within a small fraction of a second of arc. Thus practically all *computation* is done away with, except a single correction which would be required in order to insure the accuracy desirable in planetary and cometary ephemerides.

The University of Chicago:
1895 *May* 24.

On a Catalogue of Stars in the Calendarium of Mohammad Al Achsasi Al Mouakket. By E. B. Knobel.

I have lately obtained a 17th century Arabic MS. of a calendarium by Al Achsasi—a name that is not to be found in the usual sources of information about Oriental astronomers, such as D'Herbelot, *Bibliothèque Orientale*; Casiri, *Bibliotheca Escurialensis*; Houzeau, *Bibliographie de l'Astronomie*; the British Museum, the Bodleian, and the Leyden Libraries, &c. But fortunately I have found the name of the author and the title of the treatise in the catalogue of the Khedive's library at Cairo, but without any date.

The author, Mohammad Al Achsasi Al Mouakket, was Sheikh of the Grand Mosque at the College at Cairo, and surnamed Al Mouakket from his functions of regulating the times and the hours at the mosque. He derived his name "Achsasi" from a village so called, which I find existed in the province of Fayoum in Egypt. The MS. was therefore clearly written at Cairo. Its title is "Durret Al Muddiah Fih Al Aamal Al Shamsiah" (Pearls of brilliance upon the solar operations).

The MS. is unfortunately not complete, but it contains tables of the position of the Sun for each day of the Coptic and Syriac months, a list of cities in Arabia and Northern Africa, a concordance of Coptic and Mohammadan years, a catalogue of stars, a complete almanac of the Coptic year, and some other astronomical tables.

The catalogue gives the positions of 112 stars in right ascension and declination; and as it presents some points of interest I have translated this portion of the MS. as perhaps worthy of publication.

Prior to modern European astronomy it was unusual to give the positions of stars in right ascension and declination, and in the few cases where this was done by Oriental astronomers the right ascensions, designated by the term al matalia "coascendants," were always calculated from the first point of Capricornus —the solstitial colure, as we find in the present instance.

In investigating this MS. it is natural to suspect that it is a copy of the Calendarium of Al Tizini, who also bore the designation of "Al Mouakket," and who published his tables at Damascus in 1534. Al Tizini's catalogue of 302 stars was translated by

Hyde and published by him in 1665 as an appendix to his translation of Ulugh Beg. I have no doubt whatever that Al Achsasi based his tables upon those of Al Tizini; but the catalogue of the former contains a few stars not given by the latter, and also some differences in the descriptions of the stars, which indicate that it may not be simply a copy reduced to a later epoch.

The MS. is fairly written, but absolutely without vowels and very deficient in diacritical points, and there are numerous mistakes in words and figures.

The catalogue in the MS. gives the names of the stars, the right ascension, declination and magnitudes, and a column headed by a word which signifies the *nature* of the star. Against some stars are affixed certain letters, which probably indicate the Sun or some of the planets, and are clearly of astrological significance. Similar columns are to be found in the editions of Ptolemy's Catalogue published in the Alfonsine tables of 1483, the Trapezuntius Ptolemy of 1528, Bartsch's Planisphærium Stellatum, and many other mediæval works.

The epoch is not given, but the positions of the stars seem to be for about the year 1650, and on this assumption I append a comparison of the right ascensions of twenty-four stars in Al Achsasi and Al Tizini (reduced to 1650) with the correct positions for that epoch derived from Dr. Danckworth's catalogue published in the *Vierteljahrsschrift* for 1881.

In the catalogue I have given the Arabic names with the Latin translation and the modern designation of the stars.

No.	Arabic Name.	Modern Name.	Right Ascension.	Declination.	Region.	Mag.
1	Rabah al Waridah * *Quarta τοῦ al Warida*	η Sagittarii	0 41	36 5	S	3
2	Rai al Naaim *Pastor Struthionum*	λ Sagittarii	1 56	26 29	...	4
3	Aoul al Sadirah * *Prima τοῦ al Sadirah*	ϕ Sagittarii	6 0	26 27	S	1
4	Al Nesr al Waki * *Vultur Cadens*	α Lyræ	6 53	38 30	N	...
5	Thanih al Sadirah *Secunda τοῦ al Sadirah*	σ Sagittarii	8 44	26 48	S	3
6	Dzaneb al Heiyet * *Cauda Serpentis*	θ Serpentis	9 44	3 11	N	...
7	Thalath al Sadirah *Tertia τοῦ al Sadirah*	ζ Sagittarii	10 31	30 25	S	3
8	Nir al Beldat * *Lucida Oppidi*	π Sagittarii	11 18	21 55	S	3
9	Dzaneb al Tair *Cauda (Vulturis) Volantis*	ζ Aquilæ	12 27	13 0	N	3
10	Djenubi Menkib al Nesr *Australior Humerus Vulturis*	δ Aquilæ	17 21	2 27	N	3

No.	Arabic Name.	Modern Name.	Right Ascension.	Declination.	Region.	Mag.
11	Menchir al Dedjadjet *Rostrum Gallinæ*	β Cygni	20 26	26 21	N	2
12	Menkib al Nesr *Humerus Vulturis*	γ Aquilæ	22 32	9 36	N	2
13	Al Nesr al Tair * *Vultur Volans*	α Aquilæ	23 46	30 29	N	2
14	Unuk al Ghyrab * *Collum Corvi* (i.e., *Vulturis*)	β Aquilæ	25 50	5 41	N	3
15	Thanih Ras al Akab *Secunda Capitis Vulturis*	θ Aquilæ	28 19	3 0	S	3
16	Shimalih Saad al Dzabihh * *Borealior Fortunæ Immolatoris*	α Capricorni	30 28	13 33	S	3
17	Sadr al Dedjadjet * *Pectus Gallinæ*	γ Cygni	33 20	29 0	N	3
18	Dzaneb al Delphin *Cauda Delphini*	ε Delphini	35 35	10 1	N	4
19	Nir Saad Bula * *Lucida Fortunæ Dissipantis*	ε Aquarii	36 43	11 12	S	4
20	Nir Saad al Saaoud * *Lucida Fortunæ Fortunarum*	β Aquarii	49 2	30 23	S	2
21	Thanih Saad al Saaoud *Secunda Fortunæ Fortunarum*	ξ Aquarii	50 36	9 40	S	3
22	Fam al Feras *Os Equi*	ε Pegasi	52 38	8 33	N	3
23	Aoul al Achbiya * *Prima Tabernaculorum*	γ Aquarii	61 4	3 18	S	4
24	Wasat al Achbiya *Media Tabernaculorum*	π Aquarii	62 0	1 18	S	4
25	Achr al Achbiya *Postrema Tabernaculorum*	ζ Aquarii	64 40	2 0	S	3
26	Nir Saad al Bahaim * *Lucida Fortunæ Ferarum*	ζ Pegasi	66 21	8 30	N	3
27	Al Dsefadah al Aoul *Rana Prima*	α Piscis Australis	70 0	33 48	S	1
28	Shimalih al Mukdim * *Borealior*	β Pegasi	72 6	25 0	N	1
29	Djenubi al Mukdim *Australior*	α Pegasi	72 36	13 20	N	2
30	Fam al Samkat *Os Piscis*	β Piscium	75 1	1 0	N	4
31	Keff al Salsalat * *Manus Catenatæ*	ι Andromedæ	81 25	4 33	N	4
32	Dzaneb al Samkat *Cauda Piscis*	ω Piscium	85 36	4 32	N	...
33	Shimalih al Muchir * *Borealior*	δ Pegasi	88 0	26 13	N	2

No.	Arabic Name.	Modern Name.	Right Ascension.	Declination.	Region.	Mag.
34	Djenubi al Muchir *Australior*	γ Pegasi	89 20	14 32	N	2
35	Al Dsefadah al Thanih * *Rana Secunda*	β Ceti	96 55	18 0	S	3
36	Al Rascha * *Funis*	β Andromedæ	102 35	33 13	N	2
37	Aoul al Naamet * *Prima Struthionum*	η Ceti	103 0	11 30	S	2
38	Thanih al Naamet * *Secunda Struthionum*	θ Ceti	107 0	10 15	S	2
39	Thalath al Naamet * *Tertia Struthionum*	τ Ceti	112 0	18 30	S	2
40	Al Djedi * *Capra*	α Ursæ Minoris	105 17	?	N	2
41	Ras al Mathlath *Caput Trianguli*	α Trianguli	113 20	26 13	N	...
42	Rabah al Naamet *Quarta Struthionum*	ζ Ceti	114 35	12 0	...	2
43	Shimalih al Sheratein * *Borealior Signorum*	β Arietis	114 26	18 0	N	2
44	Khamis al Naamet * *Quinta Struthionum*	γ Andromedæ	115 36	40 8	N	3
45	Al Natih *Cornu*	α Arietis	116 0	20 30	N	2
46	Nir al Botein * *Lucida Ventris*	δ Arietis	136 21	23 0	N	4
47	Keff al Djezma * *Manus Truncata*	α Ceti	131 26	2 11	N	4
48	Achr al Nahr *Postrema Fluminis*	θ Eridani	132 0	41 0	S	1
49	Al Thaur al Thureiya ? *Pleiadum*	η Tauri	141 12	22 0	N	4
50	Sadr al Thaur *Pectus Tauri*	λ Tauri	145 37	11 3	N	2
51	Aoul al Debaran * *Prima τοῦ al Debaran*	γ Tauri	150 0	14 40	N	2
52	Nir al Debaran * *Lucida τοῦ al Debaran*	α Tauri	156 21	21 0	N	...
53	Wasat Taj al Djauza *Media Tiaræ Gigantis*	π Orionis	158 0	7 21	N	4
54	Rabah al Nahr *Quarta Fluminis*	ω Eridani	159 0	6 30	S	4
55	Al Aiouk * ?	α Aurigæ	162 0	44 30	N	4
56	Rijil al Djauza * *Pes Gigantis*	β Orionis	164 0	21 3	S	1

No.	Arabic Name.	Modern Name.	Right Ascension.	Declination.	Region.	Mag.
57	Kurn al Thaur al Shimalih *Cornu Boreale Tauri*	β Tauri	165 50	28 0	N	2
58	Menkib al Djauza al Aisr *Humerus Sinister Gigantis*	γ Orionis	166 5	5 32	N	2
59	Aoul al Nazhm *Prima Lineæ Margaritarum*	δ Orionis	168 46	1 11	S	2
60	Ras al Djauza *Caput Gigantis*	λ Orionis	170 0	9 36	N	Neb.
61	Rekbah al Djauza al Yemeniat* *Genu Dextrum Gigantis*	κ Orionis	173 0	10 11	S	2
62	Mirzem al Yemeniat * ?	β Canis Majoris	183 0	17 45	S	3
63	Nir al Henat * *Lucida τοῦ al Henat*	γ Geminorum	184 0	36 0	N	4
64	Al Shira al Yemeniat * ?	α Canis Majoris	187 40	15 43	S	4
65	Aoul al Adzari * *Prima Virginum*	ε Canis Majoris	191 0	29 0	S	4
66	Thanih al Adzari *Secunda Virginum*	o^2 Canis Majoris	193 0	24 5	S	2
67	Thalath al Adzari * *Tertia Virginum*	δ Canis Majoris	194 0	28 31	...	2
68	Mirzem al Ghomeisa ?	β Canis Minoris	196 40	9 0	N	4
69	Aoul al Dzira * *Prima Brachii*	α Geminorum	197 43	?	N	1
70	Al Shira al Shamiyat ?	α Canis Minoris	200 0	6 20	N	1
71	Muekher al Dzira *Posterior Brachii*	β Geminorum	201 0	38 46	N	1
72	Lisan al Shudja * *Lingua Hydri*	δ Hydræ	212 0	6 0	N	4
73	Al Nethra * ?	ε Cancri	215 0	20 49	N	Neb.
74	? Al Shudja * ? *Hydri*	ζ Hydræ	219 0	7 0	N	4
75	Shimalih al Teref * *Borealior Oculorum*	λ Leonis	224 0	25 0	N	4
76	Soheil al Fard *Soheil Solitarius*	α Hydræ	227 0	5 5	S	2
77	Djenubi Ras al Asad *Australior Capitis Leonis*	ε Leonis	235 0	25 50	N	2
78	Djenubi Djebha al Asad * *Australior Frontis Leonis*	η Leonis	250 0	19 0	N	2
79	Kalb al Asad * *Cor Leonis*	α Leonis	237 0	3 0	N	1

No.	Arabic Name.	Modern Name.	Right Ascension.	Declination.	Region.	Mag
80	Menkib al Asad *Humerus Leonis*	γ Leonis	240 0	21 50	N	...
81	Aoul al Batina * *Prima Crateris*	α Crateris	250 0	15 13	S	2
82	Djenubi al Cheratan * *Australior* ?	θ Leonis	254 0	17 33	N	3
83	Al Serpha *Vicissitudo*	β Leonis	262 0	17 0	N	2
84	Minkar al Ghyrab * *Rostrum Corvi*	α Corvi	266 0	22 0	S	3
85	Djenah al Ghyrab al Eymen *Dextra ala Corvi*	γ Corvi	269 0	15 0	S	3
86	Thanih al Aoua * *Secunda Latratoris*	η Virginis	270 0	0 36	N	2
87	Laouiyet al Aoua *Angulus Latratoris*	γ Virginis	276 0	1 13	N	3
88	Rijil al Aoua * *Pes Latratoris*	μ Virginis	277 0	21 0	S	3
89	Al Simak al Azal * *Al Simak Inermis*	α Virginis	287 0	8 0	...	2
90	Ramih al Ramih *Lancea Lanceatoris*	η Boötis	294 0	21 0	N	4
91	Wasat al Ghafr * *Media* ?	κ Virginis	298 0	8 0	S	4
92	Al Simak al Ramih *Al Simak Lanceator*	α Boötis	300 0	22 0	N	1
93	Menkib al Aoua al Aisr * *Humerus Sinister Latratoris*	γ Boötis	304 55	13 25	N	2
94	Mintek al Aoua *Cingulum Latratoris*	ϵ Boötis	307 5	...	N	2
95	Anwar al Ferkadain* *Fulgens Vitularum*	β Ursæ Minoris	307 0	76 20	N	2
96	Nir al Feccah * *Lucida* ?	α Coronæ	321 20	30 0	N	3
97	Al Niyat al Aoul * *Prima του al Niyat*	σ Scorpii	330 0	24 0	S	2
98	Kalb al Akrab * *Cor Scorpionis*	α Scorpii	332 0	27 38	S	1
99	Al Niyat al Thanih * *Secunda τοῦ al Niyat*	τ Scorpii	333 0	25 0	S	3
100	Al Sabyk al Aoul * ?	ζ Ophiuchi	334 0	...	S	...
101	Al Sabyk al Thanih * ?	η Ophiuchi	342 0	...	N	3
102	Menkib al Hadi * *Humerus* ?	...	343 0	11 0	N	3

No.	Arabic Name.	Modern Name.	Right Ascension.	Declination.	Region.	Mag.
103	Ras al Djathi * *Caput Ingeniculi*	α Herculis	344 56	44 0	N	2
104	Menkib al Djathi al Aisr * *Humerus Sinister Ingeniculi*	δ Herculis	345 0	14 0	N	...
105	Aoul al Shaoulat * *Prima Caudæ (Scorpionis)*	υ Scorpii	346 5	36 50	S	3
106	Thanih al Shaoulat * *Secunda Caudæ (Scorpionis)*	λ Scorpii	349 0	30 0	S	...
107	Fekhyz al Djathih al Aisr * *Femur Sinistrum Ingeniculi*	ι Herculis	350 0	13 20	N	3
108	Mirfek al Djathih al Aisr *Cubitum Sinistrum Ingeniculi*	μ Herculis	351 0	28 0	...	2
109	Rekbet al Djathih al Aisr * *Genu Sinistrum Ingeniculi*	θ Herculis	355 0	31 0	...	2
110	Aoul al Waridah *Prima τοῦ al Waridah*	γ Sagittarii	357 0	30 0	S	2
111	Thanih al Waridah *Secunda τοῦ al Waridah*	δ Sagittarii	358 0	30 0	...	4
112	Thalath al Waridah * *Tertia τοῦ al Waridah*	ε Sagittarii	359 0	30 0	S	3

Errors in R.A. of Al Achsasi and Al Tizini (reduced) for 1650.

	Al Achsasi.	Al Tizini.		Al Achsasi.	Al Tizini.
	° ′	° ′		° ′	° ′
α Arietis	−0 53	+0 30	α Virginis	+0 18	+0 12
α Ceti	+0 26	+0 17	α Boötis	+0 5	+0 13
γ Tauri	+0 2	+0 37	α Scorpii	+0 0	+0 27
α Aurigæ	−0 44	+0 44	α Herculis	+0 16	+0 14
β Orionis	−0 26	+0 28	α Lyræ	+0 37	+0 3
β Tauri	−0 13	+0 38	γ Aquilæ	+0 8	−0 7
α Geminorum	−0 19	+0 34	α Aquilæ	+0 21	−0 7
α Canis Minoris	−0 13	+0 6	α Capricorni	+0 55	+0 24
β Geminorum	−0 56	−0 33	α Piscis Australis	+0 28	+0 38
α Hydræ	−0 35	+0 3	α Pegasi	+0 46	+0 30
α Leonis	−0 24	−0 4	δ Pegasi	+0 24	+0 40
β Leonis	−0 47	−0 10	γ Pegasi	+0 31	−0 37

Notes.

1. Al Waridah = γ, δ, ε, and η Sagittarii, forming a trapezium, and signifies (the ostrich) going to drink at the river, *i.e.*, the Milky Way.

3. Al Sadirah = σ, φ, τ, and ζ Sagittarii, forming another trapezium, and signifies (the ostrich) returning from drinking.

4. Written Al Nesl for Al Nesr.

6. Not in Al Tizini.

8. The name Al Beldat, meaning "The Town," is given to a space in Sagittarius void of conspicuous stars. The Lucida of Al Beldat is therefore the brightest star nearest to this space.

13. The Declination is wrong.

14. Aquila is named in this MS. Al Nesr, the Vulture; Al Ghyrab, the Crow; and Al Akab, the Eagle.

16. Al Dzabihh, the Sacrificer = α and β Capricorni.

17. The Declination should be 39°. The scribe has been very careless in writing the Keff ك = 20. In some cases he has first written a Lam ل = 30, which he has subsequently altered by a diagonal stroke to a ك, and sometimes omitted doing so, which explains the errors in the Declinations of 71 and 84.

19. Cf. Al Sufi (Schjellerup), p. 189, as to the explanation of the name Saad Bula = Fl. 7, μ and ϵ Aquarii.

20. Saad al Saaoud = β and ξ Aquarii according to Ulugh Beg, but Al Sufi and Ideler give in addition ϵ Capricorni. The Declination is wrong.

23. Al Achbiya = γ, ζ, π, and η Aquarii.

26. Called by Al Tizini Nir Saad al Naam. Al Sufi gives Saad al Naam as τ and υ Pegasi, with neither of which does Al Tizini's position accord. Al Achsasi calls it Saad al Bahaim, which name is given by Al Sufi to θ and ν Pegasi. The position in both Al Tizini and Al Achsasi is that of ζ Pegasi.

28 and 29. Al Mukdim signifies "anterior," and in the description of these stars the words Al Ferg should precede. Al Ferg signifies the place between the handles of a bucket over which the water is poured.

31. This star is written in the MS. "Keff al Salsalat." In Al Tizini and Al Sufi it is called "Al Musalsalat." The Declination is quite wrong for ι Andromedæ.

33 and 34. Al Muchir signifies "posterior," and in the description of these stars the words "Al Ferg" should precede.

35 and 39. Scribe has written Declination 13 يج for 18 يح.

36. Written الشرشا, probably in error for الرشا.

37. Al Naamet, the Ostriches = τ, υ, ζ, θ, and η Ceti.

40. The star Al Djedi is out of its place, R.A. should be 95° 17′.

43. Al Sheratein, the Marks = β and γ Arietis.

44. Schjellerup translates Al Natih as "celui qui frappe de la corne."

46. Al Botein = δ, ϵ, and ρ Arietis. Dorn gives Nir Al Botein as δ Arietis, but the positions in Al Tizini and Al Achsasi do not agree with any of the above stars.

47. Declination 7° 11 for 2° 11.

51. It is commonly understood that the name Al Debaran belongs solely to the star α Tauri, and in Al Sufi it is restricted to that star; but it is certain that by many Oriental astronomers it was applied equally to the five stars α, θ, γ, δ, and ϵ Tauri, which form the Hyades. In this MS., No. 51, γ Tauri is called "The first star of Al Debaran," and No. 52, α Tauri, is "The bright star of Al Debaran." In the Alfonsine Tables, printed in 1483, γ Tauri, which is the eleventh star of Ptolemy's *Catalogue of Taurus*, is described thus: "Que sūt (sic) supra narē earū q̄ sūt ī facie et sūt stelle Aldebram"; and the name Al Debaran is not given at all to the fourteenth

star = α Tauri. The same words occur in a more correct form in the *Liechtenstein Almagest* (1515): "Que est super narem earum que sunt in facie: et sunt stelle Aldebarā," showing that Gerard of Cremona, whose translation this is, employed in the twelfth century a similar Arabic text to that used by Alfonsus in 1252.* But the description of α Tauri contains these words (writing the Latin *in extenso*): "Lucida, quæ . . . est ex forma Aldebaran quinta." Liechtenstein states definitely that the bright star α Tauri "is the fifth star of the figure Aldebaran." In Hyde's translation of Ulugh Beg the name Al Debaran is written against the above five stars, a point which Baily omitted in his edition.

Clearly, therefore, the name Al Debaran was used at Cairo and Samarkand, and also by Occidental Arabs, to designate not one star, but the five principal stars of the Hyades.

52. Declination is wrong.

55. Al Aiouk. No satisfactory explanation of the meaning of this name has hitherto been found.

56. The Declination is wrong.

61. Certain stars are designated "Al Yemeniat" clearly from the adjectival meaning of the word "the right" or "the right hand." But in the case of 64 α Canis Majoris, Al Sufi explains that the word signifies that the star *sets* in the direction of Yemen. Similarly in the case of 70 α Canis Minoris, he states that this star is called "Al Shamiyat," because it *sets* in the direction of Syria. It would seem that there is a mistake here, and that for "sets" we should read "rises."

62. Al Sufi says that a star which precedes a brilliant star is termed Al Mirzem. Scribe has written R.A. 173° for 183°.

63. Al Henat signifies "a mark burnt on the right side of a camel's neck." It is not quite certain which stars formed Al Henat, but according to Al Sufi they were either γ and ξ, or ν and γ Geminorum.

62 to 64. The scribe has written ع for ف in the Right Ascensions.

65. Al Adzari, "the Virgins" = o^2, δ, ϵ, and η Canis Majoris.

67. The Declination is that of η Canis Majoris. This star is not in Al Tizini.

69. Al Dzira, "the arm," "the foreleg" = α and β Geminorum.

72. This name is not in Al Tizini.

73 Al Nethra signifies the place under the nose between the moustachios, *i.e.*, of the Lion, the Arabian constellation of the Lion being in Cancer.

74. The first word is undecipherable.

75. Al Teref or Al Tarf = λ Leonis and κ Cancri. The R.A. is 4° in error.

78. The R.A. is clearly written 250°, but should be 237°.

79. Declination 3° for 13°.

81. The MS. has الباطنه instead of الباطيه. The Declination gives 35° for 15°; a common mistake in Arabic MSS. This star is not in Al Tizini.

82. The MS has النحراسان for النحران.

* This is most probable, seeing that there is evidence from two MSS. at Merton College, Oxford, that Gerard of Cremona made some of his translations, from Arabic into Latin, at Toledo, where the Alfonsine Tables were constructed in the following century.

86. Al Aoua, the howling dog = β, η, γ, δ, and ϵ Virginis.

88. Not in Al Tizini. The scribe has written R.A. 277° probably for 287°

89. Al Simak. The meaning of this word is obscure. *Cf.* Ideler and Schjellerup.

91. In the Declination the scribe has written ع for ح.

93. Error in Declination of 13° يج for 38° لح

95. R.A. and Declination both wrong. The correct Declination is written against 94. Al Ferkadain, the Calves = β and γ Ursæ Minoris.

96. The meaning of the name Al Fecca is quite obscure. Declination is erroneous.

97. Al Niyat means "the vein which suspends the heart," and applies to σ and τ Scorpii, situated on each side of the heart of the Scorpion.

98 and 99. The Declinations should be interchanged.

100 and 101. Al Sabyk. Lane gives the meaning as "preceding," and says it is applied to stars which precede others. The Declinations of both stars are wrong for ζ and η Ophiuchi.

102. The name is clearly written, الحادي, Al Hadi, which is probably a mistake for الجاثي. The R.A. and Declination do not accord with any star in Hercules or Ophiuchus.

101 to 104. The Declinations of these stars are all wrong, and they suggest that the scribe has taken from Al Tizini by mistake the Declinations of 276, 277, 278, and 280, instead of 280, 281, 282 and 283. A comparison of the two catalogues here offers from these errors the strongest evidence of the source whence all the positions were obtained. The Declinations of 101 to 112 are mostly erroneous.

104. In the description الحاوي is written for الجاثي.

105. Al Shaoulat, "the upraised tail of the Scorpion" = υ and λ Scorpii.

107 to 109. In the description الجاني is written for الجاثي.

Note on the Proper Motion of Arcturus. By W. T. Lynn, B.A.

The large southerly proper motion of *Arcturus* was noticed by Halley so long ago as 1718, and twenty years afterwards Cassini II. estimated that its latitude had changed by about five minutes between the time of Tycho Brahé and his own, a century and a half later. Hornsby has an elaborate paper (read 1772 December 24) on it in vol. lxiii. of the *Philosophical Transactions* (p. 93), in which he determined the star's southerly proper motion to amount to $2'\ 36''{\cdot}81$ in seventy-eight years, or about $2''{\cdot}01$ annually. This value is remarkably near the truth.

As it seems to me that the value now usually adopted is slightly too small, I have made a new determination from com-