

VI. *A Catalogue of the Positions (in 1690) of 564 Stars observed by Flamsteed, but not inserted in his British Catalogue; together with some Remarks on Flamsteed's Observations.* By FRANCIS BAILY, Esq., Vice-President of the Society, F.R.S., &c. &c. &c.

Read May 8, 1829.

ABOUT two years ago, I submitted to the Society a few brief “Remarks on the Astronomical Observations of FLAMSTEED,” in which I alluded to Miss CAROLINE HERSCHEL’s very useful and important work, published by the Royal Society in the year 1798, which contains not only an *index* to every observation of every star made by FLAMSTEED, together with a copious list of *errata* that had escaped the editors of FLAMSTEED’s works, but also a list of upwards of 560 stars that are *not inserted* in the *British Catalogue*. It is to this latter part of the subject of that laborious work that I am now desirous of drawing the attention of the Society.

The list of inedited stars published by Miss HERSCHEL is given by her nearly in the order in which they are recorded in the observation-book of FLAMSTEED, without any regard to the arrangement in right ascension, which did not enter into her plan; but, as I have frequently experienced the want of such an arrangement, without which it is difficult to identify the stars, and as perhaps others may have met with a similar inconvenience, I have thought that I may be rendering some assistance to astronomers, and saving them a great deal of time and trouble, if I were to present to them, through the medium of this Society, a catalogue of those stars, arranged in the order of right ascension, and reduced to the year 1690, the epoch of FLAMSTEED’s *British Catalogue*. This reduction has been effected in the manner following.

In Miss HERSCHEL’s list, she has given, opposite to each inedited star, the name of some other known star, (taken from the observation-book of the same day), together with the *difference* of their right ascension and

ASTRON. SOC. OF LOND. VOL. IV.

B B

declination; and such known star has generally been selected on account of its contiguity to the star in question, whereby the errors of observation, &c. are rendered of less importance. From these data, and by the assistance of the *British Catalogue*, we may determine the position of the inedited star almost as accurately as that of the known star; at least, the differences can seldom be very great; and we shall find, in the sequel, that their places may be depended on with almost as much confidence as the places of the stars in the *British Catalogue*, from which they are deduced.

As an example of the mode pursued in these reductions, take the case of No. 66 in Miss HERSCHEL's list. This star, on November 2, 1691, followed 52 *Andromedæ* 2^m 8^s (in time), and was situated 1° 45' 20" to the southward of it. Therefore, since the position of 52 *Andromedæ* is, by the *British Catalogue*, $R = 20^{\circ} 15' 0''$, and $D = +42^{\circ} 47' 50''$, we have the position of No. 66 of Miss HERSCHEL's list, $R = 20^{\circ} 47' 5''$, and $D = +41^{\circ} 2' 30''$; which will be found to correspond with No. 142 of PIAZZI's catalogue. It may here be remarked, once for all, that as FLAMSTEED's clock was adjusted to *mean solar* time, we must assume (in the right ascensions) each second of time as equal to 15.04107 seconds in space.

When Miss HERSCHEL, assisted by her illustrious brother, published this list of inedited stars, they endeavoured to identify them with some of the known stars in the catalogues of MAYER and HEVELIUS; and, in a few cases, they succeeded. At that time, however, the extensive catalogue of PIAZZI, and the voluminous observations of LALANDE, had not made their appearance; neither had the whole of the observations of BRADLEY been reduced. By the aid of these important and comprehensive works, and by a minute comparison of every observation, I have been enabled to identify the major part of the stars here alluded to;* and these synonimes will therefore serve the purpose of making comparisons of such stars, at different periods of their observation. The following is the arrangement of the catalogue.

The *first* column contains the numbers of the present catalogue in ordinal succession, for the sake of a convenient reference. The *second* column denotes the constellation in which the star is situated; and the

* About seventy stars still remain unidentified; but most of these are situated to the north of the zenith, of which there are very few observations in the *Histoire Céleste*.

third the magnitude of the star, when recorded. The *fourth* column contains the right ascension of the star, at the beginning of the year 1690, expressed in degrees, minutes, and seconds of space; and the *sixth* column contains the declinations, expressed in a similar manner, where the sign + denotes *north*, and the sign — denotes *south* declination. The *eighth* column contains the corresponding number of the star in PIAZZI'S catalogue, which is supposed to be identical with it; and the *ninth* column denotes the page in the *Histoire Céleste* where a star has been observed which also is supposed to be identical with it.* The *last* column contains the corresponding number in Miss HERSCHEL'S list. At the end are subjoined some *notes*, that could not well be introduced in the order of the catalogue.

It now remains only to explain the *fifth* and the *seventh* columns, where some contrivance has been adopted in order to abridge the results. It should be remarked, that the major part of these inedited stars have been observed only once; but, in many cases, they have been observed twice, thrice, and, in some cases, even as often as seven times. The values, therefore, inserted in the fourth and sixth columns are the *mean* of all the observations of the same star; and the values in the fifth and seventh columns denote the *greatest difference* from such mean; the figure which precedes the sign of equality denoting the number of times observed. If these differences should occasionally appear larger than might reasonably be expected, it should be kept in mind, that the observations are frequently separated from each other by a considerable interval of time, and that no regard has been had to the precession, aberration, or nutation,—circumstances which may sometimes account for all the discordances observed; and no greater precision has been aimed at, than that to which the *British Catalogue* itself is entitled. Upon this subject I request permission to make a few remarks, although perhaps at the risk of repeating some of the observations that I may have previously made in my former communication.

FLAMSTEED'S catalogue of stars, the proudest production (considering the period at which it was made) of the Royal Observatory at Greenwich, was deduced from observations made with a mural quadrant, (or rather,

* I wish it to be understood, that I have applied these numbers as the best reference which I could give for any corresponding observations of the stars, without, however, presuming that they will ultimately turn out to be the identical stars alluded to.

arc of 120 degrees,) furnished merely with cross-wires in the focus of the telescope, and is a remarkable instance, in common with that of LACAILLE, and others even in more recent times, of the great benefit that may be rendered to astronomy by instruments of very moderate capacity, when handled by men of superior talents and skill.

At the time of FLAMSTEED the transit instrument was not known; and the right ascensions of the stars were therefore determined by him from the differences in the time of their passing the vertical wire of the telescope: in fact, the practice of *fixing* an instrument in the plane of the *meridian* had been but recently introduced; the *method of distances*, by means of a movable sextant, being then almost universally adopted. The pendulum clock, also, had not been long invented; and although the accuracy of that which was used by FLAMSTEED is highly praised by him, yet, as the method of compensating the pendulum was then wholly unknown, we are not surprised to find occasionally a considerable difference in its rate. The quadrant, likewise, although of about 80 inches radius, could be read off only to 10", or, at most, by an estimation of the proportional parts, to 5". FLAMSTEED had thus to struggle with all the difficulties attending very indifferent instruments, (indifferent as compared with more *modern* works of a similar nature); yet with these he constructed a catalogue of the mean places of about 3000 stars, which (serving as the basis for all subsequent observations) is still referred to by every astronomer, and will immortalise the name of its illustrious author.

In reducing his observations, FLAMSTEED must doubtless have met with anomalies for which he could not readily account. The brilliant discovery of the *aberration* of light had not then been made, and the *nutation* of the earth's axis (although suspected) had not yet been proved. The wonderful resources of *analysis*, powerful as they then were, had not yet been fully developed in its application to the physical departments of the science. The laws which govern the *refraction* of the heavenly bodies were not then so well known as at the present day; and some errors must doubtless have arisen from mistaking one star for another,—an accident sometimes occurring even in the best modern observatories, and much more probable when the true state of the heavens was so little known. These considerations, together with the vast improvements that have taken place in the formation of telescopes, and in the construction of astronomical instruments, (whereby

we are enabled to discern distinctly, not only the seconds, but also the fractional parts of a second, in the distances of the heavenly bodies,) have caused the observations of FLAMSTEED to be more neglected than they deserve. For many years, however, the *British Catalogue* was the only catalogue in the hands of astronomers, till at length it gave way to that of MAYER, which, being deduced from observations made with better instruments, and by an astronomer of great ability and talent, was generally considered as more worthy of confidence.

But (as I have already remarked in my former communication) the observations of MAYER were made precisely in the same way as those of FLAMSTEED; viz. by means of a mural quadrant: the differences of right ascension being determined by the time of the star's passing the wire. The instruments, however, used by MAYER were of a superior kind: the pendulum of the clock was compensated, and the quadrant was better divided. The adjustments of those instruments were also better understood and practised than at the time of FLAMSTEED: consequently there is, undoubtedly, more confidence to be placed in any *one* observation of MAYER's than in any corresponding *one* of FLAMSTEED's. But the number of stars observed by MAYER was not more than one-third of those determined by FLAMSTEED: the major part of them was observed only *once*, and not more than 50 of them were observed so frequently as six or seven times; whereas FLAMSTEED observed most of his stars *several* times: in fact, above a tenth part of them was observed more than 50 times, and some even more than 100 times. Thus, ν *Geminorum* was observed 103 times, *Spica Virginis* 108 times, γ *Geminorum* 124 times, *Aldebaran* 125 times, *Regulus* 133 times, η *Geminorum* 163 times, and μ *Geminorum* 193 times. Now, it must be evident, that when observations are multiplied in this manner, the errors will be very much diminished; and although the catalogue of FLAMSTEED (as well as that of MAYER) has since been eclipsed by the superior and unrivalled catalogues of BRADLEY and PIAZZI, and by the multitudinous observations of LALANDE in the *Histoire Céleste*, and of BESSEL in his *Zones*; yet, when we take into account the long period of time (nearly 140 years) that has elapsed since the observations were made, it must be allowed to possess an interest, in common with all such ancient records, that ought never to be lost sight of.

I have here been speaking of the catalogue of FLAMSTEED as it was deduced from his own observations in his life-time; but it is manifest that

FLAMSTEED did not possess all the means of making a *correct* catalogue. The method of reduction, as practised by the modern astronomer, was but imperfectly pursued; the table of refraction used by him would not be admitted at the present day; aberration and nutation were entirely unknown; and numberless other corrections totally neglected. The catalogue, therefore, as it now exists, is not so accurate as it might be made by the application of all the modern modes of reduction. Whether it would be desirable to form a *new* catalogue, by again reducing the whole of his observations, agreeably to the most approved modes of reduction, is not a point which it is at present requisite to enter into; but should such an undertaking ever be contemplated, it is evident that the corrections for aberration and nutation can be now applied as effectually as if those quantities had been then known; and the instrumental errors (including those of the clock) might doubtless be very much reduced by a minute examination of the observations. The right ascensions, therefore, (or, at least, the differences of right ascension) might be given with considerable accuracy. The principal difficulty would occur in the declinations; since FLAMSTEED has not recorded the state of the barometer and thermometer, which are essential for correcting the refractions. For the former, perhaps, no great error would arise from taking a mean state for the whole period; and as to the latter, we might construct a scale for every day in the year, deduced from the mean of several years: at all events, this would probably lead to a more correct result than the concise and apparently inaccurate table used by FLAMSTEED, in all cases, notwithstanding the variations in the state of the atmosphere.

By comparing the positions of the principal stars given by Mr. POND for 1820 (see the *Nautical Almanac* for 1825) with the positions of the same stars deduced from the observations of BRADLEY, and assuming each of those catalogues as correct, we may obtain a fair estimate of the degree of accuracy to which the *British Catalogue* is entitled; for, as the epoch (1755) of BRADLEY's catalogue is exactly intermediate between the epoch (1690) of FLAMSTEED's and (1820) Mr. POND's, we have merely to add to the positions of the stars, as given by BRADLEY, the *difference* (with a contrary sign) between the stars in his catalogue and in that of Mr. POND, in order to obtain the true position of such stars at the epoch of the *British Catalogue*, rejecting, however, (for obvious reasons,) the right ascensions of such stars as have considerable declination; and these deduced positions, being com-

pared with the *British Catalogue*, will shew how much the latter deviates from the truth, it being presumed (as already stated) that the catalogues of BRADLEY and POND are free from any material error. Thus, in the case of *Castor*, we have

	$\mathcal{R}$ in space.	N.P.D.
1820 Pond....	$= 110^{\circ} 46' 31''$	$57^{\circ} 43' 38''$
1755 Bradley..	$= 109 43 53$	$57 36 3$
Difference =	$\underline{\quad 1 \quad 2 \quad 38 \quad}$	$\underline{\quad 0 \quad 7 \quad 35 \quad}$
1690 { Computed =	$108 41 15$	$57 28 28$
{ Observed =	$108 41 0$	$57 28 55$
Error of Flamsteed =	$\underline{\quad - 15 \quad}$	$\underline{\quad + 27 \quad}$

And it is in this manner that I have formed the following comparative table :

A Table, shewing the presumed errors of the British Catalogue.

Star.	$\mathcal{R}$ in space.	N.P.D.	Star.	$\mathcal{R}$ in space.	N.P.D.
γ Pegasi.....	$-10''$	$+23''$	Spica	$+ 17''$	$+ 8''$
α Cassiopeæ ...		-22	Arcturus....	$- 29$	-16
Polaris		-13	α^2 Libræ	$+ 78$	-13
α Arietis.	-19	$+19$	β Ursæ majoris		$+45$
α Ceti.....	$+ 3$	$+33$	α Cor. Bor. ...	$+ 25$	$+ 7$
α Persei	$+61$	$+12$	α Serpentis....	$- 3$	
Aldebaran ...	-19	$+35$	Antares	$+ 30$	-29
Capella.....	$+ 9$	$+ 6$	α Herculis ...	$+ 36$	$+ 2$
Rigel	$+10$	$+30$	α Ophiuchi ...	$- 43$	$+10$
β Tauri	-49	$+19$	γ Draconis....		-19
α Orionis	-28	$+29$	α Lyræ	$- 40$	-33
Sirius	$+13$	$+ 2$	γ Aquilæ	$- 21$	-17
Castor	-15	$+27$	α ———	$- 46$	-21
Procyon	-24	-29	β ———	$- 8$	-27
Pollux.....	-21	$+20$	α^2 Capricorni ..	$+ 26$	-36
α Hydræ.	-23	$+13$	α Cygni	-156	-36
Regulus	-18	$+37$	α Cephei		-38
α Ursæ majoris		-18	α Aquarii	$+ 16$	-14
β Leonis	$- 5$	$+33$	Fomalhaut..	$- 89$	-31
β Virginis	-10	$+42$	α Pegasi	$- 44$	$+25$
β Ursæ majoris		$+ 3$	α Andromedæ..	$- 40$	$+23$

It should be kept in mind, that none of the values inserted in the *British Catalogue* are given to a greater degree of accuracy than to the nearest *five* seconds in space; and it should also be remembered, that the result given in this table does not relate so much to the *observations* as to the *catalogue*, which is affected not only with the errors of observation, but likewise with all the errors of reduction; and it will appear (from an examination of the differences in right ascension of those stars which are nearly on the same parallel, and, at the same time, not very far from each other in right ascension,) that errors of this kind are, somehow or another, mixed up with most of the stars. Thus, by a comparison of the catalogues of BRADLEY and POND above alluded to, it appears that in the *British Catalogue* the right ascension of α *Herculis* is erroneous $+2^s,5$, and α *Ophiuchi* $-2^s,9$ (in time), whereby the *difference* in the right ascension of those stars is erroneous upwards of 5 seconds in time,—an error too great to be overlooked even by the instruments of FLAMSTEED. Now, if we examine and compare the differences in the right ascension of these two stars at the time of POND and BRADLEY, and carry back the difference of those differences (with a contrary sign) to the time of FLAMSTEED, we may be justified in the conclusion that some error has been committed in the *reduction*. Thus, the difference in the right ascension of these stars, according to POND, was, in 1820, equal to $20^m\ 8^s,4$ (in time); and, according to BRADLEY, was, in 1755, equal to $20^m\ 5^s,3$: consequently, the difference at the time of FLAMSTEED, in 1695, ought to be $20^m\ 2^s$; and so, in fact, it will appear to have been, if we confine ourselves to the *observations*, and take a mean of all the double observations of these stars made by FLAMSTEED on the same evenings.* But the difference, according to the *catalogue* of FLAMSTEED, is only $19^m\ 57^s$, which clearly shews that some error has been committed in the reduction of one or other of these stars. The same remark might be made as to several other stars similarly situated;† but enough has been said to shew the

* The mean of the nine double observations recorded by FLAMSTEED is $19^m\ 58^s,5$ in solar time, which, being multiplied by 1.00274, (as before alluded to), will give $20^m\ 2^s$ in sidereal time.

† The case of α and β *Aquilæ* presents a singular discordance. The difference in their right ascension, in 1820, was $4^m\ 28^s,3$ (in time), and in 1755 it was $4^m\ 26^s,9$, (differences which are minutely confirmed by the observations of PIAZZI and LACAILLE): consequently, the difference in 1695 ought (if the proper motion of α *Aquilæ* be in a direct line) to be $4^m\ 25^s,5$. But the difference in the *British Catalogue* is $4^m\ 28^s$; and this difference is minutely confirmed by taking a mean of all the thirty-nine double observations of these stars recorded by FLAMSTEED.

necessity of at least a *re-examination* and *comparison* of the observations with the catalogue of FLAMSTEED, even if a *new reduction* of those observations should not be considered expedient.

It is difficult to determine at what precise period the catalogue of FLAMSTEED was formed. He commenced his observations in September 1689, and continued them upwards of thirty years, till the time of his death, in December 1719. It is said, that from a manuscript fragment, in his own hand-writing, preserved in the library of the Royal Observatory at Greenwich, it appears that he commenced the reduction of his observations in 1696, and that, by the end of the following year, all the stars in the constellations forming the twelve signs of the zodiac (which comprise the greater number of the stars observed by him) had been reduced.* The stars in the other constellations were *nearly* all finished by the year 1701: they were not completely finished, however, till the year 1708, when many stars were added that had been observed in the interval from 1705 to 1708, not only by himself, but also *by other persons*. This latter fact will account for the introduction of those stars into the catalogue of which no observations are to be found in his journals. His first catalogue was published in 1712; but a more correct edition appeared in the year 1725, in the third volume of the *Historia Cælestis Britannica*, published after his death. It does not appear that the editors made any alteration in the catalogue, but merely published it from the corrected copy left by FLAMSTEED: neither is it known whether FLAMSTEED reduced any of the observations made in the latter part of his life.† It is certain, however, from the subject of this

* I have not been able to find this manuscript; but in my search I discovered another (or perhaps a *continuation* of the same) fragment of the history of FLAMSTEED's life, apparently written likewise with his own hand. It consists of about ten pages of foolscap paper, stitched (together with some other writings) in a brown-paper cover, marked No. 75, and entitled *Observations and Calculations by Flamsteed*. This document contains some very severe remarks on NEWTON and HALLEY: against the former of whom he commenced an action for the recovery of the manuscript catalogue deposited with him, agreeably to the conditions entered into with the committee of the Royal Society, and which NEWTON refused to give up again; and the latter is accused not only of clandestinely printing portions of the catalogue from this deposited manuscript, but also of altering the names and *places* of the stars, to suit "his faulty hemisphere."

† The presumption is, that he did *not*, otherwise he would most probably have detected the planet *Uranus*, which was not observed by him till after the publication of the first edition of his catalogue, if we except the doubtful and single observation of 34 *Tauri*. See the note to No. 271 of the following catalogue.

communication, that *many observations* which are noted in his journals have *never yet been reduced*; and I now present to the Society a list of upwards of 560 stars of this kind (no mean catalogue in itself) discovered by Miss HERSCHEL, most of which are stars that have been since observed by MAYER, BRADLEY, PIAZZI, LALANDE, or BESSEL; and it is possible there may be some others that have escaped her extraordinary diligence and research.* Should it ever be considered expedient to re-compute the observations of FLAMSTEED, with a view to the formation of a new and more correct catalogue of his stars, these additional observations will, of course, form a necessary part of that undertaking, and will thus furnish us with an additional number of stars.

The observations of FLAMSTEED are (as I have already remarked) confined principally to those stars which are situated in the constellations forming the zodiac. There are but few stars in any of the other constellations that he has observed more than once or twice each, except those of large magnitude. It appears to have fortunately been his practice to confine his observations, during any one night, principally to a given zone in the heavens, whereby his observations are rendered not only more easy of reduction, but also more free from those errors which occasionally occur, and which are not so readily detected when the difference of declination is very great.

That a re-computation (or even a re-examination) of the observations of FLAMSTEED would be very desirable and acceptable to every astronomer, as well as beneficial to the interests of astronomy, there can be no doubt; since a more perfect and correct comparison of the stars at that period could thereby be made than through the medium of the existing imperfect and inaccurate catalogue;† but it would be attended with so much labour,

* See the note to No. 226 of the following catalogue.

† These inaccuracies may have arisen either from the errors of copying, or from the errors in the reduction. The former it may be difficult, in some cases, to detect at the present day; but the latter may be always corrected: yet there are instances where there is a strong presumption that FLAMSTEED has erred in noting down his observations. Thus, in vol. ii. p. 532, the interval between 21, and 24, *Sagittarii* is, on *two following days*, stated to be $7^m 57^s$; whereas, this interval, according to the observations of BRADLEY and PIAZZI, is too small by 10^s ; and in the *British Catalogue* the interval is still smaller, unless (as I suspect) there is a typographical error in the right ascension of 24 *Sagittarii*, and $273^\circ 34' 45''$ has been inserted instead of $273^\circ 43' 45''$, which will agree with FLAMSTEED's recorded observation, but not with the fact. Misled by this confusion, PIAZZI has given the title of 24 *Sagittarii* to the wrong star in his catalogue: he has

that I almost despair of ever seeing it *fully* accomplished. Still, however, if the undertaking were but *partially* executed, so that two or three hundred only of the principal stars were reduced from the total of the observations of each star; or if *tables of reduction* were formed on a plan similar to that which has been adopted by Professor SCHUMACHER for the reduction of the stars in the *Histoire Céleste*, and by Professor BESSEL for his *Zones*, it would enable us not only to decide more correctly as to the merits of FLAMSTEED'S observations, and as to the propriety and expediency of extending our researches to the remainder of the stars; but also to determine more accurately the positions of the smaller stars not included in such reduction; and I shall be happy if these remarks should attract the attention of some industrious astronomer who has the talent and leisure to pursue an inquiry of this kind, and who may thus be the means of restoring the observations of FLAMSTEED to that high rank which they once held, and to which it is hoped they will still be found justly entitled.

applied it to No. 99, whereas it belongs to No. 105. This is a case taken at random; but similar discordancies are frequently to be met with, which shews the necessity of a *re-examination* and *comparison* of the observations, before any correct conclusions can be drawn respecting the true positions of any of the stars in the *British Catalogue*. I may here state, that many of the original computations relative to the reduction of the stars to latitude and longitude exist in the library of the Royal Observatory at Greenwich, which may serve as a check on any suspected inaccuracy in the printed catalogue.

A CATALOGUE
OF
THE RIGHT ASCENSION AND DECLINATION,
ON JANUARY 1, 1690,
OF
FIVE HUNDRED AND SIXTY-FOUR STARS,
OBSERVED BY FLAMSTEED, BUT NOT INSERTED IN HIS BRITISH CATALOGUE.

No.	Constellation.	Mag.	Right Ascens. 1690.	ΔR	Declination 1690.	ΔD	Piazzi. No.	Hist. Céleste, Page.	Miss Herschel No.
1	Piscium		0° 15' —"		+ 2° 31' 25"			118	401
2	Ceti		2 10 20		— 3 56 10		60		281
3	Piscium	6	2 — —		+18 26 15		66?		467
4	Andromedæ	5	2 55 38		+42 41 5		74		62
5	Andromedæ		3 59 —		+31 51 20			350	389
6	Piscium		4 13 47		+ 3 8 15		98		87
* 7	14 Ceti?		4 55 9		— 2 13 10		120		312
8	Andromedæ	6	5 1 13		+42 46 45		124		63
9	Andromedæ	6	5 4 —		+33 40 10		128		430
*10	Ursæ minoris		5 20 —		+87 20 32	2 = 2",5	177		30
11	Piscium		5 23 58	3 = 39",0	+ 1 25 25	3 = 0,0	131		277
*12	Piscium		5 46 49		+ 1 23 35		137		277
13	Piscium	6	— — —		+11 31 30			39?	468
14	Piscium		6 18 27		+ 7 38 55			127	185
*15	Ursæ minoris	5	6 34 13		+84 34 55		220		107
16	Piscium		8 2 1		+ 3 40 10		189		334
17	Piscium		8 48 48	2 = 15,0	+ 1 43 15	2 = 50,0	207		362
18	Piscium	6	— — —		+27 1 30			573?	469
*19	Ursæ minoris	4	8 55 36		+84 34 50		220		107
20	Piscium		9 — —		+25 — —			27?	507
21	Piscium	6	11 56 47		+28 0 50				174
22	Cassiopeæ	6	12 58 —		+62 32 45	2 = 15,0	312		384
23	Piscium	6	13 26 38	2 = 2,0	+14 0 45	2 = 20,0	311		69
24	Piscium		13 57 42		+30 24 55			350	173
25	Cassiopeæ	7	14 22 18		+66 9 35			375	108

Catalogue of FLAMSTEED's inedited Stars.

141

No.	Constellation.	Mag.	Right Ascens. 1690.	ΔR	Declination 1690.	ΔD	Piazzi. No.	Hist. Céleste, Page.	Miss Herschel No.
26	ζ^2 Piscium		14° 24' 0"	2 = 0,0	+ 5° 55' 22"	2 = 7,5	17		141
27	Ceti		14 35 29		— 9 16 25			247	186
28	Ceti		15 — —		— 17 26 15			250?	471
29	Piscium		19 0 37		+ 10 17 5			204	332
30	Ceti		19 44 3		— 0 39 5			119	329
31	Comes π Pisc.		20 11 —		+ 10 27 —		128		506
32	41 (Hev.) Andr.	4	20 47 5		+ 41 2 30		142		66
33	Cassiopeæ		21 25 43		+ 62 18 20		159		68
34	Comes 4 Arietis		22 51 —		+ 15 23 —		174		525
*35	1 Arietis ?		23 15 49		+ 20 42 25		179		143
36	Cassiopeæ		24 19 12		+ 63 5 50			378	339
37	Arietis	6	25 36 20		+ 19 31 35		222		106
38	Arietis		25 42 20	2 = 52,5	+ 10 46 15	2 = 0,0	223		70
39	Piscium		26 44 10		+ 1 49 45				335
*40	Arietis		27 20 —		+ 24 12 —				526
*41	Arietis		29 9 33		+ 22 — ?				502
*42	Arietis		29 11 17		+ 22 — ?				503
*43	Cassiopeæ	5	31 4 19	2 = 285,0	+ 65 58 0	2 = 50,0	72		109
44	Arietis		31 37 30	2 = 3,7	+ 9 24 52	3 = 13,0	83		31
45	Arietis		32 31 53	2 = 78,0	+ 9 9 5	2 = 40,0	85		330
46	Cassiopeæ	6	32 40 51		+ 71 25 20		97		110
47	Ceti		33 16 3		+ 8 9 10			41	187
48	Comes 30 Arie.		34 48 —		+ 23 16 —		128		524
49	Ceti		35 36 21		+ 9 16 5		140		195
50	Ceti		36 21 6	2 = 8,0	+ 9 12 40		155		196
51	Arietis		36 — —		+ 24 17 55			30	435
52	Persei	8	36 41 46		+ 55 42 50				114
53	Persei	6	36 45 47		+ 55 45 15				115
54	Ceti		37 41 11		+ 3 22 10				402
55	Persei	6	38 — —		+ 51 4 35			43	431
56	Arietis	8	39 45 —		+ 13 44 0			38	436
57	Ceti	6	39 55 12		+ 7 6 5		215		113
*58	Cassiopeæ	5	39 58 3	2 = 0,5	+ 73 9 0	3 = 0,0	237		111
*59	24 Persei ?	4-6	40 0 10	2 = 67,0	+ 33 54 32	2 = 12,5	221		112
*60	Arietis		40 18 9	3 = 10,0	+ 20 20 35				2

No.	Constellation.	Mag.	Right Ascens. 1690.	ΔR	Declination 1690.	ΔD	Piazzi. No.	Hist. Celeste, Page.	Miss Herschel No.
61	Persei	7	40° 40' 55"		+31° 8' 50"				348
62	Persei	6	40 41 27		+55 27 0		236		116
*63	18 (Hev.) Pers.	4	41 44 37		+48 23 32	2 = 7",5	253		88
64	Arietis		42 54 —		+19 32 25		261		395
*65	Arietis		43 28 —		+26 1 —			200	543
*66	Arietis		43 28 —		+26 1 —			200	544
*67	Arietis		43 29 37		+28 9 25		264		336
68	Arietis		45 25 54		+27 53 5		32		144
69	Ceti		45 47 —		+ 2 12 —			47 ?	530
70	Ceti		45 47 —		+ 2 12 —			47 ?	531
71	Tauri	6	50 14 —		— 0 28 55		98	49	71
72	Tauri (Pleia.)		52 51 4	2 = 8",0	+22 42 15		163		32
*73	Persei		53 28 32		+46 54 45		186		89
74	Tauri		55 8 40		+ 5 6 15		203		364
75	Persei	6	57 44 42		+48 15 25			376 ?	145
76	Persei	6	58 — —		+52 47 5		7		450
77	Persei	5	58 46 28		+53 37 0		257		155
78	Persei	5	58 47 59	2 = 7,5	+49 29 7	2 = 2,5	18		3
79	Persei	6	59 3 2	2 = 7,5	+49 14 32	2 = 2,5			4
*80	Tauri		59 11 9		+ 7 53 25		13		142
81	Persei	5	59 15 27	2 = 45,0	+50 7 10	2 = 15,0			5
*82	Camelopardi	6	59 — —		+55 43 15				451
*83	Tauri		61 43 21		+18 17 35				370
*84	Tauri	6	63 12 53	6 = 32,0	+15 28 24	6 = 27,0	99		28
*85	Tauri	6	63 16 25		+15 29 5		102 ?		28
*86	Tauri	6	63 17 41		+15 26 15		102 ?		60
*87	Tauri		65 6 12		+15 59 20				377
88	Eridani		66 8 1		—12 46 0		154		197
89	Eridani		66 16 48		—14 59 0		157		198
90	Eridani		67 19 52		—20 31 25				379
*91	99 Tauri?		69 — —		+24 4 5				454
*92	Camelopardi	6	71 21 37		+53 15 10			374	146
93	Tauri		73 29 20		+15 37 50		1		160
*94	Aurigæ	6	74 40 32	2 = 15,0	+33 21 30		26		90
95	Tauri	7	78 33 57		+16 46 37	2 = 12,5			34

No.	Constellation.	Mag.	Right Ascens. 1690.	ΔR	Declination 1690.	ΔD	Piazzi. No.	Hist. Celeste, Page.	Miss Herschel No.
96	Com. ν Orion.		79° 13' —"		— 7° 34' —"				558
*97	Tauri		79 58 21		+29 0 0			143?	343
98	Com. 26 Cam.		80 — —		+55 55 —				545
99	Columbæ		80 31 31		—30 4 15				36
*100	27 Camel. ?	6	80 — —		+56 22 5				438
*101	124 Tauri ?		81 6 26		+23 1 0		192		355
*102	Columbæ		81 27 25		—28 54 10				37
103	α Columbæ		82 9 32		—34 10 25		196		38
104	Columbæ		82 9 32		—32 45 40		197		39
105	Columbæ		82 50 39		—34 43 45		211		40
*106	Orionis		83 — —		+12 30 —				546
107	Camelopardi		83 3 46		+56 — ?				504
108	Tauri		83 — —		+20 42 50		222?		419
*109	Aurigæ	7	83 36 16		+54 27 15				147
110	Aurigæ		84 25 17		+44 31 10				72
111	Orionis		84 52 3		+ 9 25 0			206	378
112	β Columbæ		85 4 23		—35 45 0		267		41
113	Aurigæ		85 15 —		+43 — —			207?	534
114	Orionis		85 20 52		+12 43 20				35
115	λ Columbæ		85 30 50		—33 48 55		276		42
116	Aurigæ		85 49 10		+38 32 0			208	73
117	Aurigæ		85 56 26		+37 55 30			208	74
*118	64 Orionis ?	7	86 17 7	3 = 22,0	+19 38 45	3 = 10,0	304		1
119	Camelopardi	4	86 17 8		+69 20 20		335		156
*120	63 Orionis ?		87 5 44		+ 5 22 25		321		33
*121	Monocerotis	5	89 — —		— 6 — —				472
122	Lyncis	5.7	89 39 5	2 = 22,5	+58 32 3	2 = 7,5	55		148
123	Lyncis	6	89 44 13	3 = 75,0	+58 42 7	3 = 22,5	57		149
*124	Com. 5 Lyncis		89 57 —		+58 31 —				560
125	Lyncis	6	90 — —		+56 23 30				437
126	Com. 47 Aurig.		91 44 —		+47 — —				535
127	Com. 47 Aurig.		91 44 —		+47 — —				536
128	Com. 47 Aurig.		91 44 —		+47 — —				537
129	Lyncis	6	92 20 43		+58 17 50				313
130	Monocerotis		92 — —		+ 5 7 50				407

No.	Constellation.	Mag.	Right Ascens. 1690.	ΔR	Declination 1690.	ΔD	Piazzi. No.	Hist. Celeste, Page.	Miss Herschel No.
*131	21 Gemin. ?	8	93° — ' —"		+22° 42' 25"			272	456
132	Lyncis	7	94 21 46		+59 40 45		174?		314
133	Com. 20 Gem.		94 26 54		+18 — —				493
134	Com. 20 Gem.		94 26 54		+18 — —				494
*135	61 Aurigæ ?		97 58 —		+38 46 —				538
136	Geminorum		98 14 —		+23 55 27	2 = 7,5		316?	6
*137	Nebula		98 25 —		-20 43 —				561
138	Lyncis	5	99 40 5		+60 11 50		293		157
139	Geminorum	6	99 — —		+16 1 30			263	457
140	17 Lyncis	6	100 — —		+61 12 40		308		452
141	Geminorum	5.6	101 35 16	3 = 5,5	+11 21 53	3 = 7,0			10
142	Canis majoris		101 41 36		-28 34 —		307		497
143	Lyncis	7	102 5 14		+60 14 30		339		158
144	Lyncis	6	102 22 56		+50 13 20		331		284
145	(A cluster)		103 — —		+27 19 —				555
146	Lyncis	6	103 11 10		+52 38 20				150
*147	48 Gemin. ?	7	103 23 25		+22 35 50				159
*148	Geminorum	7	103 27 3		+17 27 50		346?		139
*149	Lyncis	5	103 44 40		+49 57 0			383	396
*150	Lyncis	5	104 36 —		+49 58 2	2 = 7,5			396 439
*151	Lyncis	5	105 — —		+47 18 —		112?		440
152	Com. η Can. ma.		107 56 —		-28 44 —				508
153	Geminorum	7	108 — —		+28 8 5				458
154	Canis minoris		110 0 20		+ 6 30 25		150		56
155	Com. Procyon.		110 54 10	2 = 4,0	+ 5 59 —		170		498
*156	Canis minoris		111 8 54		+ 5 54 5				55
*157	k^1 Navis ?	4	111 29 35		-26 6 30		175		91
*158	k^2 Navis ?	4	111 30 50		-26 6 20		177		91
*159	Navis		111 32 42		-26 8 30				91
160	Navis	6	111 33 15		-14 35 5			278	237
*161	1 Navis ?	6	112 44 39		-27 42 20		200		92
*162	Navis		112 55 0		-13 50 25				552
163	Geminorum	6	113 — —		+33 58 0		215?		459
164	Geminorum	7	113 — —		+28 56 5			144	460
165	Navis		113 27 —		-21 48 20				385

No.	Constellation.	Mag.	Right Ascens. 1690.	ΔR	Declination 1690.	ΔD	Piazzi, No.	Hist. Celeste, Page.	Miss Herschel No.
166	Navis	4.5	113° 47' 42"		-25° 11' 57"	2 = 2,5	220		75
*167	Navis	5	113 52 19	2 = 15,0	-23 57 30	2 = 10,0			340
168	Canis minoris		114 42 17		+ 9 38 35		249		400
169	Canis minoris		115 8 6		+ 9 25 40		258		199
170	Canceri	6.7	115 11 38		+17 18 47	2 = 12,5	261		140
171	Navis	6	115 to 118½		-19 42 30		283	283	427
172	Canceri		116 38 5		+28 22 7	2 = 2,5		144	7
*173	Navis	5	116 56 —		-17 34 50				372
*174	Canceri	6	116 58 —		+19 40 45				455
175	Camelopardi		117 18 13		+61 — ?				505
176	Navis	6	117 41 43	2 = 7,5	-16 50 20	2 = 20,5			341
*177	Lyncis	6	117 48 28		+60 4 40				315
178	Canceri	7	118 23 10		+15 30 5			52	161
179	Canceri	6	118 35 2		+10 42 40	2 = 5,0	3		165
180	Canceri	7	118 45 14		+14 53 5			52	162
*181	Navis	6	118 48 57		-15 21 55			280	} 238 373 188
*182	Canceri		119 5 50	3 = 15,0	+18 33 0	3 = 75,0	14		
183	Lyncis	7	119 8 —		+60 5 15				
184	Lyncis	7	119 8 —		+61 33 15		30		398
185	Canceri	7	119 15 56		+13 56 45			216	163
*186	Canceri	5	120 22 48		+21 40 45		42	211	93
187	Canceri		122 32 —		+25 — —		79?		548
188	Canceri	6	122 47 40		+25 20 15		79		166
*189	Ursæ majoris		123 36 14		+61 1 40				285
190	Com.34 Canceri		123 55 —		+11 4 —				547
*191	Canceri		— — —		+22½ to 25½				463
192	Com.35 Canceri		124 21 —		+20 37 —		104		549
193	Canceri	7	124 29 —		+29 20 15				8
194	Ursæ majoris	6	— — —		+50 6 10				441
*195	Ursæ majoris	6	— — —		+50 1 10				442
*196	Canceri		125 11 53		+20 18 50		112?		175
197	Ursæ majoris		125 25 47		+67 47 40		127		286
*198	f Canceri		125 30 31		+20 46 10		124?		168
199	b Canceri		125 45 8	2 = 52,0	+20 37 10		134		11
200	Ursæ majoris		125 50 36		+56 4 35				287

Catalogue of *FLAMSTEED's inedited Stars.*

No.	Constellation.	Mag.	Right Ascens. 1690.	ΔR	Declination 1690.	ΔD	Piazzi, No.	Hist. Celeste, Page.	Miss Herschel No.
201	Hydræ		128° — —		— 0° 48' 10"			276	420
*202	Hydræ	6	128 59 8		+ 6 28 30				249
203	Ursæ majoris	6	— — —		+66 39 10				443
204	Ursæ majoris	6	— — —		+67 9 50				444
205	Cancrī		130 13 5		+10 33 15			324	360
206	Ursæ majoris	6	130 53 7		+52 1 25				151
207	Hydræ	6	131 16 26	2 = 7,5	+ 6 49 5	2 = 5,0	233		250
208	Hydræ	6	131 20 50		+ 6 49 55		236		251
209	Cancrī	8	131 39 5		+25 47 55			148	167
*210	p Ursæ majoris	5.6	131 40 31	3 = 25,0	+39 38 45	3 = 20,0	243	320	44
*211	(17H.)Urs.ma.	5	131 44 15		+39 39 40		245	320	44
212	Ursæ majoris		131 44 —		+39 — —			320	541
213	Ursæ majoris		131 44 —		+39 — —			320?	542
214	Ursæ majoris	7	131 47 21		+74 11 30				399
*215	Ursæ majoris		131 56 6		+62 54 0				288
216	Hydræ	7	133 59 58	2 = 42,0	+ 5 6 50	2 = 30,0		324	252
217	Ursæ majoris	6	134 — —		+57 58 40				445
218	Cancrī		135 14 23	3 = 27,0	+12 45 42	3 = 23,0	35		189
219	Ursæ majoris		135 51 55		+57 3 55				152
220	Hydræ	7	136 17 45		— 8 20 0		56		253
221	Hydræ		138 5 25	2 = 33,0	— 4 44 37	2 = 58,0		321	43
*222	Hydræ	6	138 25 31		— 0 52 30	2 = 30,0	96		254
223	Hydræ	6	139 10 23		+ 3 12 42		114		255
224	Leonis minoris	6	139 — —		+40 57 45	2 = 37,5			432
*225	Leonis minoris	6	140 9 24		+36 36 25		133		256
*226	Leonis minoris	6	140 17 40		+36 42 20		137		
227	Ursæ majoris	7	— — —		+70 35 45				453
228	Leonis		140 35 44		+14 41 25		141		356
229	Ursæ majoris	5	140 50 34		+64 40 0				153
230	Leonis		141 5 43		+31 22 —		155		495
231	Hydræ		141 — —		— 9 23 15		152		421
*232	Sextantis	6	142 25 5	2 = 15,0	+ 8 5 58	3 = 53,0			240
*233	Leonis		143 32 —		+25 50 —				509
234	Leonis minoris	7	143 — —		+36 24 55			323	487
235	Sextantis	5.6	144 19 32	3 = 8,0	+ 7 23 40	4 = 45,0		226	241

Catalogue of *FLAMSTEED's inedited Stars.*

147

No.	Constellation.	Mag.	Right Ascens. 1690.	ΔR	Declination 1690.	$\Delta D.$	Piazzi, No.	Hist. Céleste, Page.	Miss Herschel No.
*236	Ursæ majoris	6	144° 33' —"		+58° 16' 35"	2 = 15,0	211		{ 391
237	Leonis minoris	7	145 24 27		+31 5 55		221		{ 446
238	Ursæ majoris	6	145 48 1		+55 22 10		229		117
*239	12 Sextantis?	6	145 52 59		+ 4 51 0		223		121
240	Leonis minoris	7	145 58 17		+32 59 45			150?	242
241	Leonis minoris		145 — —		+46 52 0			352?	257
*242	Leonis		146 23 25	2=155,0	+23 24 10	4 = 85,0	230		{ 488
243	Leonis minoris	7	146 26 37		+34 6 50			210	{ 342
244	Leonis minoris	7	146 30 37		+33 55 30			210	408
*245	Leonis minoris	7	146 50 41		+36 28 20			60	258
246	Sextantis	6.7	147 7 11		+ 6 29 32	2 = 12,5		327	259
*247	Leonis	6	147 12 8	2 = 18,5	+17 14 22	2 = 2,5	240		260
248	Com. λ Hydræ		148 52 —		—11 18 —			328	243
249	Hydræ		148 52 —		—11 18 —			326?	164
250	Sextantis	6	148 53 —		— 5 48 32	2 = 2,5	6		409
251	Leonis minoris	5	149 — —		+38 46 50				511
252	Ursæ majoris	4	150 20 0		+67 6 0		42		247
*253	Ursæ majoris	6	150 54 0		+42 46 25		44		485
254	Comes ejus		150 54 —		+42 46 —				154
255	Ursæ majoris	3	151 — —		+70 16 50				261
256	Com. 42 Leonis		151 16 —		+16 30 —			222?	553
257	Leonis		151 27 2		+10 31 5		51		447
258	Leonis	6	151 — —		+ 7 57 55				510
259	Leonis minoris	6	151 29 17		+31 10 5		53		354
260	Sextantis	6	151 55 45		— 2 5 25			277	461
261	Leonis		153 — —		+11 42 50		85		316
262	Leonis		153 2 7		+15 53 50		83		246
*263	28 Sextantis	5	153 13 13		— 2 10 20			277	410
*264	29 Sextantis	5.6	153 25 2	3 = 41,0	— 1 10 20	3 = 20,0	86		233
265	Sextantis	6	153 26 28		+ 3 4 0			275	248
266	Leonis minoris	6	153 43 43		+41 59 50			8	244
267	Com. 36 Leo.m.		155 1 —		+35 40 —				245
*268	Hydræ		155 3 47		—21 35 50			286	118
269	Ursæ majoris	6	155 — —		+70 40 30		126		554
270	Ursæ majoris	6	155 — —		+70 3 5				46

No.	Constellation.	Mag.	Right Ascens. 1690.	ΔR	Declination 1690.	ΔD	Piazzi, No.	Hist. Céleste, Page.	Miss Herschel No.
*271	<i>Uranus</i>		155° 20' 13"		+11° 8' 5"				349
272	Leonis minoris	6	156 13 23		+33 18 15		131		262
*273	Ursæ majoris	5	156 11 32		+47 49 20		135		136
*274	Ursæ majoris		156 18 3		+47 49 15		137		136
275	Sextantis	6	158 — —		+ 2 38 40			275	462
276	Leonis		162 — —		+ 9 14 10			226	411
277	Leonis		164 19 24		+21 — —		9		496
*278	Leonis		164 28 36	3 = 29,0	+ 9 44 42	3 = 7,5	12		170
279	Leonis		164 29 22		+ 3 55 30			325	263
280	Ursæ majoris	6	165 6 20		+51 9 15		19?		394
281	Draconis	6	165 56 27		+66 1 30		43?		392
282	Leonis		167 33 44		+10 21 15		69		45
*283	<i>Uranus</i>		168 24 36		+ 5 49 55				366
284	Draconis	6	168 31 22		+62 47 10				124
*285	22Hyd. & Crat.	7	170 14 49		—31 50 15		115		239
*286	<i>Uranus</i>		170 — —		+ 5 — —				365
287	Ursæ majoris	6	170 — —		+29 29 50			62?	433
288	Ursæ majoris	6	170 50 56		+59 40 50				122
289	Leonis		171 55 43		+ 4 19 5				363
290	Ursæ majoris	6	172 33 27		+57 21 10				123
291	Leonis		173 9 57	2 = 10,5	+15 59 40		160		12
292	Leonis		173 17 48		+ 6 54 30			229	357
293	Leonis		174 — —		+17 58 5			147?	422
294	Ursæ majoris	7	174 42 45		+42 38 50			9	125
295	Comæ Beren.	6	178 43 5		+29 0 30		3		76
*296	Virginis		179 11 8		+ 3 58 55				338
*297	Virginis		179 32 11	2 = 0,0	+ 3 59 30	2 = 45,0	16		338
298	Draconis	6	180 5 21		+71 55 35				393
299	Comæ Beren.	7	180 50 21		+27 44 15		39		299
300	Virginis		181 2 47		— 7 11 45		35		350
301	Corvi		181 14 49		—11 51 5		54		47
*302	Comæ Beren.	7	181 25 12		+27 43 45		52		300
*303	Comæ Beren.	7	181 26 12		+28 21 25				301
304	Comæ Beren.	7	182 6 49		+27 34 35		68		302
305	Comæ Beren.	6	183 17 14		+27 56 25			64	303

No.	Constellation.	Mag.	Right Ascens. 1690.	ΔR	Declination 1690.	ΔD	Piazzi, No.	Hist. Céleste, Page.	Miss Herschel No.
306	Comæ Beren.	7	183° 18' 30"		+27° 36' 50"		96		304
307	Comæ Beren.	7	184 31 30		+26 9 35			65	305
308	Virginis		186 56 50	5 = 8",8	+ 0 7 41	5 = 9",0		333	176
309	Ursæ majoris	6	188 28 2		+62 1 20				137
310	Canum Venat.	6	188 50 43		+39 12 40			58	126
311	Ursæ majoris		190 20 55		+63 8 45				119
312	Comæ Beren.	6	191 36 23		+22 56 50			68	78
313	<i>g</i> Virginis		193 6 52	3 = 60,0	- 7 18 25	3 = 50,0		154	101
*314	Comæ Beren.	6	193 15 2		+29 14 40			334	79
315	Canum Venat.	6	193 — —		+39 5 15			57?	434
316	Comæ Beren.		193 45 15		+18 30 15				77
317	Canum Venat.	5.6	194 54 10		+41 48 40	2 = 40,0	27		135
318	<i>r</i> Centauri	5	194 56 54		-29 48 25		31		82
319	Virginis		195 24 12		- 7 5 30			154	351
320	Virginis		195 27 30		+15 18 20		41		306
321	Virginis		195 33 46		+15 23 55		43		307
322	Canum Venat.	6	195 44 44		+51 48 20				120
323	Virginis	6	196 38 —		+ 3 43 5				387
324	Virginis	6	196 48 —		+15 45 55				403
325	Virginis		198 23 29		+ 5 29 20			336	317
326	Bootis	6	199 3 —		+25 50 5				404
327	Ursæ majoris	5	199 17 32		+61 33 50		113		138
328	Bootis		199 33 25		+25 57 20				308
*329	Canum Venat.	5	200 29 0		+38 46 25		136?		127
330	Bootis	7	200 51 38		+24 7 5		150		309
*331	25 Can. Ven.?	5	200 54 49		+37 52 20				128
332	Bootis	6	201 1 8	2 = 133,5	+12 18 52	2 = 2,5		469	94
333	Bootis	7	201 28 15		+21 36 5		161		200
334	Bootis		201 — —		+24 — —		150?		551
335	Bootis	5	202 15 44	2 = 37,5	+24 16 40	2 = 5,0		67?	201
336	Virginis		202 43 13		- 8 8 35			154	371
337	Virginis		203 — —		- 5 — —		192?		512
*338	Bootis	6.7	203 5 0	2 = 37,5	+32 28 17	3 = 21,6	195		202
339	Canum Venat.	7	203 12 42		+40 3 35			339	129
340	Canum Venat.	7	203 23 59		+40 5 35			339	130

No.	Constellation.	Mag.	Right Ascens. 1690.	ΔR	Declination 1690.	$\Delta D.$	Piazzi, No.	Hist. Céleste, Page.	Miss Herschel No.
341	Canum Venat.	7	203° 36' 5"		+32° 57' 10"				212
342	Canum Venat.	6	203 40 14	3 = 38,3	+32 44 43	3 = 46,7			131
343	Bootis	6	203 49 37		+20 11 10			71	267
344	Canum Venat.	7	204 20 53		+36 19 10			61	132
345	Canum Venat.	7	204 21 38		+36 12 10			61	133
346	Bootis		204 24 13		+18 16 30		228		203
347	Canum Venat.	6	204 31 25		+35 59 15			61	134
348	Bootis	5	204 46 55		+30 10 23		235		213
349	Canum Venat.		205 36 34		+33 32 38			162?	214
350	Bootis	6	206 30 26		+23 48 0				318
351	Com. 11 Bootis		206 46 —		+28 53 —				550
352	Bootis	7	206 54 31		+33 3 58	2 = 10,0		69	204
*353	Virginis		207 6 15		-14 49 35				352
354	Bootis	7	207 12 56	2 = 7,5	+33 9 20	2 = 2,5		69	205
355	Virginis		207 36 5		-14 41 5		300		353
356	Bootis	5	207 54 3		+52 28 45	2 = 20,0	296		215
357	Bootis	7	208 10 59		+32 20 18			69	473
358	Bootis	6	208 56 25	2 = 169,0	+45 19 4	2 = 24,0	316		206
*359	1 Libræ?	6	209 18 35		-27 47 50				216
360	Bootis	6	209 26 26		+33 45 8		16		386
361	Virginis		210 — —		+ 3 51 45		12?		217
362	Bootis	7	210 2 2		+30 33 8			165?	412
363	Bootis		210 21 45		+20 22 30				218
*364	101 Virginis?	6	210 39 41		+16 42 40				9
365	Bootis	7	210 56 56		+41 10 28				95
*366	Bootis	6	211 18 4	3 = 370,4	+36 56 2	3 = 58,4	45		219
367	Bootis	6	211 36 33		+52 45 20		50		207
368	Bootis	6	211 56 51		+53 28 30				220
369	Virginis	4.5	212 2 33	3 = 12,7	+ 9 51 48	3 = 26,7	69		221
370	Virginis	7	212 11 37		+ 9 40 0		72		96
*371	Virginis	5	212 12 6	2 = 60,5	+ 7 14 12	2 = 12,5	71		97
372	Virginis	6	212 16 22		+ 9 30 0		75		98
373	Bootis	6	212 — —		+53 59 55				319
374	Bootis		212 — —		+38 37 10			164	476
375	Bootis		212 — —		+41 10 52		102?		477
									474

No.	Constellation.	Mag.	Right Ascens. 1690.	ΔR	Declination 1690.	$\Delta D.$	Piazzi, No.	Hist. Céleste, Page.	Miss Herschel No.
376	Virginis	6	213° — ' —"		+ 2° 13' 30"		96		413
377	Bootis	6	213 11 54		+39 48 20			9	222
378	Bootis	6	213 51 1		+37 35 30			164	223
379	Bootis	6	214 8 19		+33 11 5		103		224
380	Bootis	6	214 38 39		+28 3 47	$2 = 32,5$		335?	208
381	Librae		215 36 54		— 9 11 0		137		367
382	Bootis	6	215 — —		+33 54 20			162	478
383	Bootis	6	215 — —		+38 20 25			164	479
384	Bootis	6	215 — —		+37 59 45			164	480
385	Bootis		216 34 —		+15 — —		145	74	532
386	Bootis	6	216 38 43		+44 59 10			8	225
387	Bootis	6	216 — —		+50 44 10				481
388	Bootis	6	217 31 22		+38 5 10			164	226
*389	Bootis	6	217 54 44		+41 46 45	$2 = 5,0$		161	{ 268
390	Virginis	6	217 55 48		+ 3 20 50	$2 = 10,0$	180		{ 482 320
391	Bootis	6	218 17 14		+46 30 40		179		227
392	Bootis	7	218 — —		+43 42 0			337	483
393	Bootis	5.6	219 13 30	$2 = 64,0$	+39 6 50	$2 = 35,0$			228
394	Bootis	6	219 18 38	$2 = 37,5$	+29 54 22	$2 = 2,5$	193		321
395	Bootis	5	219 34 22		+38 35 5				229
396	Bootis		219 — —		+47 52 55				428
397	Bootis		220 47 50		+28 24 10				48
398	Bootis	6.7	221 5 22		+42 24 37	$2 = 62,5$			210
399	Bootis	6	221 31 23		+50 53 28		235		209
400	Bootis	6	221 54 15	$2 = 0,0$	+40 53 38	$3 = 58,3$		9	211
401	Bootis	6	222 29 21		+48 30 7	$2 = 7,5$			{ 230
*402	Bootis	6	222 42 0		+36 26 10		263		{ 475 322
403	Bootis	5.6	223 4 20		+45 57 2	$2 = 292,0$		353?	231
404	Librae		223 41 30		—17 54 15			342	49
*405	23 Librae?	7	223 52 23		—24 5 55		5		344
406	Bootis	6	224 30 51		+34 16 25			163	232
407	Bootis	6	224 — —		+30 25 40			166	484
408	ϕ^1 Lupi	4	225 33 53		—34 58 55		34		80
409	ϕ^2 Lupi	6	225 52 26		—35 34 25		42		81
*410	Bootis	5	226 3 30		+21 44 30			69	323

No.	Constellation.	Mag.	Right Ascens. 1690.	ΔR	Declination 1690.	ΔD	Piazzi, No.	Hist. Céleste, Page.	Miss Herschel No.
411	Libræ		229° 26' 1"		— 8° 6' 40"			288	13
412	Com. 12 Serp.		229 29 —		+17 37 —				540
413	Serpentis	7	229 57 20		+18 12 20		114		102
414	Coronæ Bor.		230 6 12		+28 0 40				50
415	Herculis	6	232 57 50		+47 49 35			353?	270
416	Serpentis		233 14 —		+15 — —		176?		539
417	Scorpii		234 56 9		—20 3 10			343	169
418	Serpentis	6	235 14 38		+21 14 30		212		99
*419	Libræ		235 20 38		—12 40 40			346?	190
420	ϕ Serpentis	7	235 44 54		+15 19 5		222		100
421	Serpentis	6	238 20 0		+ 9 28 25		283		298
422	Scorpii		239 15 32		—17 43 0			342	179
423	Herculis		241 39 26		+21 54 25			468	266
424	Ophiuchi	5	242 45 50	2 = 36,5	— 6 50 42	2 = 17,5		290	264
425	Serpentis	6	242 49 12		+ 3 4 20			291	388
426	Herculis	7	243 — —		+16 4 0			81?	489
427	Herculis	7	243 32 20		+16 9 17	2 = 17,5		81	289
428	Herculis	7	243 — —		+12 8 25			84?	491
429	Herculis	6	243 — —		+11 3 15			84?	490
430	Herculis		244 — —		+22 53 45				380
431	Herculis	7	245 44 12		+38 44 40		127		271
432	Herculis	5	245 50 4		+14 21 15		136		290
433	Scorpii	7	245 57 29		—19 17 37	2 = 28,3	145		83
*434	Ophiuchi		246 — —		+ 1 50 —				559
435	Herculis	5	246 33 23	2 = 3,0	+13 1 52	2 = 2,5	154		291
436	Herculis		247 10 7		+25 28 40			169	326
437	Herculis	6	247 51 21	2 = 23,0	+16 21 0	2 = 40,0		81	292
438	Herculis	7	248 23 26	2 = 7,5	+11 43 0	2 = 40,0		84	293
439	Herculis	6	248 50 15	2 = 22,5	+13 50 20	2 = 35,0		83	294
440	Herculis		249 51 18		+15 56 30				295
441	Herculis	5	249 — —		+49 45 0				486
442	Herculis		— — —		+21 10 50			474?	492
443	Herculis	6·7	251 11 3	2 = 13,0	+15 56 57	2 = 12,5		81	296
444	Ophiuchi		251 19 31		+ 7 5 10				324
445	Herculis	6	251 53 36		+15 26 7	2 = 22,5		81	297

No.	Constellation.	Mag.	Right Ascens. 1690.	ΔR	Declination 1690.	ΔD	Piazzi, No.	Hist. Céleste, Page.	Miss Herschel No.
446	Ophiuchi	6	252° 34' 54"		-17° 9' 15"		297		16
447	Ophiuchi	6	253 44 38		+10 29 0			86	327
448	Scorpii		253 — —		-26 36 20		1 ?		414
*449	63 Herculis?	5	254 30 51		+24 38 55		11		269
450	(A Cluster)		254 — —		-26 — —				556
451	Ophiuchi		257 32 47		- 4 47 0		99		265
452	Herculis		257 37 36		+ 7 54 40				406
*453	Serpentis		259 58 —		-15 20 10	5 = 20,0	156		51
454	Herculis	6	260 — —		+31 25 0			473	429
455	Ophiuchi	7	263 54 3		+ 9 59 0			86	325
456	Herculis	7	264 41 57		+47 45 15			353	328
457	Serpentis	6	265 7 42	3 = 68,3	- 4 0 50	3 = 105,0	293		180
458	Sagittarii		265 47 15		-22 43 20		312		368
*459	Herculis	5	266 38 —		+30 — —				103
460	Com. ψ Drac.	7	266 59 0		+72 17 55		287		311
461	Herculis		267 17 —		+48 2 55				405
*462	12 Sagittarii?	7	267 35 16	2 = 27,0	-23 59 2	2 = 2,5	366		345
463	Sagittarii	6	268 12 31	4 = 36,0	-23 42 29	4 = 21,3	386		84
464	Sagittarii		268 14 39		-19 52 0			172	369
465	Sagittarii	7	268 34 14		-23 8 15			173	347
*466	18 Sagittarii?		272 41 39		-30 53 20		52		381
*467	23 Sagittarii?	7	272 45 22		-23 24 15				346
468	Sagittarii		274 54 44		-23 42 40		129		181
469	Sagittarii	6	276 48 48		-20 39 25				14
470	r^3 Sagittarii	8	279 18 47	2 = 0,0	-23 30 52	2 = 2,5	225		15
471	Sagittarii		281 27 51	2 = 7,5	-21 56 20	2 = 5,0		173	191
472	Com. π Sagitt.		282 38 —		-21 28 —				501
*473	Draconis	5	283 1 8		+73 — —				85
474	Lyræ	6	283 17 37		+31 17 55			20	17
475	Vulpeculæ	6	284 49 45	2 = 6,0	+21 3 37	2 = 2,5		105	273
*476	19 Lyræ?		284 58 40		+30 47 35			20	18
*477	2 Vulpeculæ?	6	286 9 34		+22 30 2	2 = 17,5			274
478	Sagittarii		287 39 11		-27 33 5		126		272
479	(A Cluster)		288 30 —		+21 — —				557
480	Vulpeculæ	6	288 59 46		+23 51 22	2 = 2,5	128		275

No.	Constellation.	Mag.	Right Ascens. 1690.	ΔR	Declination 1690.	ΔD	Piazzi, No.	Hist. Celeste, Page.	Miss Herschel No.
481	β^2 Cygni	6	289° 32' 55"	2 = 15,0	+27° 20' 35"		162		52
482	Sagittarii		289 35 25		—19 29 45		176		193
483	Sagittarii		289 45 52		—18 52 50		180		194
484	Aquilæ		290 10 24		— 2 2 0			98 ?	358
485	Sagittarii		290 21 46		—24 5 25		201		53
486	Sagittarii		291 27 22		—16 13 0		230 ?		359
487	Cygni		291 — —		+41 45 45			237 ?	423
488	Com. <i>f</i> Sagitt.		292 — —		—20 — —			173 ?	513
489	Aquilæ		294 — —		— 3 52 35			109 ?	415
490	Cygni		294 — —		+37 — —			14 ?	527
491	Vulpeculæ	6	297 40 3		+27 9 30		327		22
492	β^1 Capricorni		300 50 29		—15 43 20		79		19
493	Vulpeculæ	5	300 52 15		+25 49 40			26	23
494	Cygni		301 27 30		+47 21 10				29
495	Com. 68 Drac.		301 37 —		+61 9 —				533
496	ϵ^2 Capricorni		302 49 15		—18 50 40		144		192
497	Aquilæ		303 — —		+ 4 22 55			190 ?	417
498	Cephei		304 21 —		+76 45 —		119		500
499	Capricorni	6	305 35 —		—17 11 20		240		20
500	Delphini		306 18 —		+14 50 —		247	116	514
501	Delphini		306 18 —		+14 50 —			116 ?	515
502	Cygni		306 — —		+30 27 45		243		418
503	Draconis		307 36 4		+59 5 45				310
504	Capricorni		307 42 16		—19 17 35			177	171
505	Capricorni	6	308 49 25		—10 53 15		174		374
506	Capricorni		308 51 —		—18 42 —			177 ?	518
507	Capricorni		308 51 —		—18 42 —			177 ?	519
508	Aquarii		308 55 —		— 6 38 —		336 ?		516
509	Capricorni		309 19 —		—19 55 45			178	21
*510	6 (Hev.) Ceph.	6	309 19 3		+56 29 40		332 ?		86
511	Aquarii		311 13 19		+ 6 19 5				26
512	Capricorni		312 — —		—21 24 35		454		416
513	Capricorni		315 30 8		—17 26 50		66		178
514	Cygni		316 — —		+42 40 —			1 ?	522
*515	34 Vulpeculæ ?	6	316 44 43		+22 35 11			29	25

Catalogue of FLAMSTEED's inedited Stars.

155

No.	Constellation.	Mag.	Right Ascens. 1690.	ΔR	Declination 1690.	ΔD	Piazzi, No.	Hist. Céleste, Page.	Miss Herschel No.
516	Pegasi		317° 58' —"		+18° 4' —"			188	382
517	Com. 71 Cygni		319 30 —		+45 52 10				523
518	Aquarii		320 28 —		— 1 44 35				376
519	Pegasi	6	321 7 48		+18 53 0			32	58
520	Capricorni		322 6 —		—10 28 —		257		517
521	Cygni	6	322 39 17		+39 45 25		265		24
*522	Capricorni		323 13 51	2 = 0,0	—14 8 32	2 = 7,5	291		182
523	Aquarii		324 5 47		—11 59 50			571	235
524	Aquarii		324 14 59	2 = 19,5	—11 44 47	2 = 7,5		571	27
525	Pegasi	6	324 31 14		+ 5 26 0		322		383
*526	11 Pisc. Aust.?		325 25 0		—29 6 30				54
527	Aquarii		326 49 24		— 1 37 40				105
528	Piscis Aust.		327 — —		—28 19 0		378?		424
529	Aquarii		327 41 18	2 = 18,5	—11 56 37	2 = 7,5		571	234
530	Aquarii		327 49 23		—11 33 55			572	236
*531	Aquarii		328 0 16		—14 47 30			181	183
532	Aquarii	7	328 — —		— 9 0 25				464
533	1 (Hev.) Lacert.	5	330 7 40		+38 11 50		36		61
534	Aquarii		331 49 28		— 8 44 10		81		184
535	Piscis Aust.		334 — —		—27 38 10		118?		425
536	Com. 39 Pegasi		334 24 —		+18 1 —				528
537	Aquarii		334 55 16		—25 32 55			570	375
538	Pegasi	7	336 38 57		+12 54 30		195		104
539	Aquarii		336 42 0	2 = 12,5	— 9 55 15	2 = 15,0	200		283
*540	Com. ξ Pegasi		337 46 —		+17 45 —				529
541	Piscium		339 31 52		+ 0 11 35			118	331
542	Piscium		340 26 9		+ 2 9 55			110	337
543	Andromedæ	6	340 44 22		+48 5 40			363	64
544	Andromedæ	6	340 52 15		+47 2 20			363	65
545	Piscium		341 11 —		— 1 28 —			118	520
546	Piscium		341 11 —		— 1 28 —			118	521
547	Aquarii		344 38 36		— 7 37 0		2		361
548	Aquarii		344 54 3		— 5 10 25			187	278
549	Piscium		346 2 23	2 = 0,0	— 5 36 0	2 = 2,5		187	279
550	Piscium		346 9 —		+ 2 30 25				465

No.	Constellation.	Mag.	Right Ascens. 1690.	ΔR	Declination 1690.	ΔD	Piazzi, No.	Hist. Céleste, Page.	Miss Herschel No.
551	Piscium		346° 9' —"		+ 2° 27' 25"				466
552	Andromedæ		346 18 —		+46 41 15		51		499
553	Piscium		346 19 56		— 6 21 35				280
554	Piscium	6	346 54 34	3 = 36,0	— 1 25 17	3 = 83,3	68		67
555	Andromedæ	6	346 — —		+42 26 10			200?	426
556	Pegasi	6	351 0 51		+ 7 57 50		146		57
*557	Piscium		352 59 12		— 0 29 40		193?		177
558	Piscium		353 6 30	3 = 15,0	+ 6 31 28	3 = 13,3		127	276
559	Piscium		354 57 33		+ 6 29 45			127	282
560	Piscium		355 56 17		— 7 37 5		249		333
561	Pegasi		356 8 34		+25 11 45		251		59
562	Piscium	7	356 32 26		— 4 29 50		258		172
563	Ceti		357 — —		—18 14 55			244?	470
564	Ceti	6	359 55 35		—11 18 0			192	390

NOTES

TO THE PRECEDING CATALOGUE.

No.

7. Sir William Herschel has suggested, that if 14 *Ceti* in Flamsteed's catalogue be altered $+3^{\circ}$ in polar distance, it would correspond with this star; and as no other observation of 14 *Ceti* is to be found in Flamsteed's journal, this suggestion is well founded. The position of the star, as here given, is deduced from Flamsteed's observation on October 19, 1704, which seems more to be relied on than the observation made on September 13, 1703, where the determining star differs upwards of 17° in declination.
10. The right ascension of this star is deduced from a mean of seven comparisons with the pole-star; but, as the observations were made in various years and at different times of the year, and as the effect of precession, &c. has not been allowed for, we must not look for a strict accordance in the results.
12. Miss Herschel has assumed that this is the same star as the preceding one, and that there requires a correction of about $3^m\ 33^s$ in the time of the fourth star compared, viz. 19 *Piscium*. But, on making this last comparison, it will be seen that it was quite a different star, being O. 137 in Piazzi's catalogue.
15. This star, as well as No. 19, is supposed by Miss Herschel to be 43 (*Hev.*) *Cephei*; and, if so, it was observed both by Bradley and Piazzi. They are probably, however, two different stars: for, though the declination of both of them is perhaps correct, there is much ambiguity as to the right ascension. On December 5, 1793, it is stated to have followed the pole-star about $2^m\ 32^s$ in time; and on December 19, to have preceded that star $6^m\ 52^s$. I have therefore separated them.
19. See the preceding note.
35. Sir W. Herschel is of opinion that this is the star which Flamsteed has assumed as 1 *Arietis*, by making an error of 10^m (in time) in the reduction. There does not appear to be any observation of 1 *Arietis*, as given in the *British Catalogue*.
40. Allusion is made to this star by Piazzi, in the note to his I. 252.
- 41 } There is nothing in the observations to point out the declinations of these stars. They were
42 } probably near the parallel of α *Arietis*.
43. Flamsteed has recorded two observations of this star; but they are at an interval of 15 years; so that the position cannot be depended upon. In right ascension, the difference between the two observations is equal to $4'\ 45''$ in space. See the remarks in the note to No. 10, in this catalogue.
58. There appears to be an error of 1^h in recording the time of the first observation of this star; and there is a difference in reading off the limb. See Miss Herschel's note on this star.
59. Miss Herschel states, that by an alteration of $-3^m\ 12^s$ in the time of the right ascension, and $+55'\ 52''$ in the polar distance of 24 *Persei*, in the *British Catalogue*, (of which there is no recorded observation in Flamsteed), it will correspond with this star.

No.

60. This is No. 414 in Bradley's catalogue.
63. The right ascension of this star is deduced from the comparison with 33 *Persei* only, as there appears to be a difference of 1^m (in time) in the comparison with the other star.
- 65 } Bradley observed one of these stars, No. 444 of his catalogue; and they are both recorded
66 } by Lalande in the *Histoire Céleste*, p. 200.
67. This star agrees very well in declination with Piazzi, II. 264; but there is a difference of 2^m (in time) in the right ascension. It is called δ *Arietis* in Flamsteed's journal; but that star could not be mistaken for one of the 8th magnitude, and they, moreover, differ from each other above 10° in declination.
73. This star is called by Piazzi 46 *Persei*; and, misled thereby, Professor Harding has so called it in his *Atlas*: but 46 *Persei* is III. 201 in Piazzi's catalogue, and is situated upwards of 12° more to the south.
80. The reading *per strias cochleæ* appears to be the correct reading.
82. The reading *per strias cochleæ* would make the declination of this star $+52^\circ 47' 15''$.
83. This star is not in *Bessel's Zone*, No. 340.
84. The error of 1^m (in time), as noticed by Miss Herschel, is corrected prior to the reduction of this star. Miss Herschel very naturally concluded that the star which is compared with 81 *Tauri* is the same as that which is compared with the five other stars; but it appears to be a different star, which has been observed both by Mayer and Piazzi. See the following note. Miss Herschel suggests, that by a slight alteration of the *British Catalogue*, this may be 82 *Tauri*, of which there is no observation.
- 85 } These stars are both deduced from a comparison with 81 *Tauri*, on the same evening,
86 } (October 29, 1691); and, consequently, they cannot be the same star. The first agrees
86 } most nearly with IV. 102 of Piazzi's catalogue.
87. The declination of this star, *per strias cochleæ*, is $+15^\circ 50' 20''$. I cannot find any observation of such a star, either in Piazzi, or the *Histoire Céleste*. The right ascension agrees exactly with 89 *Tauri*.
91. This star passed between the transit of 97 and 98 *Tauri*. Miss Herschel states, that if the polar distance of 99 *Tauri*, in the *British Catalogue*, (of which there is no observation,) be altered $-1^\circ 1'$, it will correspond with this star; but, in that case, we must also suppose an error in the right ascension, as the transit preceded 98 *Tauri*.
92. Miss Herschel says, in p. 81, that there is no observation of 13 *Camelopardi*; but the determining star, given by her in p. 11, is evidently that star, and which she appears to have set down, in p. 82, as belonging to 9 *Aurigæ*.
94. This star was also observed by Bradley, and is No. 737 in his catalogue. It is called 18 *Aurigæ* by Piazzi; but his V. 27 agrees with that star.
97. There is a star in the *Histoire Céleste*, p. 143, that will agree with this very well in declination; but there is a difference of about 1^m (in time) in right ascension.
100. This star passed between the transit of 26 and 29 *Camelopardi*. Miss Herschel suggests, that if the polar distance of 27 *Camelopardi*, in the *British Catalogue*, (of which there is no observation), be altered $+30'$, it will correspond with this star. But she adds, that Sir W. Herschel looked for this star, and also for No. 27, on April 19, 1797, and could not discover either of them.

- No.
101. Miss Herschel says, that if the right ascension of 124 *Tauri*, in the *British Catalogue*, (of which there is no observation), be altered $+4^m 19^s$ (in time), it will agree with this star. Piazzì, however, has given that name to V. 164 of his catalogue.
 102. Miss Herschel says, that this is ν^2 , No. 427, in Lacaille's catalogue.
 106. Probably one of the stars in the *Histoire Céleste*, p. 311.
 109. This star is No. 854 in Bradley's catalogue.
 118. This is probably the star intended for 64 χ^4 *Orionis*. The declination agrees exactly with that star; but there is a considerable difference in the right ascension, as given by Flamsteed. There is no other observation of 64 *Orionis*.
 120. Sir W. Herschel supposes that this is 63 *Orionis*, (of which there is no observation by Flamsteed), and that it may have been incorrectly reduced.
 121. Neither the right ascension nor declination of this star is well determined. It passed between the transit of 7 η *Geminorum* and 5 *Monocerotis*. The declination *per lineas diagonales* differs $21'$ from that *per strias cochleæ*.
 124. Probably VI. 55 and 61 in Piazzì's catalogue.
 131. There is no observation by Flamsteed of 21 *Geminorum*, except this be it; but I cannot find any corresponding observations, either in Bradley, Piazzì, or Lalande, of any star but 20 or 21 *Geminorum*.
 135. Probably 61 *Aurigæ*, another observation of which occurs in the next entry in Flamsteed's journal.
 137. Miss Herschel remarks; that this is No. 41 of the cluster of stars mentioned in the *Connaissance des Temps*.
 147. M. Burckhardt says, that if we admit an error of 2° in registering the zenith distance of this star, it will agree with m 48 *Geminorum*.
 148. Sir W. Herschel is of opinion that this star is 50 *Geminorum* in the *British Catalogue*, (of which there is no other observation), and that it has been erroneously reduced; but it appears to me, that 50 *Geminorum* agrees better with the star so designated by Bradley and Piazzì. The star here alluded to agrees more nearly with VI. 346 in Piazzì.
 149. This star was observed by Lalande, March 7, 1791; and its place, as here given, is deduced from Flamsteed's observation of March 4, 1703, p. 457. Miss Herschel has supposed it to be the same as that which was observed by Flamsteed on January 13, 1696, p. 282, and Feb. 15, 1704, p. 472; but there is a difference of 3 or 4^m (in time) in their right ascensions. See the following note.
 150. Miss Herschel has considered this to be the same star as that which is mentioned in the preceding note; but the right ascension (although doubtful) differs 3 or 4^m (in time), and the declination above a minute in space. I have, therefore, treated them as two distinct stars. It is probably the same star as No. 439 of Miss Herschel's catalogue; and either this, or the star mentioned in the last note, is probably the same star as that which was observed by Lalande, March 1791, and which preceded 20 *Lyncis* about $3\frac{1}{2}^m$; for the interval between the first and middle wires given by him is not correct.
 151. The right ascension, also, is doubtful: it passed between the transit of No. 146 of this catalogue and 48 *Camelopardi*. There is a difference of 6^m in the declination between the *lineæ diagonales* and the *striæ cochleæ*. Perhaps it is VII. 112 in Piazzì.

No.

156. If I understand Miss Herschel correctly, she supposes this star to be No. 307 in Mayer's catalogue; but the preceding star (No. 155 of this catalogue) appears to me to be the one observed by Mayer.
- 157} Miss Herschel has imagined these stars (both of which are deduced from 7 *Navis*) to be the
158} same star; but I apprehend they are k^1 and k^2 *Navis*.
159. This star also (which is deduced from 3 *Navis*) is supposed by Miss Herschel to be the same as the two preceding ones; but it appears to me that there is too great a difference in the observations to warrant such a conclusion.
161. Sir W. Herschel has supposed that there is an error of 2° in polar distance, in the reduction of 1 *Navis* in the *British Catalogue*, and that this is the star meant, of which there is no other observation. But 1 *Navis*, as denoted by Bradley and Piazzì, is quite another star, agreeing very well in declination with Flamsteed's, but differing somewhat in right ascension.
162. The words of Flamsteed, "*hæc habet comitem precedentem*," must surely refer to the star 2 *Navis*, which is entered in the journal immediately preceding 4 *Navis*. I cannot find a record of any other star that will answer the description.
167. This star was observed by Bradley; and is No. 1130 in his catalogue.
173. There is a star in the *Histoire Céléste*, page 282, that will agree with this very well in right ascension, but differs from it above $12'$ in declination.
174. I suspect some inaccuracy in recording the observations of Feb. 14, 1696; for this star stands between two others differing only 6^s (in time) from each other, and yet differing nearly 10° in polar distance. Notwithstanding this, there is a complete observation of all the three stars.
177. This star was observed by Bradley; and is No. 1169 in his catalogue.
181. By comparing the observations of Nos. 238 and 373 of Miss Herschel's catalogue with 20 *Navis*, instead of 16 and 18 *Navis* respectively, as she has done, there can be no doubt but that they are the same star. Sir W. Herschel is of opinion that this is 17 *Navis* in the *British Catalogue* (of which there is no observation), and that it has been incorrectly reduced.
182. I have presumed (with Miss Herschel) that there is an error of 1 minute (in time) in registering the last of the three observations of this star.
186. This star is called *étoile singulière* by Lalande.
189. The declination of this star, as deduced from the *lineæ diagonales*, differs 5^m from that deduced from the *stria cochleæ*. I have taken a mean of the two.
191. It will be impossible to identify this star, as the right ascension is uncertain, and there is evidently some error in recording the zenith distance.
195. Probably VIII. 131 or 141 in Piazzì's catalogue.
196. The declination of this star agrees with VIII. 112 in Piazzì's catalogue; but there is a difference of 50^s (in time) in the right ascension.
198. The right ascension of this star agrees with VIII. 124 in Piazzì's catalogue; but there is a difference of $10'$ in the declination.
202. Observed by Bessel in zone 59.

No.

- 210} Miss Herschel has supposed these two stars to be one and the same; but they were both
 211} observed by Lalande on March 28, 1794, as well as by Piazzi. The first star is deduced from a comparison of three observations; viz. one with α *Ursæ majoris*, and the two others from 66 *Cancræ*. No. 211 is deduced from the comparison with 15 *Ursæ majoris* only. I am not altogether satisfied, however, with the results. This latter star is said, by Flamsteed, to have two stars near it, to the south, which are Nos. 212 and 213 of this catalogue.
215. This star is alluded to in the note to VIII. 261, in Piazzi.
222. There is a typographical error in No. 254 of Miss Herschel's catalogue, which has escaped her remarkable diligence. Opposite 31 *Hydræ* the letter *p* should be *f*.
225. Miss Herschel appears to have given an erroneous reference to the determining star, (12 *Leonis minoris*), which, in p. 438 of Flamsteed's journal, follows immediately after 11 *Leonis minoris*. She seems to have mistaken the whole of the last four stars in that page, which she calls 43 *Lyncis*, No. 256 of her catalogue, 12 *Leonis minoris*, and 44 *Lyncis*; but they are, respectively, 12 *Leonis minoris*, two stars not inserted in the *British Catalogue*, and 43 *Lyncis*. These two inedited stars are IX. 133 and 137 in Piazzi's catalogue. See the next note. I may here remark, that I disagree with Miss Herschel in the numbers of the stars in the constellation *Lynx* after No. 34, as I reject the one she calls No. 35.
226. This star has been overlooked by Miss Herschel, who considered it to be 12 *Leonis minoris*, which, however, preceded it 2^m 9^s (in time). See the preceding note.
232. There are three distinct observations of this star; but I cannot find any mention of it either in Bradley, Piazzi, Lalande, or Bessel. Instead of comparing it with 4 and 10 *Sextantis*, as Miss Herschel has done, it will be better to compare it with 10 *Leonis*.
233. This star is alluded to in the note to IX. 190 in Piazzi.
236. I have no doubt but that Nos. 391 and 446 of Miss Herschel's catalogue refer to the same star; and I have, consequently, deduced the declination from a mean of the two comparisons.
239. Miss Herschel states, that Flamsteed has no observation of 12 *Sextantis*, but that, if the polar distance of that star in the *British Catalogue* be altered $+1^\circ$, it will correspond with this star.
242. This is the same star as No. 408 in Miss Herschel's catalogue. The differences in right ascension are the greatest I have met with, except Nos. 43 and 368.
245. This star is compared with 21 *Leonis minoris*, and may thus be identified in the *Histoire Céleste*, p. 60.
247. I have presumed (with Miss Herschel) that there is an error of 1^m (in time) in registering the observation of March 6, 1696.
253. Miss Herschel thinks that there is an error in recording the time of the transit of the star; but it accords exactly with the observations of Piazzi.
263. Miss Herschel states, that by an alteration of $+1^m 22^s$ (in time) in the right ascension, and $+1^\circ$ in the polar distance of 28 *Sextantis*, in the *British Catalogue*, (of which there is no observation), it will agree with this star. But, see the following note.

ASTRON. SOC. OF LOND. VOL. IV.

F F

No.

264. I have presumed (with Miss Herschel) that there is an error of 2^m (in time) in registering the observation of February 28, 1702. Miss Herschel says, that by an alteration of +1° in the polar distance of 29 *Sextantis*, in the *British Catalogue*, (of which there is no observation), it will agree with this star; but it is evidently the star called 28 *Sextantis* by Piazzi.
268. This star was observed also by Bradley, and is No. 1472 in his catalogue.
271. This is stated by M. Burckhardt (*Connaissance des Temps*, 1820, p. 408,) to be one of the five observations of *Uranus* made by Flamsteed, which, although discovered prior to the publication of Miss Herschel's work, was not suspected to have been observed by Flamsteed. The observation bears date March 22, 1712, old style, and the star is called ϵ *Leonis* by Flamsteed. For three other observations of this planet, see No. 286; and for the fifth, see No. 283 of this catalogue. There is another observation (supposed to be of this planet, which, however, is doubted,) bearing date December 13, 1690, and which, having been reduced by Flamsteed as one of the fixed stars, is called 34 *Tauri* in the *British Catalogue*.
- 273 } Miss Herschel has supposed these to be the same star; but they were both observed by
274 } Piazzi.
278. In Miss Herschel's catalogue, No. 170, the distance following χ 63 *Leonis* should be 8^m 53^s, instead of 8^m 43^s.
283. This is one of the observations of *Uranus*. See the note to No. 271 of this catalogue.
285. Miss Herschel says, that Flamsteed has no observation of 22 *Hydræ et Crateris*; but that if we alter the polar distance of that star in the *British Catalogue* —1°, it will agree with this observation.
286. This is the approximate position of *Uranus* in February 1715. Flamsteed has three observations of the planet; viz. on February 21, 22, and 27, old style. That of the 22d is imperfect as to the right ascension; but the others are complete. M. Burckhardt has deduced the position of the planet, for the 21st and 27th, as under:
- | | | |
|----------------|-------------------------------|-----------------------------|
| 1715. Feb. 27. | $R = 170^{\circ} 25' 45'', 0$ | $D = +5^{\circ} 0' 38'', 6$ |
| 21. | $R = 170 40 18, 0$ | $D = +4 54 22, 7$ |
- See the note to Nos. 271 and 283 of this catalogue.
296. This star was observed by Flamsteed on April 6, 1708: and Miss Herschel has supposed it to be the same star as the one immediately following, (No. 297), and that there is an error in registering the right ascensions; but I have considered them as two different stars. I cannot find, however, any corresponding observation of *this* star, either in Bradley, Piazzi, Lalande, or Bessel.
297. This star is deduced from Flamsteed's observations of April 2 and 5, 1708. See the last note.
- 302 } If we suppose an error of 1^m (in time) in recording the transit of these stars, they will agree
303 } with the observations in the *Histoire C leste*, p. 64. The first star (302) was observed
also by Piazzi.
314. This star was observed also by Bradley, and is No. 1745 in his catalogue.
329. Miss Herschel imagines that this star is 19 (*Hev.*) *Canum Venaticorum*; but I have some doubts on the subject.

No.

331. Miss Herschel states, that if the polar distance of 25 *Canum Venaticorum*, in the *British Catalogue*, (of which there is no observation), be increased 10° , it will agree with this star. I cannot find, however, that such a star has been observed by Bradley, Piazzi, or Lalande.
335. If we suppose an error of -1° in registering the star $13^h 13^m 18^s.8$, in the *Histoire Céleste*, p. 67, it will agree with this star.
338. I have rejected the comparison with 3 *Bootis* by the *lineæ diagonales*.
353. Miss Herschel appears to hint that this may be No. 562 of Mayer's catalogue; but it passed the meridian *before* the star No. 357 in this catalogue, which is evidently 561 Mayer. I do not find any corresponding observation of it by Bradley, Piazzi, or Lalande.
359. Miss Herschel states, that Flamsteed has no observation of 1 *Libra*; but that if we alter the right ascension of that star, in the *British Catalogue*, by $-1^m 53^s$ (in time), and the polar distance by $+2^\circ 1' 22''$, it will agree with this star.
364. Miss Herschel states, also, that Flamsteed has no observation of 101 *Virginis*; but that if the polar distance of that star in the *British Catalogue* be altered $+1^\circ$, it will agree with this observation.
366. Notwithstanding the great difference in the results of the three comparisons, I have supposed (with Miss Herschel) that they all relate to the same star, seeing that the "determining stars" differ very much in declination from the star compared.
371. Miss Herschel assumes that the two observations from which the place of this star is deduced, relate to the same star; viz. 19 (*Hev.*) *Bootis*; and I have so considered them: but perhaps they are XIV. 71 and 73 in Piazzi.
389. I think there can be no doubt but that No. 482 of Miss Herschel's catalogue is the same star as her No. 268.
402. I have deduced this star, and also No. 410, from two comparisons with $\alpha 1$ *Coronæ*, as there appears to be an error of 1^m (in time) in registering the observation of May 13, 1704.
405. Miss Herschel says, that there is no observation of 23 *Libra*; but that, if we alter the right ascension of that star $+5^m 47^s$ (in time) in the *British Catalogue*, it will agree with this star.
410. See the note to No. 404 of this catalogue.
419. This star is called ψ *Libra* by Flamsteed; but, although it certainly was not that star, it was probably the one that immediately followed it in the *Histoire Céleste*, p. 346. There will still be a difference, however, of 12 or 13 minutes in declination.
434. See the note to XVI. 155 in Piazzi.
449. Sir W. Herschel thinks that the polar distance of 63 *Herculis*, in the *British Catalogue*, (of which there is no observation), has been erroneously reduced by 3° , and that this is the star intended.
453. I have left the right ascension of this star doubtful, as it appears that, from two observations, it *preceded* 55 *Serpentis*; and, from two other observations, that it *followed* it.
459. The declination of this star is doubtful, as the reading of the *lineæ diagonales* does not agree with that of the *striae cochleæ*.

No.

462. Miss Herschel remarks, that there is no observation of 12 *Sagittarii*; but that, if we alter the right ascension of that star -4^m (in time), in the *British Catalogue*, it will agree with this star.
466. If the right ascension of 18 *Sagittarii*, in the *British Catalogue*, (of which there is no observation), be increased about 1^m (in time), it will correspond with this star.
467. There does not appear to be any observation of 23 *Sagittarii*; and Miss Herschel has suggested, that if the polar distance of that star in the *British Catalogue* be altered $-40'$, it will agree with this star; but there will still be a discordance in the right ascension.
473. The declination of this star is doubtful, as the reading of the *lineæ diagonales* does not agree with that of the *striæ cochleæ*.
476. This star was also observed by Bradley, and is No. 2422 in his catalogue. Miss Herschel says, that Flamsteed has no observation of 19 *Lyræ*; but that if we alter the polar distance of that star in the *British Catalogue* $+8^\circ$, it will agree with this observation.
477. This is supposed to be 2 *Vulpeculæ* in the *British Catalogue*, of which there is neither observation nor reduction.
510. If we adopt the reading *per strias cochleæ*, this star agrees very well with XX. 332 in Piazzi.
515. Miss Herschel says, that Flamsteed has no observation of 34 *Vulpeculæ*; but that, if we alter the right ascension of that star in the *British Catalogue* $+10^m$ (in time), it will agree with this star.
522. There is evidently an error of 3^m (in time), in recording the observation of 51 *Capricorni* on September 12, 1699.
526. Miss Herschel suggests, that, by an alteration of $-47'$ in the polar distance of 11 *Piscis Austrini*, in the *British Catalogue*, (of which there is no observation), it will agree with this star.
531. This star is called by Lalande 36 *Aquarii*.
540. See the note to XXII. 212 in Piazzi.
557. If we suppose an error of 1^m (in time) in recording the observation of this star, it will agree with XXIII. 193 in Piazzi.

ERRATUM.

No. 335 should have an asterisk prefixed.