. Soc. Roy. Mems.," vol. xix.

No.	Name.	Date Published.	Number of Stars.	Description of Stars.	Mean Places; Co-ordinates.	Epoch.	Notes.
						A.D.	
301	Johnson, M. J. ...	1835	606	Prin. Stars.	R.A.; South Decl.	1830·0	"A Catalogue of 606 Principal Fixed Stars in the Southern Hemisphere, deduced from Observations made at the Observatory, St. Helena, from Nov. 1829 to April 1833, London, 1835."
302	Pearson, William ...	1824	520	Zod. Stars.	R.A.; Decl. 6° N. & S. of Ecliptic.	1830·0	"Catalogue of 520 Stars within 6° North and South of the Ecliptic, observed at South Kilworth." In "Ast. Soc. Roy. Mems.," vol. xv.
303	Wrottesley, J.... ...	1838	1,318	6 and 7 Mag.	Right Ascen.	1830·0	"A Catalogue of the R.A.s of 1,318 Stars contained in the Ast. Soc.'s Cat." In "Ast. Soc. Roy. Mems.," vol. x.
304	Wrottesley, J.... ...	1842	55	6 and 7 Mag.	Right Ascen.	1830·0	"A Supplemental Catalogue of the R.A.'s of 55 Stars.' In "Ast. Soc. Roy. Mems.," vol. xii.
305	Struve, F. G. W. ...	1852	2,874	Double Stars.	R.A.; Decl	1830·0	"Stellarum Fixarum imprimis Duplicium et Multiplicium Positiones Mediæ pro Epocha 1830·0 deductæ ex observationibus Meridianis annis 1822 ad 1843 in Specula Dorpatensi institutis, Petropoli, 1852," p. 235. General Catalogue of Double Stars.
306	Struve, F. G. W. ...	1852	48	Prin. Stars.	R.A.; Decl.	1830·0	"Catalogi Generalis 48 loca emendata." "Pos. Med.," p. cxii.
307	Struve, F. G. W. ...	1852	...	Double Stars.	R.A.; Decl.	1824, 1828 1832, 1836 1840	"Catalogi Specialis Positionum Mediarum ad Epochas 1824, 1828, 1832, 1836 et 1840 Reductarum." "Pos. Med.," p. 1.
308	Mason, E. P., and Smith, H. L.	1841	29	Telescopic.	R.A.; Decl.	1830·0	In Nebula *h* 1991. In "Amer. Phil. Soc. Trans.," vol. vii., N.S.
309	Mason, E. P., and Smith, H. L.	1841	37	Telescopic.	R.A.; Decl.	1830·0	In Nebula *h* 2008. In "Amer. Phil. Soc Trans.," vol. vii., N.S.
310	Mason, E. P., and Smith, H. L.	1841	196	Telescopic.	R.A.; Decl.	1830·0	In Nebulæ *h* 2092 and 2093. In "Amer. Phil. Soc. Trans.," vol. vii., N.S.
311	Pond, J., Ast. Roy. ...	...	66	Prin. Stars.	Right Ascen.	1830·0	From observations at Greenwich, 1816 to 1834 inclusive.
312	Pond, J., Ast. Roy. ...	...	66	Prin. Stars.	N.P.D.	1830·0	From observations at Greenwich, 1825 to 1835. In "Greenwich Observations, 1835."
313	Baily, F.	1837	...	Prin. Stars.	...	1830 0	"Address to Astronomical Observers relative to the Improvement and Extension of the A.S.C. of 2,881 Principal Stars."
314	Herschel, J. F. W. ...	1829	295	Double Stars.	R.A.; N.P.D.	1830·0	"Approximate Places and Descriptions of 295 New Double and Triple Stars." Gives measurements of distance only. In "Ast. Soc. Roy. Mems.," vol. iii.
315	Herschel, J. F. W. ...	1831	1,236	Double Stars.	R.A.; N.P.D.	1830·0	"Fourth Series of Observations with a 20-feet Reflector, in the years 1828 and 1829." Gives position and distance. In "Ast. Soc. Roy. Mems.," vol. iv.

316	Herschel, J. F. W. ...	1833	2,007	Double Stars.	R.A.; N.P.D.	1830·0	"Fifth Catalogue of Double Stars observed at Slough in the years 1830 and 1831 with the 20-feet Reflector." Contains 1,304 objects not previously described. Gives position and distance. In "Ast. Soc. Roy. Mems.," vol. vi.
317	Herschel, J. F. W. ...	1836	286	Double Stars.	R.A.; N.P.D.	1830·0	"Sixth Catalogue of Double Stars, observed at Slough in the years 1831 and 1832 with the 20-feet Reflector." Contains 105 objects not previously described. Gives position and distance. In "Ast. Soc. Roy. Mems.," vol. ix.
318	Herschel, J. F. W. ...	1847	2,103	Double Stars.	R.A.; N.P.D.	1830·0	"Reduced Observations of Double Stars made with the 20-ft. Reflector at Feldhausen, C.G.H., in the years 1834–1838." In "Results of Astronomical Observations made during the years 1834–1838 at the Cape of Good Hope, London, 1847," p. 171. Gives measurements of distance and position angle.
319	Herschel, J. F. W. ...	1847	417	Double Stars.	R.A.; N.P.D.	1830·0	"Microm. Mes. of Double Stars with the 7-ft. Equatorial taken at Feldhausen, C.G.H." In ditto, p. 276. Gives distance and position angle.
320	Herschel, J. F. W. ...	1847	44	Telescopic Stars.	Diff. R.A.; Decl.	1830·0	In Cluster 17 *Messier*. In ditto, p. 9.
321	Herschel, J. F. W. ...	1847	27	Telescopic Stars.	Diff. R.A.; Decl.	...	Nebula IV $\frac{H}{I}$ 41. In ditto, p. 11.
322	Herschel, J. F. W. ...	1847	26	Telescopic Stars.	Diff. R.A.; Decl.	...	Nebula V $\frac{H}{I}$ 30. In ditto, p. 12.
323	Herschel, J. F. W. ...	1847	105	Telescopic Stars.	Co-ordinates from Star.	...	Nebula 30 (Bode) *Doradus*. In ditto, p. 13.
324	Herschel, J. F. W. ...	1847	186	Telescopic Stars.	Diff. R.A.; Decl.	...	Nebula 8 *Messier*. In ditto, p. 16.
325	Herschel, J. F. W. ...	1847	110	Telescopic Stars.	Diff. R.A.; Decl.	...	Cluster about κ *Crucis*. In ditto, p. 17.
326	Herschel, J. F. W. ...	1847	150	Telescopic Stars.	Diff. R.A.; Decl.	...	Nebula θ *Orionis*. In ditto, p. 28.
327	Herschel, J. F. W. ...	1847	1,216	Telescopic Stars.	Diff. R.A.; Decl.	...	Nebula about η *Argûs*. In ditto, p. 42.
328	Herschel, J. F. W. ...	1847	244	Stars and Nebulæ.	R.A.; N.P.D.	1830·0	Stars, Clusters, and Nebulæ in the "Nubecula Minor." In ditto, p. 153.
329	Herschel, J. F. W. ...	1847	919	Stars and Nebulæ.	R.A.; N.P.D.	1830·0	In "Nubecula Major." In ditto, p. 156.
330	Herschel, J. F. W. ...	1847	76	Ruby Stars.	R.A.; N.P.D.	1830·0	"Approximate Places of 76 Ruby Coloured or very intensely Red Insulated Stars, noticed in the course of observation in either Hemisphere." In ditto, p. 448.
331	Herschel, J. F. W. ...	1871	336	Double Stars.	R.A.; N.P.D.	1830·0	"Seventh Catalogue of Double Stars observed at Slough in the years 1823–28 inclusive, with the 20-ft. Reflector." Contains 84 objects not previously described. Gives position and distance. In "Ast. Soc. Roy. Mems.," vol. xxxviii.

No.	Name.	Date Published.	Number of Stars.	Description of Stars.	Mean Places; Co-ordinates.	Epoch.	Notes.
						A.D.	
332	Herschel, J. F. W. ... (Main and Pritchard)	1874	10,317	Double Stars.	R.A.; N.P.D.	1830·0	"A Catalogue of 10,300 Multiple and Double Stars arranged in the order of R.A. by the late Sir J. F. W. Herschel, Bart., edited by the Rev. R. Main and the Rev. C. Pritchard." In "Ast. Soc. Roy. Mems.," vol. xl. Places only. Gives no measurements.
333	Denison, Lieut. ...	1842	158	Prin. Stars.	R.A.; Decl.	1830 to 1838	"Ordnance Survey. Astronomical Observations made with Ramsden's Zenith Sector, London, 1842." The R.A. and Decl. are for the epochs placed against each star.
334	Henderson, T.... ...	1833	7	Near South Pole.	R.A.; Decl.	1832·0	"On the Positions of several Stars near the South Pole." In "Ast. Soc. Roy. Mems.," vol. vi.
335	Henderson, T.... ...	1838	172	Prin. Stars: 125 Southern. 47 Northern.	Declinations.	1833·0	"On the Declinations of the Principal Fixed Stars, deduced from Observations made at the Observatory, Cape of Good Hope, in the years 1832 and 1833." In "Ast. Soc. Roy. Mems.," vol. x.
336	Henderson, T. ...	1846	174	Prin. Stars: 125 Southern; 49 Northern.	R.A.	1833·0	"The Right Ascensions of the Prin. Fixed Stars deduced from Observations made at the Observatory, Cape of Good Hope, in the years 1832 and 1833." In "Ast. Soc. Roy. Mems.," vol. xv.
337	Pond, J., Ast. Roy. ...	...	66	Prin. Stars.	N.P.D.	1833·0	"Catalogue of the N.P.D.s of 66 Principal Stars from the latest Observations at Greenwich." Made from 33,410 observations. In "Greenwich Observations, 1833."
338	Dawes, W. R. ...	1835	121	Double Stars.	R.A.; Decl.	1834·0	"Micrometrical Measurements of the Positions and Distances of 121 Double Stars taken at Ormskirk during the years 1830–1833." Gives position and distance. In "Ast. Soc. Roy. Mems.," vol. viii.
339	Madras Catalogue (Taylor) ...	1844	11,015	To 8 Mag.	R.A.; Decl.	1835·0	"A General Catalogue of the Principal Fixed Stars from Observations made at the Hon. E. I. Co.'s Observatory at Madras in the years 1830–1843, by Thos. Glanville Taylor, Madras, 1844."
340	San Fernando Catalogue (Montojo, S.)	1842	126	...	R.A.; Decl.	1835·0	"Mean Positions of the Stars contained in 'Mr. Baily's Address' as determined at San Fernando in 1834–1838." In "Ast. Soc. Roy. Mems.," vol. xii.
341	Rümker, C.	1843	11,978	To 9 Mag.	R.A.; Decl.	1836·0	"Mittlere Oerter von 12,000 Fix-Sternen für den Anfang von 1836, abgeleitet aus den Beobachtungen auf der Hamburger Sternwarte, Hamburg, 1843."
342	Rümker, C.	1841	60	*Pleiades.*	R.A.; Decl.	1836·0	In "Ast. Nach.," No. 432.
343	Carlini, F.	1851	38	Prin. Stars. Circumpolar.	Declinations.	1837·0	"Nuova determinazione della rifrazione." In "Effem. Ast. Milano, 1852." Appendix.
344	Köller, M.	1842	208	...	R.A.; Decl.	1838·0	"Catalogue of 208 Stars," made at the Observatory at Kremsmünster. In "Ast. Soc. Roy. Mems.," vol. xii.

345	Armagh Catalogue ...	1859	5,345	To 9 Mag.	R.A.; Decl.	1840·0	"Places of 5,345 Stars observed from 1828 to 1854, at the Armagh Observatory, by the Rev. T. R. Robinson, Dublin, 1859."
346	Bessel, F. W.	1841	53	*Pleiades.*	R.A.; Decl.	1840·0	Positions of the *Pleiades* determined from measurements with the Königsberg heliometer. In "Astronomische Untersuchungen, Königsberg, 1841."
347	Bessel, F. W.	1841	62	Fund. Stars.	Decl.	1840·0	In "Ast. Nach.," No. 422.
348	Argelander, F. G. A. ...	1843	3,256	Visible Stars.	R.A.; Decl.	1840·0	"Uranometria Nova, Stellæ per Mediam Europam Solis oculis conspicuæ secundum veras lucis Magnitudines e cœlo ipso descriptæ, Berolini, 1843."
349	Behrmann, C.	1874	2,344	Visible Stars.	R.A.; Decl.	1840·0	"Atlas des Südlichen Gestirnten Himmels Darstellung der zwischen dem Südpol und dem 20-Grad Südlicher Abweichung mit blossen Augen sichtbaren Sterne nach ihren wahren, Leipzig, 1874."
350	Bianchi, G.	1846	220	Prin. Stars.	R.A.; Decl.	1840·0	"Posizioni Medie delle 220 Stelle Principali di Piazzi." In "Modena Ital. Soc. Mem.," vol. xxiii., Parte Matematica.
351	Airy, G. B., Ast. Roy. (Greenwich Catalogue)	1843	1,439	To 8 Mag.	R.A.; N.P.D.	1840·0	"Catalogue of the Places of 1,439 Stars referred to the 1st of January 1840, deduced from the Observations made at the Royal Observatory, Greenwich, from 1836, January 1, to 1841, December 31, London, 1843."
352	Lamont, J.	1847	3,676	Small Stars.	R.A.; Decl. Zone − 0° to −10°	1840	"Observationes Astronomicæ in Specula Regia Monachiensi institutæ, Monachii, 1847," vol. xv.
353	The Bedford Catalogue (Smyth, W. H.)	1844	850	Double Stars, Nebulæ, and Clusters.	R.A.; Decl.	1840·0	"A Cycle of Celestial Objects for the use of Naval, Military, and Private Astronomers, observed, reduced, and discussed, by Capt. W. H. Smyth, London, 1844." Vol. ii. consists of— Double Stars . 419; Stars and Comites 161; Binary Stars . 20; Triple Stars . . 46; Quadruple Stars 13; Multiple Stars . 21; Nebulæ . . . 98; Clusters . . . 72. Gives micrometric measurements of distance and position angle.
354	Jacob, W. S.	1849	244	Double Stars.	R.A.; Decl.	1840·0	"Catalogue of Double Stars, deduced from Observations made at Poona from November 1845 to February 1848." Gives position and distance. In "Ast. Soc. Roy. Mems.," vol. xvii.
355	Santini, G.	1840	4,092	To 9 Mag.	R.A.; Decl. +11° to −11°.	1840·0	Descrizione del Circolo Meridiano dell' I. R. Osservatorio di Padova, Padova, 1840." In "Padova Accad. Nuovi Saggi," vols. v. and vi.
356	Santini, G.	1842	1,677	To 9 Mag.	R.A.; Decl. + 0° to +10°.	1840·0	"A Catalogue of 1,677 Stars included between the Equator and 10° of North Decl., observed at the Royal Observatory of Padua." Catalogue made to establish a series of reference points for extra-meridional observations of Planets and Comets. In "Ast. Soc. Roy. Mems.," vol. xii.

No.	Name.	Date Published.	Number of Stars.	Description of Stars.	Mean Places; Co-ordinates.	Epoch.	Notes.
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357	Gilliss, J. M. ... ... (Washington Catalogue)	1846	1,248	To 7 Mag.	R.A.; Decl.	1840·0	"Astronomical Observations made at the Naval Observatory, Washington, Washington, 1846." Catalogue made from observations, October 1838 to July 1842.
358	Struve, F. G. W. ...	1843	514	Double Stars.	R.A.; Decl.	1840·0	"Catalogue de 514 Étoiles Doubles et Multiples découvertes sur l'Hémisphère Céleste Boréale par la grande lunette de l'Observatoire centrale de Poulkova, et Cat. de 256 Étoiles Doubles Principales où la distance des composantes est de 32 sec. à 2 minutes, St.-Pétersbourg, 1843."
359	Struve, F. G. W. ...	1843	256	Double Stars.	R.A.; Decl.	1840·0	
360	Dawes, W. R.	1851	98	Double Stars.	R.A.; N.P.D.	1840·0	"Micrometrical Measurements of Double Stars made at Ormskirk between 1834·0 and 1839·4." Gives position and distance. In "Ast. Soc. Roy. Mems.," vol. xix.
361	Argelander, F. W. A....	1846	...	To 9·0 Mag.	R.A.; Decl. +45° to +80° in zones.	1842·0	"Durchmusterung des Nördlichen Himmels, zwischen 45. und 80. Grad der Declination auf der Interims-Sternwarte der Köng. Rh. F. W. Universitäts zu Bonn in den Jahren 1841 bis 1844 ausgeführt, Bonn, 1846." Unreduced.
362	Argelander (Oeltzen) ...	1851 & 1852	26,425	To 9·0 Mag.	R.A.; Decl. +45° to +80°.	1842·0	"Argelander's Zonen-Beobachtungen vom 45. bis 80. Grad Nördlicher Declination in Mittleren Positionen für 1842·0 nach gerader Aufsteigung geordnet von W. Oeltzen." Zones reduced and arranged in order of R.A. In "Wien. Annalen K. K. Sternwarte," vols. i. & ii., 3rd series.
363	Cooper, E. J., and Graham, A.	1844	50	Telescopic Stars.	R.A.; Decl. +88° to Pole.	1842 0	"Mean Places for 1 January 1842 of 50 Telescopic Stars within 2° N.P.D. observed in the years 1842 and 1843 at Markree, in the county of Sligo." In "Ast. Nach.," No. 490.
364	Santarelli	1842	104	Double Stars.	R.A.; Decl.	1842·0	"Memoria intorno a parecchie Osservazioni fatte nella Specola dell Univ. Gregor. in Collegio Romano, Roma, 1842." Gives measurements of position and distance.
365	Bessel (Luther, E.) ...	1859	36	Fund. Stars.	Declinations.	1843·0	"Declinationes Stellarum Fundamentalium a Besselio." In "Königsberg Observations," vol. xxxiii. p. 115; "Dissertatio Königsberg, 1859"; and "Ast. Nach.," No. 1,076.
366	Airy, G. B., Ast. Roy.	1852	491	Prin. Stars.	Decl. +37° to +70°	1843·0	Prepared from Greenwich Observations. In "Ordnance Survey. Astronomical Observations made with Airy's Zenith Sector 1842 to 1850, for the Determination of the Latitudes of various Trigonometrical Stations, London, 1852."
367	Santarelli	1843	415	Prin. Stars	R.A.; Decl.	1844·0	"Osservazioni fatte nella Specola dell Univ. Gregoriana in Collegio Romano, Roma, 1843," p. 103.

368	Santarelli	1843	100	Prin. Stars.	R.A.; Decl.	1844·0	In "Osservazioni fatte nella Specola dell' Univ. Gregoriana in Collegio Romano, Roma, 1843." p. 103.
369	Greenwich 12-yr. Catalogue (Airy, G. B., Ast. Roy.)	1849	2,156	To 9 Mag.	R.A.; N.P.D.	1845·0	"Catalogue of 2,156 Stars, formed from the Observations made during 12 years, from 1836 to 1847, at the Royal Observatory, Greenwich." Formed from two separate Catalogues made from observations in the years 1836 to 1841 and 1842 to 1847. The Catalogues kept distinct, reduced to their mean Epochs 1840 and 1845 respectively. App. to "Greenwich Observations, 1847."
370	The Radcliffe Catalogue (Johnson, M. J.)	1860	6,317	To 9 Mag.	R.A.; Decl.	1845·0	"The Radcliffe Catalogue of 6,317 Stars, chiefly Circumpolar, reduced to the Epoch 1845·0, formed from the Observations made at the Radcliffe Observatory, under the Superintendence of M. J. Johnson, Introduction by Rev. R. Main, Oxford, 1860."
371	Madras Catalogue ...	...	97	Prin. Stars.	R.A.; Decl.	1845·0	"Catalogue of 97 Principal Fixed Stars, from Observations made at the Madras Observatory in the years 1843–1847," Appendix to "Madras Observations," vol. vi.
372	Maclear, T.	1866	105	Zenith Stars.	R.A.; N.P.D.	1845·0	Observed with Bradley's zenith sector at the Cape of Good Hope. "In Verification of Lacaille's Arc of Meridian," vol. ii. p. 439.
373	Poulkova Catalogue ... (Struve, O.)	1869	374	Prin. Stars.	R.A.	1845·0	"Ascensions Droites Moyennes des Étoiles Principales." In "Observations de Poulkova," vol. i. p. (120).
374	Poulkova Catalogue ... (Struve, O.)	1870	300	To 9 Mag.	R.A.	1845·0	"Ascensions Droites Moyennes des Étoiles observées occasionellement." "Observations de Poulkova," vol. iii. p. (161).
375	Poulkova Catalogue ... (Struve, O.)	1870	38	Fund. Stars.	R.A.	1845·0	In "Observations de Poulkova," vol. iii. p. (42).
376	Poulkova Catalogue ... (Struve, O.)	1872	374	Prin. Stars.	Decl.	1845·0	"Déclinaisons Moyennes des Étoiles Principales." In "Observations de Poulkova," vol. iv. p. (50).
377	Poulkova Catalogue ... (Struve, O.)	1872	59	To 9 Mag.	Decl.	1845·0	"Déclinaisons des Étoiles observées occasionellement." In "Observations de Poulkova," p. (71).
378	Wolfers	...	44	Fund. Stars.	R.A.	1845·0	"Vergleichung der Rectascensionen in den 'Tabb. Red.,' mit den Beobachtungen in Pulkowa." "Ast. Nach., 1790."
379	Wolfers	...	22	Nebensterne.	R.A.	1845·0	"Vergleichung der Rectascensionen in den 'Tabb. Red.,' mit den Beobachtungen in Pulkowa." "Ast. Nach., 1790."
380	Le Verrier, U. J. ...	1856	36	Fund. Stars.	R.A.; Decl.	1845·0	"Positions des Étoiles Fondamentales." Table V. contains Mean Positions of 36 Fund. Stars for every 10 years from 1750 to 1900. In "Annales de l'Observatoire Imp. de Paris," vol. ii., Paris, 1856.
381	Maclear, T.	1849	18	Southern Stars.	R.A.; Decl.	1847·0	"Observations of Southern Stars made at the request of Prof. Mädler." In "Ast. Soc. Roy. Mon. Nots.," vol. ix. p. 16.

No.	Name.	Date Published.	Number of Stars.	Description of Stars.	Mean Places; Co-ordinates.	Epoch.	Notes.
						A.D.	
382	Wichmann, M. ...	1849	160	6 to 10 Mag.	R.A.; Decl.	1848·0	"Verzeichniss von 160 Vergleichsternen zu den Beobachtungen am Königsberger Heliometer." In "Ast. Nach.," No. 694.
383	Oudemanns, J. A. C. ...	1852	86	Prin. Stars.	R.A.; Decl.	1849·0	"Dissertatio Astronomica inauguralis, Lugduni-Batavorum, 1852." Catalogue consists of stars in the Catalogues of Argelander (560), Greenwich, Cambridge, Edinburgh, Radcliffe, and Königsberg, all reduced to Epoch 1849·0 and the mean place of all the catalogues adopted.
384	Oudemanns, J. A. C. ...	1852	101	Prin. Stars.	Declinations.	1849·0	In "Dissertatio Astronomica inauguralis, Lugduni-Batavorum, 1852," Tab. 12. From observations with the vertical circle.
385	British Association Catalogue (Baily, F.)	1845	8,377	To 8 Mag.	R.A.; N.P.D.	1850·0	"The Catalogue of Stars of the British Association for the Advancement of Science, London, 1845." Compiled from the following catalogues:— 1. All Bradley's 3,222 stars and Lacaille's 1,942 stars. 2. Other stars in the Catalogues of Hevelius, Flamsteed, Mayer, Pond, Argelander, Rumker, Johnson. 3. Other stars in the following catalogues not less than 6 mag. wherever situate, nor less than 7 mag. if within 10° of Ecliptic: Piazzi, Zach, Wollaston, Groombridge, Brisbane, Airy, Taylor, Lacaille (new). 4. Other stars possessing any special peculiarities.
386	Greenwich 6-year Catalogue (Airy, G. B., Ast. Roy.)	1856	1,576	To 9 Mag.	R.A.; N.P.D.	1850·0	"Catalogue of 1,576 Stars, formed from the Observations made during six years from 1848 to 1853 at the Royal Observatory, Greenwich, London, 1856." Appendix II. to "Greenwich Observations, 1854."
387	Durham Observatory... (Carrington, R. C.)	1855	195	...	R.A.; Decl.	1850·0 and 1851·0	"Results of Astronomical Observations made at the Observatory at the University of Durham from Oct. 1849 to April 1852, Durham, 1855."
388	Washington Zones ... (Transit)	1873	12,033	To 10 Mag.	R.A.; Decl. − 9° to −41° In Zones.	1850 unreduced	"Zones of Stars observed at the U.S. Naval Observatory with the Meridian Transit Instrument in the years 1846-49." "Washington Observations, 1870."
389	Washington Zones ... (Mural)	1872	14,804	To 10 Mag.	R.A.; Decl. − 4° to −40° In Zones.	1850 unreduced	"Zones of Stars observed at the U.S. Naval Observatory with the Mural Circle in the years 1846-49." In "Washington Observations, 1869."
390	Madras Catalogue ... (Jacob)	1854	1,440	To 7 Mag.	R.A.; N.P.D.	1850·0	"A Subsidiary Catalogue of 1,440 Stars selected from the B.A.C., from Observations made at Madras in the years 1849-53, Madras, 1854." In "Madras Observations, 1848-52."

391	Markree Catalogue ... (Cooper, E. J.)	1851–56	60,155	To 12 Mag.	R.A.; Decl. near Ecliptic.	1850·0	"Catalogue of 60,155 Stars near the Ecliptic, observed at Markree during the years 1848–56, and whose places are supposed to be hitherto unpublished, Dublin, 1851–56." Subdivided into separate catalogues for each month's observations. Stars are not numbered, and their identification is difficult.
392	Madras Catalogue ... (Jacob, W. S.)	1854	97	Prin. Stars.	R.A.; N.P.D.	1850·0	"Mean Places of 97 Prin. Fixed Stars from Observations at the Madras Observatory, 1848–52." In "Madras Observations, 1848–52."
393	Bradley (Mädler) ...	1856	3,222	To 8 Mag.	R.A. (in Degrees); Decl. (in Zones).	1850·0	"Die Eigenbewegungen der Fixsterne in ihrer Beziehung zum Gesammtsystem von J. H. Mädler, Dorpat, 1856." "Catalog der 3,222 Bradley'schen Sterne aus sämmtlichen ältern und neuern Meridianbeobachtungen." Arranged in 4 Zones: (1) All stars south of the Equator; (2) 0° to +30°; (3) +30° to +60°; (4) +60° to Pole. "Dorpat Observations," vol. xiv. p. 14. The Catalogue arranged in order of R.A. (in Time) at p. 265.
394	Rümker, C.	1859	3,126	To 9 Mag.	R.A. O H. to VII H.; Decl.	1850·0	"Neue Folge der Mittleren Oerter von Fixsternen für den Anfang von 1850 abgeleitet aus dem Beobachtungen auf der Hamburger Sternwarte, Hamburg, 1859."
395	Munich Catalogue ... (Lamont, J.)	1874	2,112	Small Stars. Mags. not given.	R.A.; Decl.	1850·0	"Annalen der König. Sternwarte bei München auf offentliche Kosten herausgegeben von Dr. J. Lamont, München, 1874," vol. xx.
396	Munich Zone Catalogue (Lamont, J.)	1866	9,412	8 to 10 Mag.	R.A.; Decl. +3° to −3°.	1850·0	"Annalen der König. Sternwarte bei München, München, 1866–74." Supplemental vol. v.
397	Munich Zone Catalogue (Lamont, J.)	1869	6,323	8 to 10 Mag.	R.A.; Decl. +3° to +9°.	1850·0	Ditto, Supplemental vol. viii.
398	Munich Zone Catalogue (Lamont, J.)	1869	4,793	8 to 10 Mag.	R.A.; Decl. −3° to −9°.	1850·0	Ditto, Supplemental vol. ix.
399	Munich Zone Catalogue (Lamont, J.)	1871	3,571	8 to 10 Mag.	R.A.; Decl. +9° to +15°.	1850·0	Ditto, Supplemental vol. xi.
400	Munich Zone Catalogue (Lamont, J.)	1872	4,093	8 to 10 Mag.	R.A.; Decl. −9° to −15°.	1850·0	Ditto, Supplemental vol. xii.
401	Munich Zone Catalogue (Lamont, J.)	1874	1,818	8 to 10 Mag.	R.A.; Decl. +15° to +21°.	1850·0	Ditto, Supplemental vol. xiii.
402	Munich Zone Catalogue (Lamont, J.)	1874	630	8 to 10 Mag.	R.A.; Decl. +21° to +27°.	1850·0	Ditto, Supplemental vol. xiii.
403	Munich Zone Catalogue (Lamont, J.)	1874	1,621	8 to 10 Mag.	R.A.; Decl. −15° to −21°.	1850·0	Ditto, Supplemental vol. xiii.
404	Munich Zone Catalogue (Lamont, J.)	1874	904	8 to 10 Mag.	R.A.; Decl. −21° to −27°.	1850·0	Ditto, Supplemental vol. xiii.

No.	Name.	Date Published.	Number of Stars.	Description of Stars.	Mean Places; Co-ordinates.	Epoch.	Notes.
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405	Munich Zone Catalogue (Lamont, J.)	1874	591	8 to 10 Mag.	R.A.; Decl. −27° to −33°.	1850·0	"Annalen de König. Sternwarte bei München, München, 1866–74." Supplemental vol. xiii.
406	Munich Zone Catalogue (Lamont, J.)	1874	918	8 to 10 Mag.	R.A.; Decl. +15° to −15°.	1850·0	Ditto. Addition to former Catalogue.
407	Munich Zone Catalogue (Lamont, J.)	1874	2,548	8 to 10 Mag.	R.A.; Decl. +15° to −15°.	1850·0	Ditto. Addition to former Catalogue.
408	Bessel, F. W.	1830	38	Fund. Stars.	R.A.; Decl.	1750·0 to 1850·0	"Tabulæ Regiomontanæ reductionum observationum Astronomicarum ab anno 1750 usque ad annum 1850 computatæ Regiomonti, 1830."
409	Newcomb, S.	1872	32	Fund. Stars.	Right Ascen.	1750·0 to 1850·0	"On the Right Ascensions of the Equatorial Fundamental Stars and the corrections necessary to reduce the R.A.s of different catalogues to a mean homogeneous system, Washington, 1872." In "Washington Observations, 1870," Appendix III.
410	Santiago Catalogue ... (Gilliss)	1871	1,963 290	To 9 Mag. Double Stars.	R.A.; S. Decl.	1850·0	"A Catalogue of 1,963 Stars and of 290 Double Stars observed by the United States Naval Astronomical Expedition to the Southern Hemisphere during the years 1850, 51, 52. From observations at Santiago. Washington, 1871." Appendix to "Washington Observations, 1868."
411	Wrottesley, Lord ...	...	1,009	6 and 7 Mag.	Right Ascen.	1850·0	"A Catalogue of the R.A.s of 1,009 Stars contained in the B.A.C." In "Ast. Soc. Roy. Mems.," vol. xxiii.
412	Argelander, F. W. A.	1852	...	To 9·0 Mag.	R.A.; Decl. in zones.	Unreduced	"Durchumusterung der Himmelzone zwischen 15 und 31 Grad Südlicher Declination, auf der Sternwarte der König. Rh. F. W. Univ. zu Bonn in den Jahren 1849–1852, Bonn, 1852." Zones unreduced.
413	Argelander (Oeltzen)...	...	23,250	To 9 Mag.	R.A.; S. Decl.	1850·0	"Argelanders Zonen Beobachtungen vom 15 bis 31 Grade Südlicher Declination in Mittleren Positionen für 1850·0." Reduced and arranged in order of R.A. by W. Oeltzen. In "Vienna Acad. Sitzungsberichte," vols. xxvi. xxvii. xxix. and xxxi.
414	Argelander, F. W. A....	1867	2,920	To 9·5 Mag.	R.A.; S. Decl. −14° 40′ to −31° 20′	1850·0	"Mittlere Oerter von 33,811 Sternen, abgeleitet aus den am Meridiankreise der Bonner Sternwarte." "Bonner Beobachtungen," vol. vi., Bonn, 1867, p. 335.
415	Epps, J.	1851	148	Prin. Stars.	R.A.	1850·0	Catalogue of Stars made at the Hartwell Observatory. In Smyth, "Ædes Hartwellianæ," and "Speculum Hartwellianum."

416	"Almanac Catalogue" (Downes, J.)	1864	1,078	Zodiacal Stars, to 7 Mag.	R.A. ; Decl.	1850·0	"Almanac Cat. of Zodiacal Stars, printed for the use of the American Ephem. and Naut. Alm., Washington, 1864." Compiled from Greenwich 12-year Cat., B.A.C., Oeltzen's Argelander (Southern), Rumker, Lalande, and Weisse's Bessel.
417	Mädler, J. H.... ...	1850	663	Double Stars.	R.A. ; Decl.	1850·0	"Uebersichts Tafel der Doppelsterne von erkannter Bewegung, Dorpat, 1850." Stars from Struve's "Mens. Microm." In "Beobachtungen der K. Univ. Sternwarte, Dorpat," vol. xii.
418	Bishop, G.	1852	252	Double Stars.	R.A. ; N.P.D.	1850·0	"Astronomical Observations taken at the Observatory, South Villa, Regent's Park, London, during the years 1839–1851, London, 1852." Cat. made chiefly by W. R. Dawes.
419	Fletcher, J.	1854	51	Double Stars.	R.A.; N.P.D.	1850·0	"Results of Micrometrical Measures of Double Stars made at Tarn Bank, Cumberland, from 1850·2 to 1853·4." In "Ast. Soc. Roy. Mems.," vol. xxii.
420	Dawes, W. R.... ...	1867	240	Double Stars.	R.A.; N.P.D.	1850·0	"Catalogue of Micrometrical Measurements of Double Stars." In "Ast. Soc. Roy. Mems.," vol. xxxv.
421	Jacob, W. S.	1854	144	Double Stars.	R.A. ; N.P.D.	1850·0	"Observations of 144 Double or Multiple Stars made at the Madras Observatory with the Lerebours Equatoreal in 1850–52."
422	Jacob, W. S.	1854	106	Double Stars.	R.A. ; N.P.D.	1850	"Catalogue of 106 Double Stars observed with the Lerebours Equatoreal."
423	Struve, Otto	1853	514	Double Stars.	R.A. ; Decl.	1850·0	"Catalogue révu et corrigé des Étoiles Doubles et Multiples découvertes à l'Observatoire centrale de Poulkova." In "St.-Pétersbourg Acad. Mems.," vol. vii., 1853.
424	Sabler (Struve, W.) ...	1852	175	...	R.A.; Decl.	1851·0	"Catalogus continens 175 Stellarum Positiones Medias ad 1851·00 ex Observationibus Pulcovensibus reductas." In "Stel. Fix. Dup. et Mult. Pos. Med.," p. 351.
425	Laugier, E.	1860	105	Fund. Stars.	N.P.D.	1852·0	"Mémoire sur la détermination des Distances Polaires des Étoiles Fondamentales." In "Acad. des Sciences Méms.," vol. xxvii. pt. 2.
426	Laugier, E.	1860	84	Not Fund. Stars.	N.P.D.	1852·0	
427	Laugier, E.	1860	140	Fund. Stars.	N.P.D.	1852·0	"Détermination des Distances Polaires et des mouvements propres normaux de 140 Étoiles Fondamentales." In "Comptes Rendus," vol. xliv.; also in "Acad. des Sciences Méms.," vol. xxvii. pt. 2.
428	Chacornac. Ecliptic Charts of the Paris Observatory	...	62,604	To 13 Mag.	R.A. ; Decl.	1852·5	Atlas Ecliptique (not completed). 36 Maps: Nos. 1 to 6, 9, 13, 15, 22, 26 to 30, 34 to 36, 39, 41, 46, 49 to 52, 61 to 64a, 70 to 72. In Charts. No Catalogue.
429	Harvard Zones (Bond, W. C.)	1855	5,500	To 12 Mag.	R.A. ; Decl. +0° to +0° 20′	Unreduced	"Annals of the Astronomical Observatory of Harvard College," vol. i. part 2. From observations in 1852 and 1853. Cambridge (Mass.), 1855.

No.	Name.	Date Published.	Number of Stars.	Description of Stars.	Mean Places; Co-ordinates.	Epoch.	Notes.
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430	Harvard Zones ... (Bond, W. C.)	1867	4,484	To 12 Mag.	R.A.; Decl. +0° 20′ to +0° 40′	Unreduced	"Annals of the Astronomical Observatory of Harvard College," vol. ii. pt. 2. From observations in 1854 and 1855. Cambridge (Mass.), 1867.
431	Bond, W. C.	1855	1,123	Standard Stars.	R.A.; Decl. +0° to +1°	1853·0	"Standard Catalogue of Stars between the Equator and 1° of North Declination." In "Annals of the Ast. Obs. of Harvard College," vol. i. pt. 2.
432	Red-Hill Catalogue ... (Carrington, R. C.)	1857	3,735	To 10 Mag. Circumpolar.	R.A.; Decl. +81° to the Pole.	1855·0	"A Catalogue of 3,735 Circumpolar Stars, observed at Red-Hill in the years 1854, 55, 56. London, 1857."
433	Red-Hill Catalogue ... (Carrington, R. C.)	1857	19	Stars very near the Pole.	R.A.	1855·0	Positions determined by special method. In "A Catalogue of 3,735 Circumpolar Stars, observed at Red-Hill in the years 1854, 55, 56. London, 1857."
434	"Bonner Sternverzeichniss" (Argelander, F. W. A.)	1859	110,984	To 9·5 Mag.	R.A.; Decl. − 2° to +20° in Zones of 1°	1855·0	"Bonner Sternverzeichniss. Erste Section enthaltend die genäherten Mittleren Oerter von 110,984 Sternen zwischen 2 Grad Südlicher und 20 Grad Nördlicher Declination, Bonn, 1859."
435	"Bonner Sternverzeichniss" (Argelander, F. W. A.)	1861	105,075	To 9·5 Mag.	R.A.; Decl. +20° to +41°	1855·0	"Bonner Sternverzeichniss zweiter Section, Bonn, 1861."
436	"Bonner Sternverzeichniss" (Argelander, F. W. A.)	1862	108,129	To 9·5 Mag.	R.A.; Decl. +41° to +90°	1855·0	"Bonner Sternverzeichniss. Dritte Section, Bonn, 1862."
437	"Bonner Sternverzeichniss" (Argelander, F. W. A.)	1867	30,891	To 9·5 Mag.	R.A.; Decl. − 1° to +90° and − 2° to −14° 40′ in Zones of 1°	1855·0	"Mittlere Oerter von 33,811 Sternen abgeleitet aus den am Meridiankreise der Bonner Sternwarte in den Jahren 1845–1867 angestellten Beobachtungen und in drei Verzeichnissen zusammengestellt, Bonn, 1867."
438	Heis, E.	1872	5,421	Visible Stars.	R.A.; Decl.	1855·0	"Atlas Cœlestis Novus. Stellæ per Mediam Europam solis oculis conspicuæ secundum veras lucis magnitudines e cœlo ipso descriptæ, Coloniæ ad Rhenum, 1872."
439	Calandrelli, J.... ...	1855	60	Prin. Stars.	R.A.; Decl.	1855·0	"Catalogo delle Stelle osservate." In "Roma Accad. Pont. Nuovi Lincei Atti," vol. vi. p. 317.
440	Gould, B. A.	1862	48	Circumpolar.	R.A.; Decl.	1855·0	"On the Mean Places for 1855·0 of 48 Circumpolar Stars." In "Gould's Ast. Jour.," vol. vi. p. 78.
441	Gould, B. A.	1867	4	Polar Stars.	R.A.; Decl.	1855·0	In "U. S. Coast Survey, 1865." Gives places also for Epochs 1790 to 1870.

442	Gould, B. A.	1867	132	Time Stars.	Decl.	1855·0	"Declinations of Standard Time Stars." "U. S. Coast Survey 1865," p. 152.
443	Krueger, A.	1865	43	Small Stars.	R.A.; Decl.	1855·0	"Der Sternhaufen *h Persei* Beobachtungen desselben am Bonner Heliometer nebst deren Berechnung, Helsingfors, 1865." Stars in the Cluster 33 H vi. In "Finnischen Soc. Abhand."
444	Santiago Catalogue (Moesta, C. G.) ...	1859	999	...	R.A.; South Decl.	1855·0	"Observaciones Astronómicás hechas en el Observatorio Nacional de Santiago de Chile en los años de 1853, 54, 55, Santiago de Chile, 1859."
445	Safford, T. H.... ...	1863	127	Clock Stars	R.A.	1855·0	"A Catalogue of Standard Polar and Clock Stars for the reduction of Observations in R.A., with a discussion of their positions." In "American Acad. Mems." vol. viii. N.S., and "Annals of Harvard College," vol. iv. pt. 1.
446	Jacob, W. S.	1860	317	...	R.A.; Decl.	1855·0	"Catalogue of 317 Stars selected from the B.A.C. (being such as were supposed to have large Proper Motions) from observations at Madras in the years 1853–7." In "Ast. Soc. Roy. Mems." vol. xxviii.
447	Schjellerup, H. C. F. C.	1867	6,943	Comparison Stars.	R.A.; Decl.	1855·0	"Genäherte Oerter der Fixsterne von welchen in den Ast Nach. Band. 1–66 selbständige Beobachtungen angeführt sind." Gives a reference to the volume and page of the "Ast. Nach." where each star is to be found. In "Ast. Gesell. Pub. der, Leipzig," No. 8.
448	Schjellerup, H. C. F. C.	1874	404	Red Stars.	R.A.; Decl.	1855·0	"Zweiter Catalog der rothen, isolirten Sterne." In "Ast. Gesell., Viertel, 1874," p. 252.
449	Schönfeld, E., and Winnecke, A.	1868	126	Variable Stars.	R.A.; Decl.	1855·0	In "Ast. Gesell. Viertel, 1868," p. 74.
450	Schönfeld, E.	1875	143	Variable Stars.	R.A.; Decl.	1855·0	"Zweiter Catalog von Veränderlichen Sternen. Mannheim. 1875."
451	Johnson, M. J... ...	1856	164	Circumpolar.	R.A.; N.P.D. +84° to Pole.	1855·0	"Catalogue of 164 Stars within 6° of the North Pole, from Observations in the years 1840–1855." In "Radcliffe Observations, 1855."
452	Powell, E. B.	1857	130	Double Stars.	R.A.; N.P.D.	1855·0	"Observations of Double Stars taken at Madras in 1853, 4, 5, 6." In "Ast. Soc. Roy. Mems.," vol. xxv.
453	Powell, E. B.	1864	56	Double Stars.	R.A.; N.P.D.	1855·0	"Second Series of Observations of Double Stars taken at Madras in 1859–62." In "Ast. Soc. Roy. Mems.," vol. xxxii.
454	Quetelet, Er.	1861	343	Prin. Stars.	R.A.	1856·0	"Essai sur le Mouvement Propre en Ascension Droite de quelques Étoiles." In "Belgium Acad. Roy. Méms.," vol. xxxii.
455	Vienna Zones (Littrow)	...	26,006	To 11 Mag.	R.A.; Decl. +15° to +19°	1856 to 1858 unreduced.	"Annalen der K. K. Sternwarte in Wien," vols. vii. to xxiv.

No.	Name.	Date Published.	Number of Stars.	Description of Stars.	Mean Places; Co-ordinates.	Epoch.	Notes.
						A.D.	
456	Bond, G. P.	1867	1,101	To 15 Mag. *Orion* Nebula.	Differences; R.A.; & Decl.	1857·0	Stars near *θ Orionis*, to which positions are referred. In "Annals of Harvard Coll. Observatory," vol. v., Cambridge (Mass.), 1867.
457	Struve, O.; & Liapounov	1863	155	To 13 Mag. *Orion* Nebula.	Differences; R.A.; and Decl.	...	"Observations de la Grande Nebuleuse d'*Orion*." "Petersburg, St., Acad. Imp. Sci. Mems.," 7th Ser., vol. v.
458	Safford, T. H.... ...	1863	532	Zenith Stars.	Decl.	1859·0	"A Catalogue of the Declinations of 532 Stars culminating near the Zenith of the Observatory of Harvard College, Cambridge (Mass.)." In "American Acad. Mems.," vol. viii. N.S.
459	Greenwich 7-year Catalogue (Airy, G. B., Ast. Roy.)	1864	2,022	To 9 Mag.	R.A.; N.P.D.	1860·0	"Seven-year Catalogue of 2,022 Stars, deduced from Observations extending from 1854 to 1860, at the Royal Observatory, Greenwich." In "Greenwich Observations, 1862," App. I.
460	Second Radcliffe Catalogue (Main, R.)	1870	2,386	To 9 Mag.	R.A.; Decl.	1860·0	"Second Radcliffe Catalogue, containing 2,386 Stars deduced from Observations extending from 1854 to 1861, Oxford, 1870."
461	The Cape Catalogue ... (Stone, E. J.)	1873	1,159	To 11 Mag.	R.A.; N.P.D.	1860·0	"The Cape Catalogue of 1,159 Stars, deduced from Observations (by Sir Thomas Maclear) at the Royal Observatory, Cape of Good Hope, 1856 to 1861, Cape Town, 1873."
462	Williamstone Catalogue (Ellery, R. L. J.)	1869	546	Mostly Prin. Stars.	R.A.; N.P.D.	1860·0	Made from observations at the Williamstone Observatory, in 1861, 1862, and 1863. In "Astronomical Observations made at the Williamstone Observatory, Melbourne, 1869," vol. i. p. 104.
463	Capelli, G.	1864	661	To 8 Mag.	R.A.; Decl. −15° to −25°	1860·0	"Posizioni Medie di 661 Stelle, distribuite nella zona fra 15° e 25° di Decl. Australe." From Observations at the Milan Observatory in the years 1852, 1853, 1855, 1856. In "Effem. Ast. di Milano, 1865," Appendix.
464	Padua Zone Catalogue (Santini, G.)	1858	2,706	To 10 Mag.	R.A.; Decl. −10° to −12° 30′	1860·0	"Posizioni Medie di 2,706 Stelle pel 1° Gennajo 1860, dedotte dalle osservazioni fatte negli anni 1856–58, nell' I. R. Osservatorio di Padova, Venezia, 1858." In "Memorie dell' Istituto," vol. vii.
465	Padua Zone Catalogue (Santini, G.)	1862	2,246	To 10 Mag.	R.A.; Decl. −12° 30′ to −15°	1860·0	"Posizioni Medie di 2,246 Stelle, dedotte dalle osservazioni fatte dal Sig. Trettenero negli anni 1857–61, Venezia, 1862." In "Memorie dell' Istituto," vol. x.
466	Padua Zone Catalogue (Santini, G.)	1870	1,425	To 10 Mag.	R.A.; Decl. −0° to −3°	1860·0	"Posizioni Medie di 1,425 Stelle, dedotte dal osservazioni fatte dal defunto Prof. Trettenero, 1861–63, Venezia, 1870." In "Memorie dell' Istituto," vol. xv.

467	Washington Catalogue (Yarnall, M.)	1873	10,658	To 9 Mag.	R.A.; Decl.	1860·0	"Catalogue of 10,658 Stars observed at the United States Naval Observatory during the years 1845 to 1871, prepared for publication by Prof. M. Yarnall, Washington, 1873." Appendix III. to "Washington Observations for 1871."
468	Laugier, E.	1860	155	Prin. Stars.	Decl.	1860·0 to 1870·0	"Mémoire sur la Détermination des Distances Polaires des Étoiles Fondamentales." "Acad. des Sciences Méms.," vol. xxvii.
469	Schjellerup, H. C. ...	1866	280	Red Stars.	R.A.; Decl.	1860·0	"Catalog der rothen isolirten Sterne, welche bis zum Jahre 1866 bekannt geworden sind." In "Ast. Nach." No. 1591.
470	Schmidt, J. F. Julius	1873	162	Orange-red Stars.	R.A.; Decl.	1860·0	"Ueber die Farben der Fixsterne." In "Ast. Nach." No. 1902.
471	Yarnall, M.	1873	51	Prin. Stars.	R.A.; Decl.	1860·0	"Positions of the Principal Stars derived from Observations made at the U.S. Naval Observatory, Washington, in the years 1853 to 1860." In "Ast. Nach.," No. 1947.
472	Stone, E. J.	1874	8	Close to South Pole.	R.A.; N.P.D.	1860·0 to 1900·0	Positions of Stars very near the South Pole, from Observations at the Cape of Good Hope since 1829.
473	Newcomb, S.	1866	57	Circumpolar Stars.	Declinations.	1860·0	"On the Lat. and Long. of the U.S. Naval Observatory, Washington, and the Declinations of certain Circumpolar Stars." In "Washington Observations, 1864," App.
474	Santiago Catalogue (Moesta, C. G.) ...	1875	3,309	To 9 Mag.	R.A.; N.P.D.	1860·0	"Observaciones Astronomicas hechas en el Observatorio Nacional de Santiago de Chile en los años de 1856 á 1860, Dresde, 1875."
475	Hall, Asaph	...	151	*Præsepe* to 11 Mag.	R.A.; Decl.	1860·0	"Catalogue of 151 Stars in *Præsepe*." In "Washington Observations, 1870." App. IV.
476	Johnson, M. J. ...	1858	1,481	To 9 Mag.	R.A.; N.P.D.	1860·0	"A Provisional Catalogue of 1,481 Stars, deduced from the Observations at the Radcliffe Observatory during the years 1854–56." In "Radcliffe Observations, 1856."
477	Secchi, A.	1860	1,321	Double Stars.	R.A.; Decl.	1860·0	"Catalogo di 1,321 Stelle Dopie misurate col grande Equatoriale di Merz all' Osservatorio del Collegio Romano, Roma, 1860." Stars from Struve, in five orders of distances: 0″ to 1″; 1″ to 2″; 2″ to 4″; 4″ to 8″; 8″ to 12″.
478	Wrottesley, Lord ...	1861	398	Double Stars.	R.A.; N.P.D.	1860·0	"A Catalogue of the Positions and Distances of 398 Double Stars." In "Ast. Soc. Roy. Mems.," vol. xxix.
479	Pogson, N.	1856	53	Variable Stars.	R.A.; N.P.D.	1860·0	"Catalogue of 53 known Variable Stars, with Notes." In "Radcliffe Observations, 1854, Oxford, 1856."
480	Dien, Ch.	...	100,000	Stars and Nebulæ.	...	1860·0	"Atlas Céleste, contenant plus de 100,000 Étoiles et Nébuleuses, d'après les Catalogues les plus exacts des Astronomes Français et Étrangers." 26 Maps.

No.	Name.	Date Published.	Number of Stars.	Description of Stars.	Mean Places; Co-ordinates.	Epoch.	Notes.
						A.D.	
481	Brothers, A.	1867	155 42	Binary Stars. Doubtful Binary Stars.	R.A.; Decl.	1860·0	"Catalogue of Binary Stars." In "Manchester Lit. Phil. Soc., 1867." Gives measures of distance and position angle by several observers.
482	Greenwich New 7-year Catalogue (Airy, G.B., Ast. Roy.).	...	2,760	To 9 Mag.	R.A.; N.P.D.	1864·0	"New Seven-year Catalogue of 2,760 Stars deduced from Observations extending from 1861 to 1867, at the Royal Observatory, Greenwich." In "Greenwich Observations, 1868," Appendix.
483	Schjellerup, H. C. F. C.	1864	10,000	To 10 Mag.	R.A.; Decl. +15° to −15°.	1865·0	"Stjernefortegnelse indeholdende 10,000 Positioner af Teleskopiske Fixstjerner imellem −15 og +15 Gradus Deklination, Kjøbenhavn, 1864." Made with the Copenhagen meridian circle in the years 1861–63.
484	Gyldén, H.	1868	43	Fund. Stars.	Declinations.	1865·0	"Vorläufige Vergleichung der Declinationen des Poulkowaer Verticalkreises mit einigen anderen Verzeichnissen."
485	Schultz, H.	1873	104	Small Stars.	R.A.; Decl.	1865·0	"Mikrometrisk Bestämning af 104 Stjernor inom Telescopiska Stjerngruppen 20 Vulpeculæ." Stars in the Cluster 20 H VIII. In "Stockholm Köngl. Vet. Akad.," vol. xi., 1873.
486	Pihl, O. A. L....	1869	85	Small Stars.	R.A.; Decl.	1865·0	"Micrometric Examination of Stellar Cluster in *Perseus*, Christiania, 1869." A Catalogue of Stars in the Cluster 34 *Messier*. Also in "Ast. Soc. Roy. Mon. Nots.," vol. xxviii.
487	Schultz, H.	1875	440	To 9 Mag.	R.A.; Decl.	1865·0	"Om Komparations Stjernorna vid Nebulosobservationerna i Upsala." From meridian observations at Upsala. In "Stockholm Akad. K. Svenska, Vet. Bihang Handlingen," Band 2, No. 16.
488	Vogel, H. C.	1867	110	Comparison Stars.	R.A.; Decl.	1865·0	"Beobachtungen von Nebelflecken und Sternhaufen, Leipzig, 1867." Comparison stars used in determining the places of nebulæ.
489	Schönfeld	1862	254	To 9 Mag.	R.A.; Decl.	1865·0	"Astronomische Beobachtungen auf der Grossherzoglicher Sternwarte zu Mannheim, Mannheim, 1862." Comparison stars from Bonn observations for determining the places of nebulæ.
490	Arrest, H. L. D' ...	1864	212	To 16 Mag.	R.A. $0^h\ 14^m\ 46^s$ to $0^h\ 19^m\ 7^s$ Decl. +63° 9′ to +64°	1865·0	"Resultater af en Teleskopisk Undersøgelser af egnen omkring det Sted paa Himmelen hvor Tycho's nye Stjerne har viist sigi Aarene 1572–1574." A telescopic examination of the region of the heavens in which Tycho's new star appeared in 1572, adopting the position assigned by Hind, viz. R.A. $0^h\ 17^m\ 7^s$, Decl. +63° 23′ 5″, as a centre. In "Copenhagen Danske. Vid Selsk. Oversigt. 1864," p. 6.
491	Respighi, L.	1868	88	Prin. Stars.	Declinations.	1866·0	"Sulla Latitudine dell' Osservatorio della Romana Univ. sul Campidoglio." In "Roma Accad. Pont. Nuovi Lincei Atti," vol. xxi. p. 41.

492	Engelmann, R. ...	1870	146	Prin. Stars.	R.A.; Decl.	1866·0	"Resultate aus Beobachtungen auf der Leipziger Sternwarte. Leipzig, 1870."
493	First Melbourne General Catalogue (Ellery, R. L. J.)	1874	1,227	To 9 Mag.	R.A.; Decl.	1870·0	"First Melbourne General Catalogue of 1,227 Stars for the Epoch 1870, deduced from Observations extending from 1863 to 1870, made at the Melbourne Observatory, Melbourne, 1874."
494	White, E. J.	1873	56	Near South Pole.	R.A.; N.P.D.	1870·0	Catalogue of Stars near the South Pole, prepared for the use of the Transit of *Venus* Expedition, from Observations with the Melbourne Transit Circle. In "Ast. Nach.," No. 1946.
495	Valentiner, W. ...	1873	57	Fund. Stars.	Declinations.	1870·0	From observations with the Leyden meridian circle, 1864 to 1868. In "Ast. Nach.," No. 1902.
496	Newcomb, S.	...	169	Fund. Stars.	R.A.; N.P.D.	1870·0	"Mean Positions for 1870·0 of Stars of the American Ephemeris, deduced from Observations with the Transit Instrument and the Transit Circle during the years 1862–67." "Washington Observations, 1867," Appendix iii. p. 41.
497	Barclay, J. G.	1870	217	Double Stars.	R.A.; N.P.D.	1870·0	"Astronomical Observations taken during the years 1865–69 at Leyton, Essex, London, 1870," vol. ii.
498	Barclay, J. G.	1873	91	Double Stars.	R.A.; N.P.D.	1870·0	"Astronomical Observations taken during the years 1865–69 at Leyton, Essex, London, 1870," part 3.
499	Chambers, G. F. ...	1867	121	Variable Stars.	R.A.; Decl.	1870·0	"Catalogue of Variable Stars." In "Descriptive Astronomy, Oxford, 1867," p. 577.
500	Chambers, G. F. ...	1865	113	Variable Stars.	R.A.; Decl.	1870·0	In "Ast. Soc. Roy. Mon. Nots.," vol. xxv.
501	Chambers, G. F. ...	1867	293	Red Stars.	R.A.; Decl.	1870·0	In "Descriptive Astronomy, Oxford, 1867," p. 584.
502	Secchi, A.	1876	444	Red and Colored Stars.	R.A.; Decl.	1870·0	"Prodromo di un Catalogo fisico delle Stelle Colorate." In "Spettri Ital. Soc. Mem.," vol. v.
503	Winlock, J.	1873	156	Fund. Stars.	Right Ascen. 12^h to 24^h	1871·0	"Results in R.A. of Observations of 156 Fund. Stars, observed at Harvard College Observatory." In "Ast. Nach.," No. 1909.
504	Winlock, J.	1873	27	Fund. Stars.	Right Ascen. N. of 60° Decl.	1871·0	In "Ast. Nach.," No. 1909.
505	Winlock, J.	1873	121	Fund. Stars.	R.A.; Decl. S. of +60°	1871·0	Stars from the Fundamental List of the Astron. Gesell. In "Ast. Nach.," No. 1947.
506	Winlock, J.	...	45	Fund. Stars.	R.A.; Decl. N. of +60°	1871·0	Stars from the Fundamental List of the Astron. Gesell. In "Ast. Nach.," No. 1947.
507	Fergola, E.	1873	106	Prin. Stars.	R.A.; Decl.	1871·0	"Determinazioni novella della Latitudine dell' Osservatorio di Capodimonti." 53 Pairs of Stars, distant in Declination, close in Right Ascension. In "Naples Accad. R. Atti," vol. v., 1873, No. 23.

No.	Name.	Date Published.	Number of Stars.	Description of Stars.	Mean Places; Co-ordinates.	Epoch.	Notes.
						A.D.	
508	Stone, E. J.	1873	78	Near South Pole.	R.A.; N.P.D.	1871·0	From Observations made at the Royal Observatory, Cape of Good Hope. In "Ast. Soc. Roy. Mon. Nots.," vol. xxxiii. p. 55.
509	Tacchini	...	1,001	To 9 Mag.	R.A.; Decl. −18° to −28°	unreduced	"Osservazioni di Stelle Australi esequite al Cerchio Meridiano del R. Osservatorio di Palermo" In "Palermo Ist. Tecnico Giornale," vols. iii. iv. v.
510	Göttingen Catalogue (Copeland, R., and Börgen, C.) ...	1869	6,595	To 9 Mag.	R.A.; Decl. − 0° to − 1°	1875·0	"Mittlere Oerter der in den Zonen −0° und −1° der Bonner Durchmusterung enhaltener Sterne bis zu $9^{m}\cdot0$ Grosse beobachtet und auf 1875·0 reducirt." Göttingen, 1869.
511	Poulkova Catalogue ... (Struve, O.)	1868	536	Fund. Stars.	R.A.; Decl. in Zones of 10° from −10° to +90°	1875·0	Catalogue of Fundamental Stars for the new Zone Observations of the Northern Heavens to Stars of the 9 Mag. In "Ast. Gesell. Viertel, 1868," p. 169.
512	Poulkova Catalogue ... (Struve, O.)	1869	539	Fund. Stars.	R.A.; Decl.	1875·0	Catalogue of Fund. Stars arranged in order of R.A. In "Ast. Gesell. Viertel, 1869," p. 324.
513	Gyldén, H.	1874	103	Fund. Stars.	R.A.	1875·0	In "Stockholm Kongl. Akad. Vetens. Ofversigt Forh. 1874," No. 10. Also in "Ast. Soc. Roy. Mon. Nots.," vol. xxxv. p. 349.
514	Pritchard, C.	1874	12	Close Circumpolar Stars.	R.A.; Decl.	1875·0	"Ephemeris of 12 close Circumpolar Stars, suitable for the determination of Azimuth Error." Places derived from the Red Hill Catalogue and the Radcliffe Observations. In "Ast. Soc. Roy. Mon. Nots.," vol. xxxv. p. 115.
515	Döllen, W.	1874	240	Time Stars.	R.A.; Decl.	1875·0	In "Die Zeitbestimmung vermittelst des tragbaren Durchganginstruments," vol. ii.
516	Argelander, F. W. A.	1869	160	Prin. Stars.	R.A.; Decl.	1875·0	"Mittlere Positionen von 160 Sternen abgeleitet aus altern und neuern Beobachtungen." In "Astronomische Beobachtungen auf der Sternwarte zu Bonn," vol. vii. Bonn, 1869.
517	Safford, T. H.... ...	1873	801	B.A.C. Stars.	R.A. XII hours to II hours; Decl. +30° to +60°	1875·0	"Catalogue of the Mean Declinations of 981 Stars between Twelve Hours and Twenty-six Hours of Right Ascension, and Thirty Degrees and Sixty Degrees of North Declination, Washington, 1873." The R.A.s are considered but approximate. The Declinations were prepared for Latitude Observations by the Engineers engaged on the U.S. Lake Survey.
518	Safford, T. H.... ...	1873	180	Not in B.A.C.	R.A. XII hours to II hours; Decl. +30° to +60°	1875·0	

519	Struve, F. G. W. (Lindsay, Lord) ...	1876	2775	Double Stars.	R.A.; Decl.	1875·0	"A Summary or Index of the Measurements in the 'Stellarum Duplicium et Multiplicium Mensuræ Micrometricæ, F. G. W. Struve, 1837'; 'Additamentum in F. G. W. Struve "Mensuras Micrometricas Stellarum Duplicium, editas anno 1837, Petrop. 1840."' Including all the Stars in the 'Synopsis Observationum de Stellis Duplicibus in Specula Dorpatensi annis a 1814 ad 1824, per instrumenta minora perfectorum,' p. 305; and in the 'II. Mensuræ Micrometricæ,' p. 315. Re-arranged in order of R.A. and positions brought up to 1875." Dun Echt Observatory Publications, vol. i. Dun Echt, Aberdeen, 1876.
520	Dorna, A.	...	634	Prin. Stars.	R.A.; Decl.	1880·0	"Catalogo delle 634 Stelle Principali visibili alla Latitudine media di 45°." In "Turin Acad. Mems.," 2nd Series, vol. xxvi.
521	Herschel, J. F. W. ...	1867	812	Double Stars.	R.A.; N.P.D.	1880·0	"A Synopsis of all Sir Wm. Herschel's Micrometrical Measurements." In "Ast. Soc. Roy. Mems.," vol. xxxv.
522	Wilson, J. M., and Seabroke, G. M.	1875	447	Double Stars.	R.A.; Decl.	1880·0	"Catalogue of Micrometrical Measurements of Double Stars made at the Temple Observatory." In "Ast. Soc. Roy. Mems.," vol. xlii.
523	Gledhill, J.	1875	484	Double Stars.	R.A.; Decl.	1880·0	"Measures of 484 Double Stars made at Mr. Edward Crossley's Observatory." In "Ast. Soc. Roy. Mems.," vol. xlii.
524	U.S. Coast Survey (Peirce) ...	1875	2,164	To 5·9 Mag.	Approx. R.A.; Approx. Decl. — 1° 48′ to +88° 40′	1880·0	"A List of Stars for Observations of Latitude." Contains all stars to the 5·9 Mag., inclusive, that are found in Argelander's Durchmusterung between 88° 40′ North and 1° 48′ South declination. The magnitudes reduced to a scale of "equable distribution," according to Peirce's method in Harvard Coll. Obs. Annals. In "U.S. Coast Survey Report, 1873, Washington, 1875," p. 139.
525	Cincinnati Catalogue... (Howe.)	1876	50	Double Stars.	R.A.; Decl.	1880·0	"Catalogue of 50 New Double Stars, discovered with the 11-inch Refractor of the Cincinnati Observatory." Gives measures of position and distance. Publications of the Cincinnati Observatory, No. 1. Cincinnati, 1876.
526	Mitchel, O. M. (Stone, O.) ...	1876	176	Double and Triple Stars.	R.A.; N.P.D.	1880·0	"Micrometrical Measures of 176 Double and Triple Stars, observed with the 11-inch Refractor of the Cincinnati Observatory, by O. M. Mitchel." From observations in the years 1846–1848. Publications of the Cincinnati Observatory, No. 2. Cincinnati, 1876.
527	Proctor, R. A.... ...	1866	1500	To 5 Mag.	R.A.; Decl. Approx.	1880·0	"Handbook of the Stars," London, 1866, p. 47. Stars are arranged according to constellations.

Catalogues of Proper Motions.

No.	Name.	Date Published.	Number of Stars.	Description of Stars.	Co-ordinates.	Notes.
1	Mayer, Tobias... ...	1775	80	Prin. Stars.	Proper Motions in R.A. and Decl.	In "Opera Inedita," vol. i. p. 80. Gottingæ, 1775.
2	Lalande, J.	...	20	Prin. Stars.	Proper Motion in Decl.	In "Conn. des Temps, 1796."
3	Triesnecker, F. de Paula	1791	67	Prin. Stars.	Proper Motions in R.A. and Decl.	De motibus propriis Fixarum in Ascensionem rectam et Declinationem Disquisitio. Hell's "Vienna Ephemeris, 1792," p. 380.
4	Hell, M.	1791	17	Prin. Stars.	Latitudes.	Catalogus quarundum Fixarum latitudinis variabiles habentium. "Vienna Ephemeris, 1792," p. 392.
5	Zach, De	1792	92	Prin. Stars.	Proper Motion in R.A.	In "Fixarum Præcipuarum Catalogus Novus. Gothæ, 1792." Proper Motions according to Maskelyne, T. Mayer, and Triesnecker.
6	Zach, De	1792	81	Prin. Stars.	Proper Motion in Decl.	In "Fixarum Præcipuarum Catalogus Novus. Gothæ, 1792." Proper Motions according to T. Mayer and Triesnecker.
7	Piazzi, G.	1806	309	Prin. Stars.	Proper Motions in R.A. and Decl.	"Saggio sui Movimenti Proprii delle Fisse." In "Bologna Ist. Nat. Ital. Mem. Fis. e Mat.," vol. i. pt. 1.
8	Lalande, J.	...	516	Prin. Stars.	Proper Motion.	In "Conn. des Temps, 1808."
9	Pond, J., Ast. Roy. ...	...	45	Prin. Stars.	Proper Motion.	"Catalogue of the Proper Motions of 45 Stars, with the amount from 1756 to 1813." In "Greenwich Observations, 1820–22."
10	Baily, F.	1833	314	Prin. Stars.	Proper Motions in R.A. and Decl.	"On the Proper Motion of the Fixed Stars." In "Ast. Soc. Roy. Mems.," vol. v.
11	Argelander, F. G. A. ...	1835	560	To 8 Mag.	Proper Motions in R.A. and Decl.	"DLX. Stellarum Fixarum Positiones Mediæ ex observationibus Aboæ habitis deduxit." Helsingfors, 1835.
12	Taylor, T. G.	1844	732	...	Proper Motions in R.A. and Decl.	"Proper Motion of the Fixed Stars." In "Appendix to the Madras Gen. Cat. of 11,015 Stars."
13	Galloway	1847	81	Prin. Stars.	Proper Motions in R.A. and Decl.	On the Proper Motion of the Solar System. "Phil. Trans., 1847," p. 106.
14	Main, R.	1851	877	Prin. Stars.	Proper Motions in R.A. and N.P.D.	"Proper Motions of the Stars contained in the Greenwich 12-year Catalogue of 2,156 Stars deduced by comparison with the results of Bradley's Observations as given in the 'Fund. Ast.' for the Epoch 1755," Part 1. Stars in the Gr. Cat. of 1,439 Stars. In "Ast. Soc. Roy. Mems.," vol. xix.
15	Main, R.	1851	293	Prin. Stars.	Proper Motions in R.A. and N.P.D.	Part 2. Stars in Gr. 12-year Cat. not included in the Cat. of 1,439 Stars. In "Ast. Soc. Roy. Mems.," vol. xix.

16	British Association Catalogue (Baily).	1845	8,377	To 8 Mag.	Proper Motions in R.A. and N.P.D.	Gives Proper Motions for most of the stars, specially determined for this Catalogue.
17	Struve, F. G. W. ..	1852	384	Prin. Stars.	Proper Motions in R.A. and Decl.	"Catalogue of the Proper Motions of 384 of Bradley's Stars." In "Stell. Fix. Imp. Dup. et Mult. Pos. Med.," p. cliii.
18	Oeltzen, W.	1855	1,696	...	Proper Motions in R.A. and Decl.	The Proper Motions of 1,696 Stars deduced from a comparison of Lalande's "Histoire Céleste," reduced to 1842·0 and Argelander's Northern Zones. In "Vienna Acad. K.K. Sitzungsber," vol. xvi. p. 540.
19	Mädler, J. H.	1856	3,222	Bradley's Stars.	Proper Motions in R.A. and Decl.	"Die Eigenbewegungen der Fixsterne in ihrer Beziehung zum Gesammtsystem von J. H. Mädler," Dorpat, 1856. "Dorpat Observations," vol. xiv. p. 14.
20	Robinson, T. R. ...	1859	1,783	To 8 Mag.	Proper Motions in R.A. and N.P.D.	Armagh Catalogue of 5.345 Stars, p. xxxiv.
21	Main, R.	1860	270	Prin. Stars.	Proper Motions in R.A. and N.P.D.	"Proper Motions of Stars of the Gr. Cat. of 1,576 Stars for 1850 not included in the Gr. 12-year Cat." In "Ast. Soc. Roy. Mems.," vol. xxviii.
22	Airy, G. B., Ast. Roy.	1860	113	Prin. Stars.	Proper Motions in R.A. and N.P.D.	"On the Movement of the Solar System in Space." In "Ast. Soc. Roy. Mems.," vol. xxviii.
23	Laugier, E.	1860	140	Fund. Stars.	Proper Motions in N.P.D.	"Détermination des Distances Polaires et des Mouvements propres de 140 Étoiles Fondamentales." "Comptes Rendus," vol. xliv.; and "Acad. des Sciences Méms," vol. xxvii. pt. 2.
24	Quetelet, Er.	1861	343	Prin. Stars.	Proper Motion in R.A.	"Essai sur le Mouvement Propre en Ascension Droite de quelques Étoiles." In "Belgium Acad. R. Mems.," vol. xxxii.
25	Gould, B. A.	1862	48	Circumpolar.	Proper Motions in R.A. and Decl.	"On the Mean Places for 1855·0 of 48 Circumpolar Stars." "Gould's Ast. Jour.," vol vi. p. 78.
26	Dunkin, E.	1864	1,167	Prin. Stars.	Proper Motions in R.A. and N.P.D.	"On the Movement of the Solar System in Space, deduced from the Proper Motions of 1,167 Stars." In "Ast. Soc. Roy. Mems.," vol. xxxii.
27	Stone, E. J.	1865	460	...	Proper Motions in R.A. and N.P.D.	"Proper Motions of the Stars in the Greenwich Seven-year Catalogue of 2,022 Stars for 1860, not included in the Greenwich Twelve-year and Six-year Catalogues." In "Ast. Soc. Roy. Mems.," vol. xxxiii.
28	Argelander, F. W. A....	1869	250	To 8 Mag.	Proper Motions in R.A. and Decl.	Catalogue of the Proper Motions of 250 Stars. "Untersuchungen uber die Eigenbewegungen von 250 Sternen nach ältern und den auf der Bonner Sternwarte angestellten Beobachtungen." In "Bonn. Ast. Beob.," vol. vii.
29	Stone, E. J.	1875	406	Southern Stars.	Proper Motions in R.A. and N.P.D.	"Proper Motions of 406 Southern Stars deduced from a comparison of the places of the Cape Catalogue of 1,159 Stars for 1860 with those of certain earlier Catalogues." In "Ast. Soc. Roy. Mems.," vol. xlii.

ABOUL HHASSAN'S *Table of the Longitudes and Latitudes of* 240 *Stars,*

For the Commencement of the Hegira (*Thursday, July* 15, *Noon,* A.D. 622). (Sédillot).

No.	Name after the Arabian Author.	Mag.	Long. s	Long. °	Long. ′	Lat. °	Lat. ′	Bayer's Letter, or Flamsteed's No.
1	La Médiale des Autruches, ou le Ventre de la Baleine.	3*p*	0	1	38	−20	00	ζ Ceti.
2	Celle qui est entre les épaules d'Andromède.	2*p*	0	1	13	+24	30	δ Andromedæ.
3	Alzhalime, qui est la dernière du Fleuve	1	0	6	47	−13	20	θ Eridani.
4	Le Nœud des Deux-fils (des Poissons) ...	3*p*	0	9	8	− 8	30	α Piscium.
5	Le Ventre du Grand Poisson, qui est près d'Andromède.	...	0	10	29	+26	20	β Andromedæ.
6	L'Australe des Chérathaine	3	0	13	18	+ 7	20	γ Arietis.
7	La Boréale des Chérathaine	...	0	14	15	+ 8	20	β Arietis.
8	La Main-teinte, ou Bosse du Chameau ...	3	0	14	28	+51	40	β Cassiopeiæ.
9	L'Œil de la Baleine	4	0	16	50	− 8	10	ν Ceti.
10	La Barbe ou Mandibule de la Baleine (sur le Menton).	3*p*	0	17	9	−14	00	δ Ceti.
11	Al-Nâthihh, cornupeta (la Brillante de la Mouche).	3	0	17	18	+10	00	α Arietis.
12	La Poitrine de Cassiopée	3	0	17	28	+46	45	α Cassiopeiæ.
13	Le Sommet du Triangle	3	0	17	38	+16	30	α Trianguli.
14	La Bouche de la Baleine	3	0	19	18	−11	30	γ Ceti.
15	La Boréale des Anisaine, ou la Boréale de la Base du Triangle.	2	0	22	38	+20	40	β Trianguli.
16	La Cuisse du Cassiopée	3	0	23	18	+49	00	γ Cassiopeiæ.
17	Anâkhal-ardhe, ou le Pied d'Andromède	3	0	23	28	+28	10	γ Andromedæ.
18	L'Australe des Anisaine, ou l'Australe de la Base du Triangle.	3	0	23	28	+19	00	γ Trianguli.
19	La Main tronquée (elle est de la Barbe, ou Machoire inférieure de la Baleine)	3	0	24	18	−12	20	α Ceti.

Notes.

The Longitudes are those of the "Almagest," increased for 105 stars by 6° 40′, for 102 stars by 6° 38′, and the remaining Longitudes differ from Ptolemy by 6° 36′, 6° 37′, 6° 39′, and 6° 42′.

The Latitudes are identical with Ptolemy's; all the stars, without exception, being in his Catalogue.

I have marked North and South Latitude by plus and minus signs, and have designated the Signs of the Zodiac numerically. In the Magnitudes, "*g*" means *grand*, and "*p*" *petit*; so that "3*g*" corresponds to Argelander's 3–2, and "3*p*" would mean 3–4.

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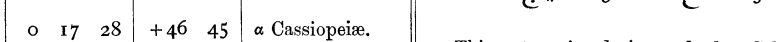
2. Longitude Ptolemy +6° 38′ = 1° 58′. The number 13′ in Sédillot is most probably erroneously translated for 58′, the Arabic characters for the two numbers differing only by a few dots:



3. This star is designated by Schjellerup, in "Al-Sûfi," as α *Eridani*; but Baily, in his edition of Ptolemy's Catalogue, gives it as θ *Eridani* (see his note to Star 805, Ptolemy's Catalogue). Ptolemy, Al-Sûfi, Chrysococca, Aboul Hhassan, Ulugh Beigh, and Al-Tizini, all designate this star as "1st magnitude," though no such bright star is to be found in the portion of the heavens indicated. Baily's suggestion that the magnitude has changed is very improbable. He says that the 1st magnitude star *Achernar*—the real "Ultima Fluvii"—was not visible at the latitude of Alexandria.

20	L'Australe d'Albothaine...	5	0	26	19	+ 1 10	ρ Arietis.
21	(Wanting)	3	0	27	2	+45 30	δ Cassiopeiæ.
22	(Wanting)	5	0	28	00	+ 4 50	ε Arietis.
23	La Médiale d'Albothaine	4	1	00	30	+ 1 40	δ Arietis.
24	L'Australe de la Section du Taureau ...	4 *g*	1	00	58	− 9 15	*o* Tauri.
25	(Wanting)	4	1	1	18	− 8 30	ξ Tauri.
26	La Boréale, ou Milieu de la Section ...	5	1	2	38	− 7 15	S. Tauri.
27	Maëfhame-al-Tsuriach, le poignet des Pleiades.	3	1	3	18	+40 30	Cluster χ Persei.
28	La Tête de Méduse, ou Al-Rhôl ...	...	1	6	18	+23 00	β Persei.
29	La Première des Pleiades (c'est la Boréale du côté d'Al-Rhôl)	5	1	8	48	+ 4 30	Fl. 19 Tauri.
30	L'Épaule de Persée	3	1	9	18	+35 30	γ Persei.
31	La Poitrine du Taureau	3	1	10	18	− 8 00	λ Tauri.
32	L'Extérieure au Nord des Pleiades ...	4	1	10	18	+ 5 00	Fl. 18 Tauri.
33	La Boréale du Haut de l'Épaule des Pleiades (c'est celle qui est en avant)	3	1	10	45	+12 00	*o* Persei.
34	Le Côté de Persée	2	1	11	28	+30 00	α Persei.
35	L'Australe du Haut de l'Épaule des Pleiades (c'est la Dernière).	...	1	12	58	+11 10	ζ Persei.
36	Le Genou de Persée	3	1	15	17	+19 15	ε Persei.
37	L'Angle du Lam grec (le Lambda) ...	3	1	15	38	− 5 45	γ Tauri.
38	L'Œil Boréale du Taureau	1	1	18	28	− 8 00	ε Tauri.
39	Aldebaran, ou le Hhadie, le Conducteur	3	1	19	18	− 5 10	α Tauri.
40	La Sixième de Al-Taje, la Couronne Royale.	3	1	21	27	−15 50	π^1 Orionis.
41	La Cheville du Pied Gauche du Cocher	1	1	26	28	+10 10	ι Aurigæ.
42	Le Pied d'Orion (Rigel)...	4	1	26	30	−31 30	β Orionis.
43	Al-Anze la Chèvre	2	1	28	37	+20 40	ε Aurigæ.
44	L'Épaule Gauche d'Al-Jouza (d'Orion)...	3	2	00	38	−17 30	γ Orionis.
45	Le Ventre du Lièvre	...	2	1	28	−44 20	β Leporis.
46	Al-Aioukhe (la Brillante de la Chèvre)	...	2	1	37	+22 30	α Aurigæ.
47	La Première de la Ceinture d'Orion ...	...	2	2	00	−24 10	δ Orionis.
48	La Corne attachée (boréale) du Taureau. Cornu alligatum.	...	2	2	20	+ 5 00	β Tauri.

The latitude of this star in Ptolemy = −53° 30′; in Chrysococca (quoting Persian tables) and Aboul Hhassan it is given erroneously as −13° 20′. This error of 40° occurring in Arabic and Persian tables differing 120 years in date is curious. It does not appear to exist in any edition of the "Almagest," but it is explicable through mistranslation or confounding of the Arabic characters*:

ج = 13 ن = 53

7. Longitude of Ptolemy +6° 38′ = 14° 18′. The difference of 15′ for 18′ is difficult to explain, the Arabic characters for these numbers being quite dissimilar.

9. Schjellerup, in Al-Sûfi, gives this star as ξ^2 *Ceti*; but *ν Ceti*, as suggested by Baily, is the only bright star in the "Eye of the Whale."

17. Latitude in Ptolemy = +28° 00′.

21. Longitude differs 6° 42′ from Ptolemy.

28. It is singular the magnitude of *Algol* should be omitted by Aboul Hhassan, and it suggests his knowledge of its variability.

30. Latitude Ptolemy = +34° 30′. The discrepancy of 35° for 34° is probably due to confounding the characters in the original Arabic:

ل = 34 ك = 35

33. Longitude Ptolemy +6° 38′ = 10° 48′. The difference of 45′ for 48′ is not easily explained. Aboul Hhassan's longitudes of this star and No. 7 differ from Ptolemy by +6° 35′.

35. Latitude Ptolemy = +11° 00′.

38. Latitude Ptolemy = −3° 00′. This discrepancy of 8° for 3° in Aboul Hhassan is clearly due to Arabic mistranslation:

ج = 3 ح = 8

The magnitudes of 38 and 39 have been interchanged.

* It is strange that Delambre, in giving Chrysococca's Catalogue, should not have noticed this error.

No.	Name after the Arabian Author.	Mag.	Long.			Lat.		Bayer's Letter, or Flamsteed's No.
			s	°	′	°	′	
49	Le Corps du Lièvre	...	2	2	30	...		α Leporis.
50	L'Antérieure d'Anourai Al-Arheribah, ou les Deux Brillantes des Corbeaux.	...		...		...		444 Lacaille.
51	Al-Hakheah, ou la Tête d'Orion ...	...	2	3	40	−13	50	λ Orionis.
52	La Seconde de la Ceinture (d'Orion) ...	...	2	4	00	−24	50	ε Orionis.
53	La Corne Australe du Taureau	3	2	4	18	− 2	30	ζ Tauri.
54	La Troisième de la Ceinture (d'Orion) ...	...	2	4	49	−25	40	ζ Orionis.
55	Le Genou (d'Orion)	3 *g*	2	6	50	−33	30	κ Orionis.
56	Al-Judie (la Brillante de la Queue de la Petite Ourse)	3	2	6	50	+66	00	α Ursæ Min.
57	L'Épaule d'Orion (la Droite)	1	2	8	40	−17	00	α Orionis.
58	L'Épaule Droite du Cocher	2	2	9	28	+20	00	β Aurigæ.
59	Le Poignet Droit du Cocher	3	2	9	30	+13	20	θ Aurigæ.
60	La Première d'Al-Haneah (c'est la boréale)	4 *g*	2	13	10	− 1	30	η Geminorum.
61	La Seconde d'Al-Haneah...	4	2	14	50	− 1	5	μ Geminorum.
62	Le Pied du Chien	3	2	16	18	−13	45	ζ Can. Maj.
63	La Troisième d'Al-Haneah	3 *p*	2	16	19	− 3	30	ν Geminorum.
64	Merzame Al-Abour	4	2	17	40	−41	20	β Can. Maj.
65	La Quatrième d'Al-Haneah	3	2	18	40	− 7	30	γ Geminorum.
66	Le Genou du Premier des Gémeaux ...	3 *p*	2	19	40	+ 1	30	ε Geminorum.
67	La Cinquième d'Al-Haneah	4	2	21	20	−10	30	ξ Geminorum.
68	Soheil al Iemen (Canope)	1	2	23	50	−75	00	α Argûs.
69	Chiera-al-Abour (Sirius transiens) ...	1	2	21	18	−59	10	α Can. Maj.
70	Al-Sukkane, l'Ancre Boréale	3	2	26	50	−65	40	557 Lacaille.
71	Le Gemeau Boréal, ou le Bras Antérieur (c'est le boréal).	3	2	29	58	+ 9	40	α Geminorum.
72	La Boréale des Adzara. Vierges ...	3	3	00	20	−51	30	ε Can. Maj.
73	La Boréale des Adzara, des Vierges ...	3	3	1	20	−46	10	o^2 Can. Maj.
74	Chiera Al-Rhomeisha	4	3	1	38	−14	00	β Can. Min.
75	Le Bras Étendu	4	3	3	20	+ 6	15	β Geminorum.

Notes—continued.

40. This star is given by Schjellerup in Al-Sûfi as π^3 *Orionis*. According to the maps of the S. D. U. K. the position agrees best with π^1 *Orionis* as given by Baily.

41. } The magnitudes of these stars have been
42. } interchanged.

50. 444 Lacaille is the only star, of those designated by Al-Sûfi as forming *Al-Arheribah*, or *Al-Agribat*, which has a longitude suitable to the position given by Hhassan to No. 50 in his Catalogue. Longitude Ptolemy (Liechtenstein) +6° 40′ = 2^s 3° 40′.

51. The latitude agrees with Al-Sûfi, but differs from all editions of the "Almagest." See Baily's note to Star 734 Ptolemy's Catalogue, in which he says "there is probably a mistake in all the copies."

60. } Al-Sufi and Ulugh Beigh restrict the name
61. } *Al-Haneah* to the two stars 65 and 67. Al-
63. } Tizini (Hyde's "Commentary on Ulugh
65. } Beigh," p. 79) includes five stars in *Al-*
67. } *Haneah*. Ideler derives the name from the verb "to bend," and Sprenger gives the meaning as "curved." The five stars η, μ, ν, γ and ξ *Geminorum* certainly form a curved line, and it would therefore seem probable that the Arabs Hhassan and Al-Tizini have applied the name *Al-Haneah* more correctly than the Persians Al-Sufi and Ulugh Beigh. Schjellerup says* that Kazimirski's signification of the word, "Name of 5 stars disposed in a series in the left arm of *Orion*," is evidently false. But if we read "*near* the left arm of *Orion*," it would be correct

61. Latitude Ptolemy = −1° 15′.

* Schjellerup's "Al-Sûfi," note.

76	La Médiale des Adzara, des Vierges ...	3	3	3	20	−48	45	δ Can. Maj.
77	Celle qui suit Soheil (Canope)	3 *p*	3	5	36	−71	45	579 Lacaille.
78	Al-Rhomeisha	1	3	5	50	−16	10	α Can. Min.
79	La Restante des Adzara, ou Queue du Chien.	3	3	8	50	−50	40	η Can. Mag.
80	Ters-Al-Sefinah, le Bouclier du Navire	4 *g*	3	13	00	−47	15	κ Argûs.
81	La Troisième du Navire	4 *g*	3	15	28	−45	00	ξ Argûs.
82	Al-Natsrah, dite Al-Maalef, l'Etable ...	...	3	17	00	+00	40	ϵ Cancri (Præsepe)
83	L'Externe de la Tête de l'Hydre, vers le Midi.	3	3	19	8	−23	15	30 Monocerotis.
84	La Queue du Dragon	3 *p*	3	19	50	+56	55	λ Draconis.
85	La Deuxième du Navire	3	3	20	18	−43	20	ι Argûs.
86	La Bouche de l'Hydre	4	3	20	8	−14	15	η Hydræ.
87	La plus Brillante des Deux-Veaux, Ferkhadaine.	...	3	23	50	+72	50	β Ursæ Min.
88	La Première d'Al-Naeche, ou le Dos de la (Grande) Ourse.	...	3	24	20	+49	00	α Ursæ Maj.
89	La Machoire inférieure, ou la Barbe de l'Hydre.	4 *g*	3	24	28	−12	00	ζ Hydræ.
90	Le Tapis (ou peut-être le Pont) du Navire	...	3	27	50	−18	20	δ Argûs.
91	La Boréale d'Al-Tharf	4	3	27	50	+ 7	30	λ Leonis.
92	L'Australe d'Al-Tharf	4	3	28	20	− 5	40	κ Cancri.
93	La Boréale d'Al-Naeche, ou l'Epigastre de la (Grande) Ourse.	3 *g*	3	28	50	+44	30	β Ursæ Maj.
94	L'Origine du Col de l'Hydre (du côté de la Tête).	4 *p*	3	29	58	−13	40	θ Hydræ.
95	L'Australe de la Tête du Lion	3	4	00	50	+ 9	30	ϵ Leonis.
96	La Cachée d'Al-Ferkhadaine	3	4	2	50	+74	50	γ Ursæ Min.
97	Celle qui est sous le Tapis du Navire ...	...	4	6	38	−63	50	ζ Argûs.
98	Soheil, le Solitaire, ou la Vertèbre de l'Hydre.	...	4	6	40	−20	30	α Hydræ.
99	La Boréale du Front du Lion	3	4	6	48	...		ζ Leonis.
100	L'Australe des deux Médiales du Front du Lion.	3		...		...		η Leonis. (?)
101	L'Épaule du Lion	...	4	8	50	+ 8	30	γ Leonis.

62. Latitude Ptolemy = −53° 45′. The error of 13° for 53° is clearly due to mistranslation of the Arabic

ثلث = 13 for نجّ = 53.

63. Longitude of Ptolemy + 6° 39 (occasionally used by Hhassan as precessional correction) = 16° 49′. It is not impossible that the discrepancy of 19′ for 49′ may be due to confounding the Arabic characters

يط = 19 for صط = 49;

but it is not so probable as that it is a clerical error.

69. Longitude of Ptolemy + 6° 38′ = 24° 18′. From the fact of the stars being arranged in Hhassan's Catalogue in order of longitude, there can be no doubt that the error of 21° 18′ for 24° 18′ is due to translator or printer. It is not probable that the Arabic characters for 21 and 24 have been confounded. Latitude of Ptolemy = 39° 10′. Hhassan's or Sédillot's erroneous latitude of *Sirius*, 59° 10′, is most probably due to mistaking the Arabic

لط = 39 for نط = 59.

85. Longitude of Ptolemy + 6° 38′ = 20° 58′. The longitude 20° 18′ given by Sédillot is probably an Arabic error of

يح = 18 for نح = 58.

86. Longitude of Ptolemy + 6° 38′ = 22° 8′. From this star's place in the Catalogue, the longitude 20° 8′ is no doubt a mistake. The number 20 being represented in Arabic by *one* letter, and 22 by *two*, does not suggest the source of this error.

90. Latitude of Ptolemy = −58° 20′. Sédillot's latitude is a mistranslation of the Arabic

يح = 18 for نح = 58.

No.	Name after the Arabian Author.	Mag.	Long.			Lat.		Bayer's Letter, or Flamsteed's No.
			s	°	′	°	′	
102	Le Cœur du Lion	1	4	9	8	+00	10	α Leonis.
103	Al-Jaune	...	4	13	50	+13	30	ϵ Ursæ Maj.
104	La Première de la Crinière du Lion (ce sont les Rhhartsane).	...	4	20	50	+13	40	δ Leonis.
105	Al-Nâchir	...	4	20	50	−14	30	ϵ Argûs.
106	La Seconde de la Crinière	3	4	23	00	+ 9	40	θ Leonis.
107	Al-Anâkhe	...	4	24	38	+55	40	ζ Ursæ Maj.
108	L'Antérieure de la Ligne	3 *p*	4	24	38	−24	40	μ Hydræ.
109	La Cuisse du Lion	3	4	26	58	+ 5	50	ι Leonis.
110	La Dernière de la Ligne	3	4	29	38	−22	10	ν Hydræ.
111	Al-Sharfah	1	5	1	8	+11	50	β Leonis.
112	Le Foie du Lion	3	5	4	30	+39	45	12 Can. Ven.
113	Le Côté Austral d'Al-Aoua, de Bootes ...	3	5	5	40	+00	10	β Virginis.
114	Al-Khaid, le Gouverneur	2	5	6	8	+54	00	η Ursæ Maj.
115	La Médiale du Côté Austral d'Al-Aoua, de Bootes.	3	5	15	00	+ 1	10	η Virginis.
116	La Suivante des Deux Loups	3	5	15	00	+84	50	ζ Draconis.
117	L'Australe de ces Deux Loups	3	5	16	40	+78	00	η Draconis.
118	Le Côté Boreal d'Al-Aoua, de Bootes ...	3	5	18	50	+15	10	ϵ Virginis.
119	Al-Dabahh	3	5	19	20	+70	00	ι Draconis.
120	L'Angle d'Al-Aoua, de Bootes	3	5	19	50	+ 2	50	γ Virginis.
121	L'Aile droit du Corbeau...	3	5	20	8	−14	50	γ Corvi.
122	Le Col du Corbeau	3	5	21	00	−19	40	ϵ Corvi.
123	La Médiale du Côté Boréal d'Al-Aoua, de Bootes.	3	5	22	00	+ 8	30	δ Virginis.
124	(La Vertèbre Dorsale) du Corbeau ...	3 *p*	5	22	00	−21	40	α Corvi.
125	(L'Aile Gauche du Corbeau)	3	5	23	17	−12	30	δ Corvi.
126	L'Épaule d'Al-Shaiahh, du Crieur ...	3	5	26	20	+49	00	γ Boötis.
127	Le Pied du Corbeau	3	5	27	7	−18	10	β Corvi.

97. } The longitudes of these stars in Ptolemy are
98. } identical = 4ˢ 0° 00′, but Aboul Hhassan gives for the first, Ptolemy + 6° 38′, and for the latter, Ptolemy + 6° 40′. This is quite inexplicable.

100. Having nothing but the description by which to identify this star, we cannot be very certain of it; but probably η *Leonis* is described, in which case the longitude would be 4ˢ 7° 20′ and latitude + 4° 30′.

103. This star, *Al-Jaune*, is stated by Al-Sûfi to be in *Ursa Major*, and the longitude is correct for ϵ *Ursæ Majoris*; but the latitude given, viz. + 13° 30′, places it far from this constellation. Ptolemy's latitude for ϵ *Ursæ Majoris* = + 53° 30. We have therefore in Hhassan a probable Arabic error of

يج = 13 for نج = 53.

105. The longitude of this star agrees with Ptolemy (editions of Grynæus and Halma) + 6° 40′ for the 31st star in *Argo*. From the declination of *Al-Nâchir* given by Hhassan in his second Catalogue, being −39° 4′, I find the place to be that of ϵ *Argûs*. The latitude therefore is a mistake of 14° 30′ for 54° 30′, or, in the Arabic,

يل = 14 for نل = 54.

Mr. Baily says, in his notes to Ptolemy's Catalogue, that two editions of Ptolemy—Liechtenstein and Trapezuntius—place this star in the *Constellation Cancer*. As the latitude in the former edition is 54° 30′, and in the latter 51° 30′, with a marginal reading of 54° 30′, he must have meant the *Sign Cancer*.

The name *Al-Nâchir* is not to be found in Ideler's "Untersuchungen über den Ursprung und der Bedeutung der Sternnamen," nor the

128	L'Australe de l'Angle d'Al-Aoua ...	4	5	28	00	+25	00	υ Boötis.
129	La Lance du Lancier	3	5	28	00	+28	00	η Boötis.
130	Le Sommet du Fémur d'Adzara... ...	3	6	1	28	+ 8	40	ζ Virginis.
131	La Suivante du Triangle de l'Hydre ...	3	6	2	00	−31	20	28 Crateris.
132	Al-Simak-al-Aezal, le Delaissé ...	1	6	3	20	− 2	00	α Virginis.
133	Al-Simak-al-Ramihh, le Lancier ...	1	6	3	40	+31	30	α Boötis.
134	La Ceinture d'Al-Shaiahh, du Crieur ...	3	6	6	37	+40	15	ϵ Boötis.
135	L'Épaule Gauche du Centaure	3	6	12	48	−25	40	ι Centauri.
136	L'Épaule Droite du Centaure	3	6	12	18	−22	30	θ Centauri.
137	La Boréale d'Al-Rhafar, du Garde du Gardien.	4	6	13	20	+ 7	30	ι Virginis.
138	L'Australe d'Al-Rhafar	4	6	14	00	+ 2	40	κ Virginis,
139	L'Articulation du Pied Droit du Centaure	...	6	16	37	−51	10	ν Centauri.
140	La Médiale d'Al-Rhafar...	4	6	16	40	+ 5	30	λ Virginis.
141	Le Tarse Gauche du Centaure	...	6	17	50	−55	20	ζ Centauri.
142	La Brillante d'Al Fekah	...	6	21	20	+44	30	α Coronæ.
143	La Cheville du Pied Droit du Centaure	...	6	22	00	−51	40	ξ Centauri.
144	Le Plateau Austral	3 *g*	6	24	38	+00	40	α Libræ.
145	Le Commencement du Corps Humain ...	3	6	24	38	−33	33	λ Centauri.
146	L'Origine du Col du Serpent	3 *p*	6	28	40	+34	15	β Serpentis.
147	Le Plateau Boréal	3 *g*	6	28	50	+ 8	50	β Libræ.
148	L'Extrémité de la Queue de l'Hydre ...	3 *p*	6	29	18	+17	40	π Hydræ.
149	Le Bras du Centaure	3	6	29	28	...		κ Centauri.
150	Hhadhâr (c'est le Hhanatse), le Parjure	*g*		...		...		γ Centauri (?).
151	Le Col du Serpent	3 *p*	7	00	18	+25	20	α Serpentis.
152	La Tempe du Serpent	3 *p*	7	1	00	+36	30	γ Serpentis.
153	Le Pied d'Al-Fahed, du Léopard ou du Loup.	3	7	4	38	−24	50	o Lupi.
154	L'Antérieure de la Main d'Al-Fahed ...	4 *g*	7	4	38	−21	15	ζ Lupi.
155	La Seconde de la Main d'Al-Fahed ...	3 *p*	7	10	18	−21	00	η Lupi.
156	L'Épaule d'Agenouillé, d'Hercule ...	3	7	10	18	+43	00	β Herculis.
157	Le Côté d'Hercule	3	7	10	28	+54	10	ζ Herculis.
158	La Boréale de la Couronne	3	7	12	57	+ 1	20	β Scorpii.

"Fundgruben des Orients;" neither can I find it in any Oriental work. Several distinguished Arabic scholars have informed me they are quite unacquainted with the word as applied to the stars.

114. Longitude of Ptolemy $+6° 38' = 6° 28'$. The discrepancy of 8′ for 28′ is not explicable through error in translation.

115. Longitude differs 6° 50′ from Ptolemy.

120. Schjellerup says "Sédillot is in error in supposing *Al-Aoua* (referred to here) to be in *Boötes*."

123. Longitude of Ptolemy $+6° 40' = 21° 00'$.

131. The description and latitude of this star accord with Ptolemy's 23rd star in *Hydra*, but the longitude of Ptolemy $+6° 40' = 5^s 22° 50'$; Hhassan gives it as $6^s 2° 00'$. This great discrepancy is very difficult to account for, but the following seems to me the most probable explanation:

The difference in longitude given by Hhassan of 6° 40′ in 484 years, between Ptolemy's epoch, A.D. 138, and the commencement of the Hejira, A.D. 622, gives an annual correction to the longitude of 49″·58. The epoch of Aboul Hhassan's 2nd and 3rd Catalogues is A.D. 1282. Reducing, therefore, Ptolemy's place to this epoch gives for the star under consideration a longitude of $6^s 1° 55'$, or, in round numbers, $6^s 2° 00'$, the very longitude we have in the Catalogue. Hhassan seems therefore to have unintentionally given to this star the longitude it would have at his own epoch, 1282. This differs 15° 50′ from Ptolemy, but the longitude of No. 148 differs nearly the same amount, namely, 15° 48′ from Ptolemy, or is about what it should be brought up also to 1282.

I therefore am inclined to infer that Hhassan did not take Ptolemy's Catalogue and reduce it to A.D. 622 by adding a fixed constant to the longitudes, but that the original Catalogue was for his own period, A.D. 1282, and that he reduced this back to 622—small arithmetical errors in the subtractions occasioning some of the slight variations in the amount by which the

No.	Name after the Arabian Author.	Mag.	Long.			Lat.		Bayer's Letter, or Flamsteed's No.
			s	°	′	°	′	
159	La Médiale de la Couronne	3	7	12	18	− 1	40	δ Scorpii.
160	L'Australe de la Couronne	3	7	12	18	− 5	00	π Scorpii.
161	Al-Wesne, ou le Jureur	1	7	15	00	−41	10	α Centauri.
162	Al-Niïâth-Al-Aouel, la Première des Entrailles.	3 *p*	7	17	17	− 8	45	σ Scorpii.
163	Le Genou Gauche	3	7	18	50	+51	50	ζ Ophiuchi.
164	Le Cœur du Scorpion	...	7	19	17	− 4	00	α Scorpii.
165	Al-Niïâth-Al-Tsanie, la Deuxième des Entrailles	3	7	21	8	− 5	30	τ Scorpii.
166	La Tête d'Agenouillé, d'Hercule ...	3 *p*	7	24	20	+37	30	α Herculis.
167	Le Premier Sphondyle	3	7	25	8	−	00	ε Scorpii.
168	Le Deuxième Sphondyle	4	7	26	40	−18	40	ζ^1 Scorpii.
169	Le Genou du Serpentaire	4	7	27	48	+ 7	30	η Ophiuchi.
170	Le Quatrième Sphondyle	3 *p*	7	29	50	−19	30	η Scorpii.
171	La Tête du Serpentaire	3 *g*	8	1	28	+36	00	α Ophiuchi.
172	L'Australe d'Al-Chaulah	3 *p*	8	3	37	−13	30	υ Scorpii.
173	La Boréale d'Al-Chaulah	3	8	4	8	−13	20	λ Scorpii.
174	L'Épaule du Serpentaire	3 *p*	8	4	37	+27	15	β Ophiuchi.
175	Le Cinquième Sphondyle	3	8	4	48	−18	30	θ Scorpii.
176	d'Al-Naaim Al-Waridah...	3 *p*	8	11	7	− 6	20	γ Sagittarii.
177	La Cheville du Pied Boréal du Sagittaire	3 *p*	8	13	20	−13	00	β Telescopii.
178	Al-Siïah du Nord (c'est la Boréale des Zhalimaines)	4	8	13	20	+ 2	50	μ Sagittarii.
179	La Poignée (de l'Arc) du Sagittaire, d'Al-Naaim Al-Waridah	3	8	14	20	− 6	30	δ Sagittarii.
180	Al-Siïah, du Midi, d'Al-Naaim-Al-Waridah	3 *g*	8	14	38	−10	50	ε Sagittarii.
181	L'Australe d'Al-Zhalimaine, ou le Pasteur	3	8	15	40	− 1	30	λ Sagittarii.
182	Al-Faukhe (elle fait partie d'Al-Naaim-Al-Shadirah)	4	8	19	40	− 3	50	φ Sagittarii.
183	L'Épaule du Sagittaire (d'Al-Naaim-Al-Shadirah)	3	8	22	00	− 3	10	σ Sagittarii.

longitudes generally differ from those of the "Almagest," and the stars 131 and 148 were unintentionally inserted without reduction.

This may perhaps help to explain some of the difficulties Mr. Stone experienced in examining this Catalogue.*

136. Longitude of Ptolemy +6° 38′ = 22° 18′. The position of this star in the Catalogue suggests that the discrepancy of 10° in Hhassan's longitude is not due to translator. It is not improbable, however, that in the original MS.

كب = 22 was mistaken for يب = 12.

145. Schjellerup gives this star as ζ *Centauri*, but according to Bayer's Atlas λ *Centauri* is the star described.

148. Longitude of Ptolemy +6° 38′ = 20° 8′. See *ante*, note to Star 131.

Latitude should be − (South).

149. In Bayer κ is the star in the arm of the Centaur, but in the maps S. D. U. K. it is designated η.

150. From the longitude of this star lying presumably between 29° 28′ and 0° 58′ (see note to the following star), it should be γ *Centauri*.

151. Longitude of Ptolemy +6° 38′ = 0° 58′. A probable error in translating the Arabic

نح = 58 for يح = 18.

152. The latitude differs 30′ from the editions of Ptolemy.

* *Monthly Notices*, vol. xxix. p. 102.

184	La Première d'Al-Khalaishe	4	8	22	20	+ 2 10	ξ^1 Sagittarii.
185	L'Aisselle du Sagittaire, d'Al-Naaim-Al-Shadirah	3	8	23	20	− 6 45	ζ Sagittarii.
186	Le Genou du Sagittaire	4 *p*	8	23	37	−18 00	α Sagittarii.
187	L'Aigle Tombant...	1	8	24	00	+ 2 00	α Lyræ.
188	L'Arrière de l'Épaule du Sagittaire, d'Al-Naaim-Al-Shadirah	4 *g*	8	24	13	− 4 30	τ Sagittarii.
189	Le Nerf du Sagittaire	4 *p*	8	24	18	−23 00	β Sagittarii.
190	La Brillante d'Al-Khalaishe.	4	8	25	48	+ 2 00	π Sagittarii.
191	L'Australe de Zhalimai-Al-Nasr, de l'Aigle.	3 *p*	8	27	50	+18 10	λ Aquilæ.
192	La Queue de l'Aigle	3	8	28	50	+36 20	ζ Aquilæ.
193	La Dernière d'Al-Khalaishe	4 *p*	8	29	28	+ 6 50	υ Sagittarii.
194	La Troisième des Externes de la Constellation Akhab, le Grand Aigle.	3 *p*	9	2	38	+25 00	δ Aquilæ.
195	La Boréale d'Al-Shardaine	4 *p*	9	4	00	−13 30	θ Sagittarii.
196	La Boréale d'Al-Zhalimai (Al-Nasr) ...	4 *p*	9	4	50	+20 00	ι Aquilæ.
197	L'Épaule de l'Aigle	3	9	9	50	+31 30	γ Aquilæ.
198	L'Aigle Volant	*g*	9	10	30	+29 10	α Aquilæ.
199	Le Col du Grand Aigle	3 *p*	9	11	30	+27 10	β Aquilæ.
200	Le Bec de la Poule, du Cygne	3 *p*	9	11	8	+49 20	β Cygni.
201	L'Antérieure de Saad-Al-Dzabihh, la Fortune de l'Egorgeur.	3 *p*	9	14	00	7 2	α^1 Capricorni.
202	La Deuxième de Saad-Al-Dzabihh ...	3 *p*	9	14		...	β Capricorni.
203	La Deuxième externe du Grand Aigle ...	3	9	15	28	+19 10	θ Aquilæ.
204	La Brillante de Saad-bela. La Fortune de la Valeur	4 *g*	9	21	20	+ 8 40	ϵ Aquarii.
205	L'Antérieure du Dos du Capricorne ...	4	9	23	18	...	θ Capricorni.
206	La Queue du Dauphin	4 *g*	9	24	18	+29 10	ϵ Delphini.
207	L'Australe du Côté Antérieur, des Nœuds	4 *g*	9	25	8	+32 00	β Delphini.
208	La Boréale du Côté Antérieur, des Nœuds	3 *p*	9	26	43	+33 50	α Delphini.
209	Celle qui suit le Dos du Capricorne ...	3 *p*	9	27	38	+00 50	ι Capricorni.
210	L'Australe du Côté qui est après les Nœuds.	4	9	27	58	−32 00	δ Delphini.

154. Longitude of Ptolemy +6° 38′ = 7° 38′. The error here of 4° for 7° is very probably due to confounding the Arabic

ه = 4 and ز = 7.

155. Longitude of Ptolemy +6° 38′ = 10° 48′. If this is an error in Hhassan of 18′ for 48′, it might possibly be due to badly written Arabic characters:

مح = 18 for مم = 48.

162. Latitude of Ptolemy = 3° 45′. Hhassan's latitude 8° 45′ is clearly due to bad writing or mistranslation of the Arabic:

ح = 8 for ج = 3.*

163. From the description and longitude which equals Ptolemy's +6° 38′, this star is ζ *Ophiuchi*. The latitude in Ptolemy is +11° 50′. The discrepancy in Hhassan's latitude is probably due to badly written Arabic, confounding

ب = 51 with يا = 11.

167. The longitude agrees with Ptolemy for ϵ *Scorpii*; the latitude therefore would be −11° 00′.

168. Al-Sûfi and Ulugh Beigh call this star the *third* Sphondyle.

175. Latitude in Ptolemy = 18° 50′. The Arabic characters for 30 and 50 might probably be confounded:

ل = 30 ن = 50.

* The Royal Astronomical Society possesses Persian MS. of Ulugh Beigh's Catalogue, which contains numerous errors in the characters,

ح and ج

having been confounded by the original transcriber.

No.	Name after the Arabian Author.	Mag.	Long. s	Long. °	Long. ′	Lat. °	Lat. ′	Bayer's Letter, or Flamsteed's No.
211	La Boréale du Côté qui est derrière les Nœuds.	3 *p*	10	00	8	+ 33	10	γ Delphini.
212	La Première de la Queue du Capricorne	3 *p*	10	1	30	− 2	10	γ Capricorni.
213	La Brillante Saad-Al-Sooud. La Fortune des Fortunes.	3 *p*	10	4	10	+ 8	50	β Aquarii.
214	La Poitrine du Cygne, (elle est d'Al-Fouaris, les Cavaliers).	3 *g*	10	5	8	+ 56	20	γ Cygni.
215	La Bouche d'Al-Fouaris, c'est (la Lèvre du Cheval) le Djaafalih.	3	10	12	00	+ 22	30	ε Pegasi.
216	La Brillante de Saad-Al-Mulk, la Fortune du Royaume.	3 *p*	10	13	00	+ 11	00	α Aquarii.
217	L'Australe d'Al-Fouaris	3	10	13	18	+ 44	00	ζ Cygni.
218	La Bouche du Poisson Austral ; Fomalhaut, ou la Première Grenouille.	1	10	13	40	+ 23	00	α Piscis Austr.
219	Al-Ridfe, ou la Queue de la Poule, du Cygne.	...	10	15	48	+ 60	00	α Cygni.
220	La Brillante de Saad-Al-Beham (c'est la Tête du Cheval).	3 *p*	10	16	00	+ 16	50	θ Pegasi.
221	La Première d'Al-Arhhebiah, les Tentes	3 *p*	10	16	10	+ 8	45	γ Aquarii.
222	La Seconde de la même	4 *g*	10	18	20	+ 10	45	π Aquarii.
223	Saad-Al-Arhhebiah, la Fortune des Tentes	3 *p*	10	18	39	+ 9	00	ζ Aquarii.
224	La Brillante de Saad-Al-Rhamâm (c'est le Col du Cheval).	3 *p*	10	25	30	+ 18	00	ζ Pegasi.
225	L'Australe de Saad-bari (c'est la Poitrine du Cheval).	4 *g*	11	2	48	+ 29	00	λ Pegasi.
226	L'Antérieure de celle qui suit le Détour de l'Eau.	4 *g*	11	3	18	+ 15	30	2 Ceti.
227	La Croupe du Cheval, ou l'Australe d'Al-Fazerhe Antérieur.	...	11	3	18	+ 19	40	α Pegasi.
228	ou le Genou du Cheval.	3	11	5	38	+ 35	00	η Pegasi.
229	L'Épaule du Cheval, ou la Boréale d'Al-Fazerhe.	...	11	8	49	+ 31	00	β Pegasi .

185. Longitude of Ptolemy + 6° 40′ = 23° 00′. The difference of 20′ in Hhassan's longitude cannot be explained from any edition of the "Almagest."

187. There is no doubt, from both the name and the longitude, that α *Lyræ* is here designated. Latitude of Ptolemy = + 62° 00′. The error in the latitude of 2° for 62° might possibly be ascribed to badly written Arabic:

ب = 2 for سب = 62.

188. Longitude of Ptolemy + 6° 38′ = 24° 18′. The discrepancy of 13′ for 18′ in the longitude of this star is most probably due to misinterpretation of the Arabic

يج = 13 for يح = 18.

193. Latitude of Ptolemy = + 6° 30′. The discrepancy of 50′ for 30′ is probably due to the same cause as in 175, namely,

ن = 50 for ل = 30.

201. Latitude in Ptolemy = + 7° 20′. Perhaps a typographical error, though the Arabic characters,

ب = 2 and ك = 20,

might be confounded.

208. Longitude of Ptolemy + 6° 38′ = 26° 48. Another probable error in the Arabic:

مح = 43 and مح = 48.

210. The latitude should be + (North).

230	La Boréale de la Queue de la Baleine ...	3*p*	11	10	58	− 9 40	ι Ceti.
231	La Boréale d'Al-Kerb, du Lieu de l'Urne	4	11	11	8	+25 30	τ Pegasi.
232	L'Australe d'Al-Kerb	4	11	11	38	+25 00	υ Pegasi.
233	La Deuxième Grenouille (c'est la Boréale de la Queue de la Baleine).	3*g*	11	12	20	− 20	β Ceti.
234	L'Aile du Cheval (Pégase), (c'est l'Australe d'Al-Fazerhe Postérieur).	...	11	18	48	+12 30	γ Pegasi.
235	La Boréale des Trois Médiales, des Autruches.	3*p*	11	21	38	−15 40	η Ceti.
236	L'Épaule de l'Enflammé, Céphée ...	3	11	23	18	+69 00	α Cephei.
237	Serat-Al-Fars, ou l'Extrémité Boréale de la Tête d'Andromède.	...	11	24	30	+26 00	α Andromedæ.
238	La Boréale de l'Origine de la Queue de la Baleine (c'est la Boréale des Autruches).	3*p*	11	26	20	−15 20	θ Ceti.
239	L'Australe des Trois Médiales des Autruches.	4*g*	11	28	40	+25 20	τ Ceti.
240	L'Australe des Autruches	4	11	29	38	−30 50	υ Ceti.

213. Longitude of Ptolemy +6° 40′ = 3° 10′. The discrepancy of 1° in Hhassan's longitude is not easily explained.

218. The latitude should be − (South).

226. The latitude should be − (South).

233. The latitude in Ptolemy = −20° 20′.

239. The latitude should be − (South).

Appendix.

Note on Ulugh Beigh's Catalogue.

The following discrepancies in certain MS. copies of Ulugh Beigh, given by Mr. Baily in his notes to that Catalogue, in volume xiii. of the *Memoirs of the Royal Astronomical Society*, are, like so many errors in Aboul Hhassan's Catalogue, due probably to mistranslation of the Arabic characters :—

Ulugh Beigh. Baily's No. of Star.							Ulugh Beigh. Baily's No. of Star.						
	°	′		°	′			°	′		°	′	
37	10	7	for	10	4	ز for د	316	15	15	for	15	55	يه for نه
48	21	15	„	21	55	يه „ نه	514	18	18	„	18	58	يح „ نح
89	58	11	„	58	51	يا „ نا	550	2	56	„	2	16	نو „ بو
141	60	16	„	60	36	يو „ لو	643	1	15	„	1	55	يه „ نه
165	11	15	„	11	55	يه „ نه	870	60	55	„	60	15	نه „ يه
231	17	25	„	16	25	يز „ يو	945	4	15	„	4	55	يه „ نه

Appendix—cont.

Note on Cardinal Cusa's Catalogue.

The statement on page 15, that Cardinal Nicholas of Cusa was an original observer, and made a Catalogue of Stars from his own observations, was given on the authority of Riccioli, but it seems to require some qualification. Since writing it, I have found in the British Museum a copy of his works (Khrypffs (Nich.) de Cusa, *Opera, Basileæ*, 1565, fol.). At page 1174 is given a Catalogue of the Longitudes and Latitudes of 64 Principal Stars, entitled "Catalogus Stellarum fixarum ex Cardinalium Cusani, Niceni et Alliacensis Observationibus." The latitudes are Ptolemy's, and where any difference of reading exists in the known editions of the *Almagest*, Cusa agrees with the Venice Edition of Liechtenstein, which is believed to have been translated from an Arabic MS. This leads one to infer that Cusa derived the places of his stars also from the Arabic. There are some errors in the Catalogue which are readily explained on the supposition of confounding the Arabic characters. For example:—The latitude of *Sirius* is given as 39° 50′ instead of 39° 10′, or the very probable error of confounding the Nūn ن with the Yā ي. The latitude of the northern of the *Aselli* is given as 10° 40′ for 2° 40′, or a mistake of Yā ي for Bā ب.

The longitudes are those of Ptolemy increased by 21°. The Epoch is not given in the above edition, but if it be A.D. 1440 as asserted by Riccioli, then the amount of precession adopted was 58″ annually, or one degree in sixty-two years.

Ptolemy probably observed θ^1 and θ^2 *Tauri* as one star; Cusa gives both components, which appears to be the solitary observation to justify the title of his Catalogue.

Catalogues omitted.

No.	Name.	Date Published.	Number of Stars.	Description of Stars.	Mean Places; Co-ordinates.	Epoch.	Notes.
32A	William 4th, Landgrave of Hesse	1665	24	Prin. Stars.	Long.; Lat.	1587	"Ex observatis a Lantgravio Hassiacæ et supputatione Tychonis." A Catalogue of Stars reduced by Tycho from the observations of the Landgrave of Hesse, on the assumption that the R.A. of *Aldebaran* for the epoch was 63° 10′. In "Riccioli, Astronomiæ Reformatæ," tom. i, p. 218.
518A	*Safford, T. H. ...	1877	2018	To 7 & 8 Mag.	R.A. 0 h. to II h. and XII h. to XXIV h. Decl. + 10° to + 70°.	1875·0	"Engineer Dept., U.S. Army. Catalogue of the Mean Declinations of 2018 Stars between 0^h to 2^h and 12^h to 24^h R.A., and 10° and 70° North Decl., for Jan. 1, 1875." Washington, 1877. Catalogue was prepared for the Latitude work of the U.S. Engineers. Includes all B.A.C. stars within the limits mentioned. In its preparation all catalogues have been consulted, including annual catalogues of Greenwich to 1874, and the Poulkova Observations in Vol. vi. of the "Annales."