The Pronunciations, Derivations, and Meanings of a Selected List of Star Names

By GEORGE A. DAVIS JR.

About eight years ago I thought that the time was appropriate to begin the collection of material for a new work on the constellations, which would include the results of the most recent scholarship, as well as data contained in manuscripts and works heretofore neglected by both American and English writers. I have continued my studies to the present time as assiduously as the demands of my profession have permitted. The present paper contains extracts from my notes which relate specifically to the star names in this list. The most difficult problem was to determine what to include and what to omit. Although the list is strictly a limited one, I have, in several instances, shown the wealth of material which exists, and which has not as yet been utilized by any writers on the constellations. Furthermore, I have never seen any American book on astronomy which includes the Arabic and Persian names of the stars in their original forms. I trust that I may be pardoned, therefore, for attempting, in a rather modest way, to remedy that omission.

The Committee of the American Astronomical Society on Preferred Spellings and Pronunciations published its Report in the August, 1942, issue of Popular Astronomy, and this Report contained, among other things, the pronunciations of fifty important star names. After the publication of this Report, and in response to requests from many members of the A.A.S. and others for the publication of a more extended list of star names and pronunciations, in accordance with the same general plan, together with a discussion of the derivations and meanings of all the names, this paper has been prepared. Dr. Samuel G. Barton, of the Flower Astronomical Observatory, and I, who were two members of that Committee, have cooperated on the additional names and pronunciations, nearly all of which are also published in A Guide to the Constellations, Third Edition, by Samuel G. Barton and Wm. H. Barton, Jr. Although Dr. Barton is in no way responsible for the derivations and meanings, he has, nevertheless, made many excellent suggestions and several computations, which are incorporated herein, and for which I am very grateful.

A careful study of the following pages will reveal the falsity of some ideas concerning the astronomy of the Arabs which have been accepted for several hundred years. This is neither the time nor place to discuss them in detail, but I think that it is quite in order to call attention to them, especially in view of the fact that most of our star names are derived from the Arabic.
It has been said, time and again, that the Arabs used one star only to represent one living creature, but, on occasion, used more than one star to represent some inanimate object. This rule, we have been told, was the result of one of Muhammad's traditional prohibitions against depicting the human form, or any other living creature, either in paintings, in architecture, or in any other way. It must be remembered, however, that Arabian astronomy existed for several thousand years before the birth of Muhammad, and evidence still exists of the Sumerian influence on early Arabian star names, and, in particular, on the Arabian system of Lunar Mansions, a phase, and probably the first phase, of Sumerian astronomy which was either never transmitted to the Greeks or was never accepted by them.\(^8\) I have given several instances of this influence. Then, too, the nomadic Arab paid little attention to any of the ahadith of the Prophet; in fact, the prohibition against painting or otherwise drawing " likenesses of God's creation," as well as the prohibition against the use of alcoholic drinks, "did no more prohibit than did the 18th Amendment to the Constitution of the United States."\(^4\) We find, therefore, many representations of living creatures in indigenous Arabian astronomy, both before and after Muhammad. A few examples will be found in the following pages, and many more could be given.

Another misconception is that when the Arabs became acquainted with Greek astronomy, they altered some of the constellation figures to suit their own ideas. Nothing could be farther from the truth, for the Arabs made no changes whatever in the Greek constellations. The fault has lain with the commentators who were unable to distinguish between the astronomy of the Arabs and the astronomy of the Greeks. A glance at the discussion of the stars in Perseus will make this perfectly clear. Many writers on the constellations, up to the present time, have thought that the Arabs conceived the figure of Perseus as something quite different from the Greek representation. It is obvious now that the early names of the stars in Perseus did not refer to Perseus at all.

Another misunderstanding has always existed concerning "the fish" among the stars in Andromeda and Pisces, that is, the Arabian fish has always been considered the equivalent of the northern fish of the zodiacal constellation, but, because of ignorance of the Greek figure, or for some other reason, the Arabs became confused and extended the fish into Andromeda. It is now clear that it was not the Arabs who were confused, but the non-Arabian commentators who tried to equate the two figures. Another large fish, incidentally, was represented by the Arabs among the stars in Andromeda's feet and in the northwestern part of Perseus.

I have also, here and there, corrected some erroneous translations which I have seen in well-known books on the constellations, which were obviously the result of ignorance of the Arabic language.
If my derivations are compared with those which have already been published, it will be discovered that I have fortunately been able to present for the first time the true origin of ten or eleven star names. I might say, in this connection, that the entire paper is the result of original research, and every statement that I have made is based on documents which would be received as legal evidence in any court of competent jurisdiction. If such evidence was not available, I have frankly said so. Some of my conclusions, appearing here for the first time, may seem somewhat surprising, but the evidence for their correctness is overwhelming; and such conclusions speak loudly of the utter futility of guesswork in researches of this kind.

I have one regret in publishing this paper at the present time, and that is that I have not been able to determine definitely the origin of Albireo. I am satisfied in my own mind that I know the answer, but I have not been able, under present conditions, to secure the necessary documentary proof.

I have added to the discussion of each star, as a convenient reference, its magnitude and spectrum. The magnitudes are visual and are taken from the Henry Draper Catalogue except for the variable stars which have been discovered since its publication, and for Proxima. The combined magnitude is given for the double stars, and the spectrum is that of the brighter component. The spectra are principally from Harvard, Mt. Wilson, Victoria, and Yerkes, and are the latest which have been published. BS refers to the Yale University Observatory's Catalogue of Bright Stars, Second Edition (1940). The stars marked with an asterisk are those contained in the Report of the Committee. I have added in some cases, in parentheses, the Semitic equivalent of the Sumerian name. The underlined letters and words, except the names of the constellations, would, of course, be italicized if the paper were being printed in the usual way and the font contained the necessary type.

I express my deep gratitude to Professor Solomon L. Skoss of Philadelphia for his friendly advice and encouragement, and for looking over and checking a part of the manuscript. I am also indebted to him for informing me of the system of transliteration adopted by the Journal of the American Oriental Society, which I have followed throughout the paper. If, however, any errors are discovered, the responsibility therefor is entirely my own.

I also wish to thank Miss Mildred Ross of the Grosvenor Reference Library of Buffalo, Miss Ruth Sparrow of the Research Library of the Buffalo Museum of Science, Miss Dorrit Hoffleit of the Harvard College Observatory, and the libraries of Cornell, Harvard, and Princeton Universities for the many courtesies which they have extended to me during the past six or seven years.

Lastly, I wish to say that the publication of this paper at the present
ANDROMEDA (And)
 α*ALPHERATZ (āl-fēʿrāts), from the Arabic سَرَةَ الفَرَس, "the horse’s navel," formerly common to And and Peg. 2°15 Aon
 β*MIRACH (mīʿrāk), from the Arabic المِرَاق, al-Marāq, "the loins," a form very similar to that for β UMa. This, and other names, obviously derived from المَزْرَع, al-Mizar, were simply taken from Ptolemy’s description of the place of the star in the figure, and were never assigned to β by the Arabs. β was known chiefly as بَتَنُّ الْحُرَت, Batin al-Hurt, "the fish’s belly," one of the names of the 28th and last Arabian Lunar Mansion. This fish, however, was not the northern fish of the zodiacal constellation Pisces, which the Arabs called "the little fish," but a considerably larger one which they called al-Hūt, "the fish," and which comprised the following galaxy and stars: Μ 31, ν, μ, and 6 And, BS 374, 91, φ, χ, and ψ′ Psc, and η, ζ, ε, δ, π, BS 157, and 32 And.

γ*ALMACH (āl-māk), from the Arabic بَنَانُ الْأَرْض, Anāg al-ʿArḍ, literally "the earth-kid," the animal called in Persia سَيْلَةُ گُوش, Sīyāh goosh, "the black ear," and in Arabic البريد, al-Barīd, "the badger, messenger, jackal, courier," etc., which attends upon the lion and guides him to his prey.

AQUARIUS (Aqr)
 α SADALMELIK (sādʿāl-mēlʿik), from the Arabic سَعَدُ الْمَلِك, Saʿd al-Malik, "the lucky star (or asterism) of the king," i.e., of d NERGAL, the Sumerian Sun-god of summer’s heat and winter’s cold, known in West Semitic religion as Melqart, Moloch, Malik, etc. The Sumerian name of Aquarius was mul GU-.LA, "the great constellation," which was equivalent to dingir GU-LA, "the great god," as the stars represented the Sky-god AN (llu A-nu) pouring the waters of eternal life, which he kept in the highest heaven, upon the earth, and which was referred to in Sumerian art by the spouting or overflowing vase. The Arabic title refers to α and o Aqr.

β SADALSUUD (sādʿāl-sūʿūd), from the Arabic سَعُدُ السَّعْوَن, Saʿd as-Suʿūd, "the luckiest of the lucky stars (or asterisms)," the name of the 24th Arabian L.M., consisting of β and δ Aqr, with 46 Cap sometimes being added. This title is an echo of the original Sumerian name of the star, mul NAM-MAH, "the star of powerful destiny."
The Pronunciations and Meanings of Star Names

γ SADACHBIA (sād-āk′bī-ā), from the Arabic سن البلدية, Saʾd al-Akhibya, "the lucky star (or asterism) of the tents," the name of the 25th L.M., which consisted of γ, ζ, η, and π Aqr. 3.97 Al

δ SIKAT (skāt), from the Arabic الساق, as-Sāq, "the leg," that is, from the ankle to the knee.

ε ALBALI (āl-bā′lē), from the Arabic سعد البلعم, Saʾd al-Bulāʾ, "the lucky star (or asterism) of the swallow," the name of the 23rd L.M., which consisted of ε, μ, and γ Aqr. 3.83 Aln

θ ANCHA (ān′g′kā), a medieval Latin medical term, also written ancæ and anca, "the upper part of the femur," or, more commonly, "the hip."

AQUILA (Aql)

α "ALTAIR (āl-tār′), from the Arabic النسر الطائر, an-Nasr at-Tāʾîr, "the flying eagle or vulture," originally derived, of course, from the Sumerian mul IL.BU (kakkab Naṣru-Bu), "the constellation of the eagle," which was equated with 𒀀 za-MA-MA₂, the great Sun-god of Kish, the most ancient capital of Sumer. Aql and Lyr were called by the Arabs an-Nasr-ain, the nāsrun, "the two eagles or vultures." 0.99 Aln

β ALSHAIN (āl-shān′), from the substantive part of one of the Persian names of the constellation, شاهین تارزان, Shāhīn Tārāzād, "the plundering or ravishing falcon.

γ TARAZED (tār-â-zēd), from the adjectival part of the Persian name. Aql and Lyr were called by the Persians دو شاهین, Du Shāhīn, "the two falcons."

ARIES (Ari)

α "HAMAL (hām′āl), from the Arabic الحمار, al-Hamal, "the full-grown lamb," a modified form of the Sumerian mul LU-LIM (kakkab Lulimu), "the constellation of the ram."

β SHERATAN (shēr-â-tân), from the Arabic الشرطان, ash-Sharatānī, "the two signs," presumably of the New Year, when Ari marked the vernal equinox, but this is not necessarily the original meaning of the title. This, according to existing records, was the name of the first Arabian L.M., which generally consisted of β and γ Ari. Sometimes α and β were regarded as constituting the L.M., and when γ was added, the three were called الإشراط, al-Ashrāṭ, "the signs." 2.72 A3
γ MESARTIM (mēzʿār-tīm), from the Arabic, al-Muthartim, "the extremely fat ram," the letter T being generally transliterated S in the older dictionaries.

AURIGA (Aur)

α CAPELLA (kā-pēl′ā), from the Latin, "the little she-goat," the diminutive of capra, derived ultimately from one of the Sumerian names of the star, mul ʾĀš-KAR, "the goat star," and whence the most ancient Arabic name of the star, ʿal-ʿAyūq, "the goat," and the Greek name Aįg.

Θ MENKALINAN (mēn-kālʾī-nān), from the Arabic, Man-kīb dhū al-ʿInān, "the shoulder of the rein-holder." var Alnp

BOÖTES (Boo)

α ARCTURUS (ark-tū′rūs), from the Greek of Hesiod, ἀρκτόουρος, "the bear-guard." This star, or possibly the constellation itself, was the northern mul SIB-2I-AN-NA of the Sumerians, "the faithful shepherd of heaven," and, similarly, the Arabians, حارس السماء, Ḥāris as-Samāʾ, "the keeper of heaven," and حارس الشمال, Ḥāris ash-Shamāl, "the keeper of the north." α was also called السماك الرأي, as-Simāk ar-Rāmī, "the armed or lance-bearing prop," one of the supports of heaven. The other prop was Spica. Compare with the functions of Shu, Atlas, Mithra, Ver-alden Tschuold, etc.

Θ NEKKAR (nēk′kār), from an erroneously pointed form of the Arabic ʾal-Bagār, "the drover or dealer in cattle."

γ SEGINUS (sē-i′nūs), of uncertain derivation, but there is evidence tending to show that it is an astronomical erratic and a corrupt form of one of the Arabic names of Cep.

ε IZAR (i′zār), from the Arabic ʾal-Izār, "the loin-cloth." Other more interesting titles were: ʿTābit ʿAwwāʾ, "the shouter's belt," Taḥt as-Simāk, "the follower of the prop," Raʾyāt as-Simāk, "the flag or standard of the prop," and Raʾyāt al-Fakka, "the flag or standard of the broken one."

η MUPHRID (mūr′rīd), from the Arabic, Mufrid ar-Rāmī, "the solitary (star) of the spear-holder or lancer."
ALKALUOPS (알'카-루프스), from the Greek Κάλαυρος, "the shepherd's crook," with the Arabic article al prefixed.

CANCER (Cnc)

α ACUBENS (에쿠- Wendz, from the Arabic الزبان, az-Zubān, "the claw," the full title being زبان السرطان الجنوبي, Zubān az-Sarṭān al-Janūbi, "the southern claw of the crab.

γ ASELLUS BOREALIS (에살 루스 보레 알리스), from the Latin, "the northern little ass," the diminutive of asinus.

δ ASELLUS AUSTRALIS (에살 루스 오스트랄리스), "the southern little ass."

CANES VENATICI (CVn)

α COR CAROLI (كور كارولي-리), from the Latin, "Charles's heart."

γ CHARA (كارا), from the Greek Χάρα, "joy."

Canis Major (CMa)

α SIRIUS (سيريوس), from the Greek of Hesiod Σείριος, "the scorching one."

β MIRZAM (ميرزام), from the Arabic المرزم, al-Mirzam, "the roarer," or, metaphorically, "the announcer or proclaimer." β CMa and β CM1 were known as المرزمان, al-Mirzamān, "the two proclaimers," i.e., of the rising of Sirius and Procyon.

ε ADHARA (ادهراك), from the Arabic العذراء, al-Adhāra, "the virgins," referring to δ, ε, η, and α° CMa.

ζ FURUD (فرود), from an erroneously pointed form of the Arabic al-Qurūd, "the male apes," referring to ζ and λ CMa and γ, δ, θ, κ, λ, μ, and ξ Col.

η ALDRA (الدراك), from the Arabic العذراء, al-'Udhrā, in the title عذرة الجوزاء, al-Udhrat al-Jauza', "the virginity or maidendom of Orion." The names of ε and η are derived from the myth in which Suhail married the virgin Orion, and the four stars which were mentioned above under α were probably regarded as her attendants. 'Udhrā is not the singular of 'Adhāra.

Canis Minor (CMi)

α PROCYON (프로시온), from the Greek Προκύων, "before the dog,"
i.e., the bright star which rises before Sirius.

α GOMEISA (gō-mi'zā), from the Arabic الخيبة, "the weeping or blar-eyed one," properly one of the names of Procyon, and refers to the ancient Arabic myth concerning Sirius and Procyon, who were أخت سهيلا, "the two sisters of Canopus."

CAPRICORNUS (Cap)

α ALGEDI (āl-jē'dē), from the Arabic الجدي, "the kid."

β DABIH (dā'ibē), from the Arabic سعد الدائي, Sa'īd adh-Dähīth, "the lucky star (or asterism) of the sacrificer or slayer," the name of the 22nd Arabian L.M., consisting of α and β Cap, and shows the influence of the Sumerian name of the star, mul SAK-SA-DI, "the star of the bright horn of slaughter."

γ NASHIRA (nā'shî-rā), from the Arabic نشيرة, Sa'īd an-Nāshīra, "the lucky star (or asterism) of the verdant fields at the end of summer," referring to γ and δ Cap.

δ Deneb Algedi (dēn'ēb āl-jē'dē), from the Arabic ذنب الجدي, Dhanab al-Jadī, "the kid's tail."

CARINA (Car)

α CANOPUS (kā-nō'pūs), from the Greek Κάνωπος, a city of ancient Egypt, and, according to classical tradition, the name of the chief pilot of the fleet of Menelaus.

β MIAPLACIDUS (miā'-plās'-i-dūs), from the Arabic المياض, al-Miyyāh, "the waters," and the Latin placidus, "quiet, still," i.e., the still waters in which the ship Argo is resting.

γ ASPIDISKE (ās-pē-dis'kē), from the Greek Ἀσπίσκη, "the little shield or boss," the diminutive of Ἀσπίς.

CASSIOPEIA (Cas)

α SCHEDAR (shēd'ār), from the Arabic الصدر, as-Sadr, "the breast."

β CAPH (kāf), from the Arabic الكف, "the stained hand," and refers to an ancient figure of the Arabs called كف الثري الأيمن المبسوطة, Kaf' ath-Thurayyā al-Yāmīn al-Mabūsīta, "the outstretched right hand of the Pleiades," which consisted of a
shoulder, arm, and hand, and extended from the Pleiades, through Per, to the stars in Cas, which represented a hand with the ends of the fingers stained in the oriental manner (اناميل مكحبطة). What remains of the left hand will be found in Cet.

The Pronunciations and Meanings of Star Names

8 RUCHBAH (رُكْبـُاه), from the Arabic ركب الـذات الكرسي, Rukbat adh-Dhāt al-Kursī, "the knee of the lady of the chair." var A3n

CENTAURUS (Cen)

α RIGIL KENTAUROS (زَيْجل كنْتَوْرُس), from the Arabic رجل القنطورس, Rijl al-Qantarīs, "the centaur's foot." 0706 04

PROXIMA (پُرْکُ السَّمِّ), from the Latin, "the nearest" (star). 11.5 m

CEPHUS (Cep)

α ALDERAMIN (أَلْدَرْامِن), from the Arabic الـدَرُّ الـبَيْـسِ, adh-Dhirā' al-Yāmīn, "the right forearm." This will be the brightest star near the pole from about 6500 to 8300, the successor to Alfirk and the predecessor of BS 7955. 2760 A3n

β ALFIRK (أَلْفَرْك), from the Arabic كَوْاَكِب الفَرْعَ, Kawākib al-Firq, "the stars of the flock," referring chiefly to α, β, and γ Cep. This will be the brightest star near the pole from about 5100 to 6500. var B1a

γ EERRAI (إيرِئِ), from the Arabic الرَّامِي, ar-Ra'ī, "the shepherd." This will be the brightest star near the pole from about 3100 to 5100, the successor to Polaris and the predecessor of Alfirk. 3342 Klα

ξ KURHAH (كِرْحَ), from the Arabic القرحة, al-Qurha, "the blaze or small star on the forehead of a horse." 4140 A3

CETUS (Cet)

α MENKAR (مِنْكَر), from the Arabic المـنـكـر, al-Minkhar, "the nostril." The ancient Arabs called α, γ, δ, λ, μ, and ξ, the six stars in the head, κ, κατ, αλ-كَافِ الـجَذَمَاء, "the amputated hand," i.e., of the Pleiades, only the stump of the wrist being left. This was so called because of the small size of the asterism as compared with the hand in Cas, and also because of the shorter series of stars connecting it with the Pleiades. 2782 M2

β DENEK BAITOS (دنَّـبـَب دَّنْـبَوْس), from the Arabic ذَنب الـپَطَـس الـبَنْـو, Dhanab al-Qitas al-Janūbī, (the star in) "the southern branch of the sea-
monster's tail." The more ancient name, however, was دعاء, ad-Difa' ath-Thānī, "the second frog," Fomalhaut being the first. 274 06

8 BATHEN KAITOS (bāṭīn kā'tōs), from the Arabic بطن القبطس, Bātn al-Qītas, "the sea-monster's belly." The Arabs called 8, 9, 9 , and 9 , المسمات, an-Na‘āmāt, "the ostriches."

o MIRA (mī‘rā), from the Latin title of a work by Hevelius, Historiola Mirae Stellae, "A Short History of the Wonderful Star." var Mēs

COLUMBA (Col)

α PHACT (fāk’t), from the Arabic الفاختة, al-Fākht or al-Fākhita, "the ring-dove," a name originally applied by some Arabs to Cyg, but which later wandered to this star when Col became a constellation.

27/5 BSne

β WAZN (wāz’n), from the Arabic الوزن, al-Wazn, "the weight," one of the stars referred to in a well-known legend of the Arabs, which revolved around the rising of Canopus.

3722 Ko

CORONA BOREALIS (CrB)

α ALFHECCA (āl-fāk’ā), from the Arabic الفكة, al-Fäkke, "the broken or fractured one" (the word does not mean "dish" or "bowl"), the earliest name of the constellation among the Arabs, and refers to the incomplete or broken circle of stars, which fact gave rise to the following names of the constellation: قصعة اليساكيين, Qas‘at al-Maskan, "the bowl of the beggars," and قصعة الصاليف, Qas‘at aš-Salālik, "the bowl of the poor or indigent." The Persians had similar names for the constellation.

var Aln

β NUSAKAN (nū’sa-kān), from the Arabic النسقان, an-Nasqānī, "the two series or lines" (of stars), applied to this star through an erroneous description by Firuzabádí in his al-Qāmūs. The name refers to the northern and southern series of stars, النسق الشامی, an-Nasq ash-Sha’mī, and النسق البشان, an-Nasq al-Yamānī, which began near this star and ran through Her, Lyr, Ser, and Oph, and formed two sides of the rostra, an-Rauda, "the garden or meadow."

3772 A7s

CORVUS (Crv)

α ALCHIBA (āl-kāb’ba), from the Arabic الإجبأ, al-Khibā, "the tent," one of the early names of the constellation. 4M18 F2

γ GIENAH (jē’nā), from the Arabic جنَاح الغراب الأيمن, Janāh al-
Ghurāb al-Aiman, "the right wing of the raven."  

Δ ALGORAB (al-gō' rāb), from the Arabic al-Γhurāb, "the raven." The principal stars of Crv were also called عَرْشُ السَّمَّاَكِ الإَلْعَزَل, "the throne of the unarmed prop," i.e., Spica.

3°11 Aon

CRATER (Crt)

α ALKES (al' kēz), from the Arabic الكَأس, al-Ka's, "the cup," especially one filled with wine.

4°20 K1

CRUX (Cru)

α ACRUX (a' krūks), a modern name coined from ξ Crucis, the designation of the star in the Bayer system.

1°05 Bln

CYGNUS (Cyg)

α* DENEB (dēn'ēb), from the Arabic دُنْبَ النَّجَاجَة, Dhanab ad-Dajāja, "the hen's tail."

1°33 α2e

β ALBIREO (al-bir'e-ō), of unknown derivation. Ideler's suggestion is not accepted.

3°10 Ko

γ SADR (sād'r), from the Arabic صَدِرُ النَّجَاجَة, Sadr ad-Dajāja, "the hen's breast."

2°32 cP7

DRACO (Dra)

α* THUBAN (thōō' bān), from the Arabic الثُّبَان, ath-Thubān, "the serpent or dragon," which was the brightest star near the pole from about 3700 to 1500 B.C., the successor to Edasich and the predecessor of Kochab.

3°64 Aop

β RASTABAN (ra's tah bān), from the Arabic رَأَسُ الثُّبَان, Ra's ath-Thu'bān, "the serpent's head." β, γ, ν, and ξ form the head of our Draco, and, collectively, were called by the ancient Arabs العروائَن, "the aged camels."

2°99 c02e

γ ELTANIN (ēl-tān'ēn), from the Arabic رَأَسُ التَّنَين, Ra's at-Tinnīn, "the dragon's head."

2°42 K5c

δ ALTAS (al' tās), from the Arabic الْتِبُس, at-Tais, "the ho-goat."

3°24 G8

ε EDASICH (ēd'ē-sīk), from the Arabic الذِّيْن, ad-Dīkha, "the hairy male hyena."

3°47 K3

λ GIAUSAR (jō' zār), from the Persian جَوْزُر, Jauzahr, "the dragon's
head and tail," and called by the Arabs, al-'Uqdatānī, "the two
knots," referring to the nodes of the Moon's orbit which were regarded
as "the poison places."

μ ALRAKIS (al-rā'kīs), from the Arabic al-ra'qīs, "the dancer
or leaper," which wandered here from Her. The original desert name,
differently pointed, was al-ra'ādī, "the freely pasturing camel,
thus completing the group of camels in the head of Dra.

ξ GRUMIUM (grō'ūmī-um), a faulty transcription of the Greek γενελ-
τον, "the under jaw" (of the dragon). β, γ, and ξ Dra, with i Her,
constituted the Arabian asterism, al-Salib al-Wāqī, "the falling
cross."

EQUULEUS (Equ)

α KITALPHA (ki-tāl'fā), from the Arabic qitā al-Far-
as, "the part or section of the horse."

ERIDANUS (Eri)

α* ACHERNAR (ā'kōr-nār), from the Arabic Ḏakhūr an-Nahr,
"the end of the river," originally applied to θ Eri.

β CURSA (kūnsā), from the Arabic kurūs al-Maqaddām, "the foremost chair of Orion," consisting of β, λ, and γ Eri and τ Ori.

γ ZAURAK (zō'rāk), from the Arabic naqīr az-Zaurag,
"the bright (star) of the boat," this name having wandered here from a
Phoenixis, α, β, γ, κ, μ, and ν Phe having been called az-Zaurag,
"the boat," a rather striking asterism.

η AZHA (āzḥā), from the Arabic udhī an-Nā'īm, "the
hatchling place of the ostrich," but, because of an error by a copyist,
I find that the letter ω in the St. Petersburg and Copenhagen MSS. of
as-Sūfī was written i in two places in the partial, and often erroneous,
copy which was used by Hyde and Ideler. Azha is neither Arabic nor
Persian. The title refers to the curving line of stars in the western
part of Eri, running from ζ to κ Eri, and which included ε and π Cet.

θ ACAMAR (ā'kā-mār), another form of Achernar.

o' BEID (bid), from the Arabic al-beid, "the eggs," originally
designating the stars about the hatching place.

o' KEID (kid), from the Arabic al-qaid, "the fragment of an
egg-shell," also referring to each star in this vicinity.  

GEMINI (Gem) 

α CASTOR (kæsˈtɔr), the Latin form of the Greek Καστώρ, one of the twin sons of Zeus, who were called the Dioscuri. 

β POLLUX (pɔˈlʌks), the Latin form of the Greek Πόλυξ, the other twin son of Zeus. The well-known Sumerian name of Gemini was mul MAŠ-TAB-BA-GAL-GAL, "the constellation of the great twins."

ALHENA (əlˈheɪnə), from the Arabic الْهَنَّة, al-Hanʾa, "the brand-mark," the name of the 6th Arabian L.M., which consisted generally of γ and ε Gem; sometimes, however, η, μ, and ν were added. These five stars, together with ε, 13, and 15 Mon were regarded as Thros theoraz, Qeas al-Jauzā', "Orion's bow," and this is one of the reasons for the confusion which exists among writers who apply the word Jauzā' to the stars in Gem.

SWASAT (swəˈsæt), from the Arabic Wust al-ṣawāt, "the middle of the sky," i.e., the ecliptic, being only about 11° south of it (1940.0).

MEBSUTA (məbˈsuːtə), from the Arabic مَبْسُوطَة, Dhira' al-Asad al-Mabsūta, "the outstretched paw of the lion," i.e., the lion of the Arabs. They designated this paw, however, by α and β Gem which constituted the 7th L.M., and which they called simply adh-Dhira'.

MEKBUDA (məkˈbʊdə), from the Arabic مَكْبُودَة, Dhira' al-Asad al-Maqbūda, "the folded paw of the lion," the Arabs designating this paw by α and β CMi.

PROPUS (prəˈpʊs), from the Greek προποῦς in Ptolemy's description of the star, "the projecting foot" (of the foremost twin). var cGLv

HERCULES (Her) 

RASALGETHI (ræsəˈlæl-ʤæˈθi), from the Arabic رأس الجاثي, Raʾs al-Jāthi, "the kneeler's head," from the name of the constellation, جاثي, Jalāt on both his knees." var M5'

KORNEPHOROS (kɔrˈnɛfərəs), from the Greek Κόρνηφόρος, "the club-bearer." This was one of the stars in an-Nasag ash-Sha`mi.
George A. Davis, Jr.

**HYDRA (Hyi)**

α *ALPHARD (al'fārd), from the Arabic *Fard ash-Shu-jā'ī*, "the solitary (star) of the serpent."

**LEO (Leo)**

α *REGULUS (rēg'ū-lūs), from the Latin, "the prince," the diminutive of *rex*. The Sumerian name of the star was *mul* LUGAL (kakkab Sar-ru), "the star of the king," whence the Arabian, *al-Malikī*, "the royal (star)."

β *DENEBOLEA (dē-nēb'ō-lā), from the Arabic *Dhanab al-Asad*, "the lion's tail."

γ *ALGIEBA (al-jī'bā), from the Arabic *al-Jabba*, "the forehead" (of the Arabian lion), sometimes written *Jahbat al-Asad*, the name of the 10th Arabian L.M., which consisted of α, γ, ζ, and η Leo.

δ *ZOSMA (zōs'ma), from the Greek ζωσμα, "the loin-cloth."

ζ *ADHAPERA (ā-dā'tē-rā), from the Arabic *ad-Dari'a*, "the plaited or twisted hair," originally designating the stars included within the triangle formed by γ, 4, and 21 Com.

θ *CHERTAN (chēr'tān), from the Arabic *al-Kharatān*, "the two small ribs," an alternate title of *Zubrat al-Asad*, "the lion's mane or shoulder," the name of the 11th L.M., which consisted of δ and θ Leo.

λ *ALTERF (al'tērf), from the Arabic *al-Tabrīf*, "the eye or glance" (of the Arabian lion), the name of the 9th L.M., consisting of κ Cnc (sometimes incorrectly given as ξ Cnc) and λ Leo.

μ *RASALAS (rās'ā-lās), from the Arabic رأس الاسد الشمالي, *Ra's al-Asad ash-Shamašlī*, (the star in) "the northern part of the lion's head."

**LEPUS (Lep)**

α *ARNEB (ār'nēb), from the Arabic *al-Arnāb*, "the hare."

β *NIHAL (nī'āl), from the Arabic *an-Nihāl*, "the camels quenching their thirst," referring to α, β, γ, and δ Lep. These stars were also called *Kursī al-Jauza' al-Mu'akhhrī*, "crusie the zodiacal position."
The Pronunciations and Meanings of Star Names

khār, "the hindmost chair of Orion," to distinguish it from the one in Eri.

LIBRA (Lib)

α ZUBENELGHUBI (ṣūb-bēnʾāl-ja-nūbē), from the Arabic الزبان al-ṣūbān, "the southern claw" (of the scorpion).

β ZUBENESCHAMALI (ṣūb-bēnʾās-shā-māʾi), from the Arabic الزبان al-ṣūbān, "the northern claw." α and β Lib constituted the 16th Arabian L.M., which was called al-zubān, "the two claws." This title alone shows the great antiquity of the Arabian Lunar Mansions.

LYRA (Lyr)

α VEKA (vē′gā), from the Arabic النسر الزغب, an-Nasr al-Wāqī, "the falling eagle or vulture."

β SHELIJAK (šēlīrāk), from the Persian شلیجک, Shālīgak, "the tortoise," derived from the Greek Χέλως, the little tortoise from which Hermes constructed the first stringed musical instrument, and which was the earliest Greek name of the constellation.

γ SULAFAT (sūlā-fāt), from the Arabic السلافة, as-Salafat, "the tortoise." β and γ were the two easternmost stars in an-Nasq ash-She′mi.

OPHICUS (Oph)

α RASALHAQ (rās′āl-hāʾgō), from the Arabic رأس الحَوَّة, Raʾs al-Ḥawwāʾ, "the head of the serpent collector," sometimes translated "serpent charmer."

β CEBIRAI (ṣeb−ba-rāʾ), from the Arabic كَبْر الراِعى, Kalb er-Rāʾi, "the shepherd's dog."

δ YED PRIOR (yēd prīʾūr), from the Arabic البَن, al-Yād, and the Latin, "the foremost (star) in the hand." δ, ε, and ζ Oph were stars in an-Nasq al-Yamānī.

ε YED POSTERIOR (yēd pōs-tēr′i-ūr), "the hindmost (star) in the hand."

γ SABIK (ṣābīk), from the Arabic السَّبِيك, as-Sābīq ath-Thānī, "the second winner or conqueror," located in the right knee of Oph. ζ being the sahib al-awāl, "the first winner or conqueror," situated in the left knee. These names refer to the "tramp-
ling" of the "huge monster," Scorpius, with "both his feet." To translate sabīq here in the sense of "preceding," as all previous commentators have done, is to deprive the star name of any meaning. 2.563 A2s λ MARFIK (mārīfīk), from the Arabic, al-Marfig or al-Mirfag, "the elbow." ORION (Ori) α BETELGEUSE (bēt'ēl-jūz). The evidence is inconclusive as to the first syllable since several derivations are possible, but the name is probably from the Arabic ʾaḥṭ al-ḫūzāʾ, literally, "the arm-pit of the white-belted sheep," a comparatively late title, for it combines the location of the star in the classical figure with the earliest Arabic name of the constellation. This ancient figure, however, may have consisted originally of the belt stars and γ, κ, and λ, for the earliest name of both α and β was rāʾi al-ḫūzāʾ, "the shepherd of the white-belted sheep." Later al-Ḫūzāʾ lost its original significance and became synonymous with the Greek Orion. This constellation was the southern mul SIB-ZI-AN-NA of the Sumerians, which was equated with d DUMU-ZI, the well-known Tammuz of the West Semitic cults, "the faithful son," referring to "the greatest of all ancient myths." var M2 β RIGEL (rī'ēl), from the Arabic رجل الأجراء البسري, Rīl al-Jauzāʾ al-Yusrī, "Orion's left foot," formerly common to Ori and Eri. 0.54 cB8e γ BELLATRIX (bē-lā'ītrīks), from the Latin, "the female warrior." 1.70 B2s δ MINTAKA (mīntā-kā), from the Arabic منطقة الجرية, Mintaqat al-Jauzāʾ, "Orion's belt or girdle." var Bln ε ALNILAM (ʾāl-nīlām), from the Arabic النطاق, an-Nīlam, "the string of pearls," a title which referred to the three belt stars collectively. 1.75 Bo ζ ALNITAK (ʾāl-nītāk), from the Arabic النطاق, an-Nītāk, "the belt." 1.91 Bone κ SAIPH (ṣāf), from the Arabic سيف الشابار, Saif al-Jabbār, "the sword of the powerful one," originally designated by β, ζ, and 42 Ori. 2.20 cBo λ MEISSA (mīsā), from the Arabic, al-Maisān, "the glitter-
ing or sparkling star," originally applied by the Arabs to γ Gem in the 6th L.M. λ, φ', and φ² Ori formed the 5th Arabian L.M., which was called اَلْحَقَّة, "the circle of hairs," and some early commentators confused the two because of the similarity of names and because the name جَوْزَة was frequently used to designate the stars in Gem. The brightest stars in Orion, however, were very appropriately called, in the plural, اَلْمِيْيَاسِين, al-Mayāsin.

PEGASUS (Peg)

α "MARKAB (مَرْكَب), from the Arabic, مَرْكَب, "riding, or anything on which one is carried," e.g., a horse, chariot, camel, litter, or ship.

β SCHEAT (شَهِّةَت), a corrupt transliteration of the Arabic الساق, as-Sā'at, "the leg," frequently used in the catalogues.

γ "ALGENIE (الْجَنِّية), from the Arabic الجَانَب, al-Jānib, "the side."

ε ENIF (إِنْيَف), from the Arabic اَنْفُ الفَرْس, Anf al-Faras, "the horse's nose."

ζ HOMAM (حُوْمَام), from the Arabic سعود الهمام, Sa'id al-Humām, "the lucky star (or asterism) of the great king or hero," referring to ζ and, ξ Peg.

η MATAR (مَاطِر), from the Arabic سعود المطر, Sa'id al-Matār, "the lucky star (or asterism) of the rain," referring to η and ζ Peg.

θ BIHAM (بِهْـم), from the Arabic سعود الْيَمْه, Sa'id al-Biham, "the lucky star (or asterism) of the flock of lambs, kids, and camels' colts," referring to θ and η Peg. These stars were sometimes called سعود النِّهَام, Sa'id al-Bahā'im, "the lucky star (or asterism) of the wild beasts."

μ SADALBARI (سَدَالْبَرَى), from the Arabic سعود الْبَرْى, Sa'id al-Bā'ri, "the lucky star (or asterism) of the one excelling in knowledge and virtue," referring to λ and μ Peg. Differently pointed, this asterism was also called سعود الْبَرْى, Sa'id al-Bā'ri, "the lucky star (or asterism) of the camel longing for its usual pasture."

PERSEUS (Per)

α "MIRFAK (مِرْفاَك), from the Arabic مِرْفَاق, Mirfaq ath-Thuray-
"the elbow of the Pleiades ('the moderately rich' cluster)," referring to the ancient figure of "the outstretched right hand of the Pleiades," mentioned above under Cas. A late Arabian title for the star was جنب برشاش، Jamb Barshaoush, "the side of Perseus," from which we derive Algenib, the other well-known name of α.

β *ALGOL (āl'gōl), from the Arabic رأس الغول, Ra's al-Shūl, "the demon's head."

ζ ATIK (ā'tīk), from the Arabic عاطق الثغَّر، Ātīq ath-Thurayyā, "the shoulder blade of the Pleiades," referring to both ζ and ζ Per.

η MENKIB (mēn'kīb), from the Arabic منكب الثغَّر، Mankīb ath-Thurayyā, "the shoulder of the Pleiades." To complete this ancient Arabian figure: η and γ were the elbow, فم al-Wā>j'am, "the wrist," η and γ were the hand, عَدَّل as-Sā'id, "the forearm," σ was the palm, al-Mabīq, "the bend of the arm," ψ was the wrist, Ibrat al-Mīrfaq, "the tip of the elbow," and δ, ν, and ε were the arm, al-'Adīd, "the upper arm," - all of α Per.

FISCEES (Psc)

α ALRESCHA (āl-re'shā), from the Arabic الرشَا, ar-Rashā, "the rope or cord," originally one of the names of ζ And as a member of the 28th Arabian L.M., and referred to the rope attached to the bucket formed by α, δ, and γ Peg and α And, which was called الدلو, ad-Dalw, and did not refer in any way to the cord or thread binding the two fishes in Psc.

FISCEIS AUSTRINUS (PsA)

α* FOMALHAUT (fō'māl-ōt), from the Arabic فم الحمل الجنوبي, Fum al-Hūt al-Janūbi, "the mouth of the southern fish." The indigenous names, however, were η, ad-Dīdāq al-Awāj, "the first frog," and ζ, az-Zalīm, "the male ostrich."

SAGITTARIUS (Sgr)

α RUKBAT (rūk'bāt), from the Arabic ركبة الرامي, Rukbat ar-Rāmī, "the archer's knee."

β ARKAB (ār'kāb), from the Arabic عرقوب الرامي, 'Urqūb ar-Rāmī, "the archer's tendon Achilles."
The Pronunciations and Meanings of Star Names

النعائم الواردة, an-Na'tā'im al-Wārida, "the approaching ostriches." One ancient tradition, however, saw in these stars only one ostrich, and one ostrich in the stars mentioned below under ζ.

Σ KAUS MEDIA (kōs mō'dī-ā), from the Arabic, al-Qaus, and the Latin, "the middle part of the bow." 2°54 K2

ζ KAUS AUSTRALIS (kōs ʻos-trā'īlās), "the southern part of the bow." 1°95 A0

Ζ ASCELLA (a-sēl'ā), a mediaeval Latin term, frequently written "exilla" in the catalogues, "the armpit." ζ, φ, σ, and τ Sgr formed another Arabian asterism called "the departing ostriches." an-Na'tā'im as-Sādira, 2°71 A6n

λ KAUS BOREALIS (kōs bō'īrā'īlīs), "the northern part of the bow." 2°94 K1

σ NUNKI (mūn'kē), from the name of the 30th Sumerian L.M., mul GU-SIR-A-AB-BA: mul NUNKI, "the asterism of the yoke of the sea : the asterism of the holy city," i.e., Eridu on the Persian Gulf, sacred to den-KI (ilū ʾē-a), the god who dwelt in "the sweet waters." 2°14 B3n

SCORPIUS (Sco)

α° ANTARES (ān-tā'roz), from the Greek Ἄνταρης, "the rival of Mars" ("Aρης"). 1°22 M1

β GRAFFIAS (grāf'ī-as), from the Greek γραφαιος, "the crab." 2°76 Bon

λ SHAULA (shō'īlā), from the Arabic الشولا, ash-Shaula, "the cooked-up part of the scorpion's tail." This is the name of the 19th Arabian L.M., which consisted of λ and ν Sco. 1°71 B2n

ν LESATH (lēs'āth), from the Arabic اللساط, al-Las'a, "the scorpion's sting." The names of λ and ν are echoes of one of the Sumerian names of the constellation and the name of the 27th L.M., mul GIR-TAB (kakkab Aqrabu), "the constellation (or asterism) of the scorpion." These two stars were individually called ʾŠAR-ŪR and ʾŠAR-GAZ, the names of two well-known Star-gods.

SERPENS (Ser)

α UNUKHALAI (ū'nūk-kāl-hā'ē), from the Arabic عنق الهر, ʾUnuq al-Hayya, "the serpent's neck." This was one of the stars in an-Nasaq al-Yamānī. 2°75 K2
"the serpent."

**TAURUS (Tau)**

α° ALDEBARAN (al-dêb'ar-ân), from the Arabic الدبران, al-Dabarān, the follower, i.e., of the Pleiades; this is also the name of the 4th Arabian L.M., which consisted of α, γ, δ, ε, θ', and θ^2 Tau, the brightest stars in the Hyades.

β° ELMATH (îl'mâth), from the Arabic الناطق, an-Nāṭiq, "the one butting with horns," formerly common to Tau and Aur; it was also one of the names of α Ari.

η° ALGYONE (al-sî'î-nê), from the Greek Ἀλκυόνη.

16 CELAENO (sê-lê'nô), from the Greek Κέλαινω.

17 ELECTRA (ê-lêk'trâ), from the Greek Ἐλέκτρα.

19 TAYGETA (tâ-i'jê-tâ), from the Greek Τηγέτη.

20 MAIA (mâ'îa), from the Greek Mâia.

21 STEROPE (stôr'ô-pê), from the Greek Στερόπη.

23 MEROPPE (mê-rô'pê), from the Greek Μερόπη.

27 ATLAS (âl'tlâs), from the Greek Ἀτλας.

28 PLEIONE (plô'înê), from the Greek Πλιγένη.

**URSA MAJOR (UMa)**

α° DUBHE (dûb'ê), from the Arabic ظهر الدب الكبير, Zahr ad-Dubb al-Akbar, "the back of the greater bear." It might be well to note here that there was no "bear" constellation in the astronomy of the Sumerians and Babylonians; they called UMa mul MAR-GÁD-DÁ, "the constellation of the long chariot."

β° MERAK (mê'râk), from the Arabic مرأق الدب الكبير, Maraq ad-Dubb al-Akbar, "the loins of the greater bear."

γ° PHECDA (fêk'dâ), from the Arabic فخذ الذب الكبير, Fakhkhâd ad-Dubb al-Akbar, "the thigh of the greater bear."

δ° MEGREZ (mê'grêz), from the Arabic مجرب الذب الكبير, Mâhrij adh-Dhâbi ad-Dubb al-Akbar, "the root of the tail of the greater bear."

ε° ALIOTH (îl'î-ôth), one of the ridiculously corrupt forms of al-Aryûq, the ancient Arabic name of Capella. This is just another exam-
ple of how star names are wont to wander at the hands of the uninformed. Scaliger's derivation is not accepted. The Arabic names for this star were إِلْجَون, "the black horse or camel," and الأَحْمَر, al-Ḥawar, "the extremely bright one," an appropriate name for the brightest star in the constellation. Ṣ968 A2s

۷ MIZAR (mīzar), from the Arabic al-Mī’zar, "the veil, trousers, or waist-cloth," erroneously applied to this star. The Arabs called it إِلْجَن, "the female kid." This word is not the plural of إلْجِن or إلْجَن, "neck." Ṣ917 A2s

۸ ALKAID (al-kād'), from the Arabic, Qā'id al-Banāt an-Nāṣ'ah, "the leader or governor of the daughters of the bier," one of the early names of the constellation having been بنات المعرش الكبرى, Banāt an-Nāṣ'ah al-Kubrā, "the daughters of the greater bier." Ṣ911 B3n

۹ TALITHA (tālīth-ā), from the Arabic, al-Qafṣa ath-Thālitha, "the third leap" (of the gazelles), applied by the Arabs to both ṣ and k UMA. Ṣ912 A5n

۱۰ TANIA BOREALIS (tan'īya bōrē-ā'līs), from the Latin and the Arabic القَفْصَة الثانِئَة, al-Qafṣa ath-Thāniya, "the northern (star) of the second leap." Ṣ952 A2s

۱۱ TANIA AUSTRALIS (tan'īya ʿas-trālīs), "the southern (star) of the second leap." Ṣ921 K5

۱۲ ALULA BOREALIS (al-ūlā bōrē-ā'līs), from the Latin and the Arabic القَفْصَة الأولى, al-Qafṣa al-Ūlā, "the northern (star) of the first leap." Ṣ971 K3

۱۳ ALULA AUSTRALIS (al-ūlā ʿas-trālīs), "the southern (star) of the first leap." These three pairs of stars, collectively, were known as جَفَسَات الظَبا, Qafṣāt az-Zibā', "the leaps of the gazelles," referring to an ancient and familiar Arabic legend. Ṣ766 Go

۱۴ MUSCIDA (miṣī-dā), a corrupt form of the mediaeval Latin musum or musua, "the mouth, muzzle, or distented jaws (of an animal). Ṣ747 G1

۱۵ ALCOR (al-kūr), from the Persian خوار, Khwar, "the abandoned or friendless one," similar in meaning to السَه أو, as-Suhā, the ancient and well-known Arabic name of the star. Ṣ702 A1n
URSA MINOR (UMI)

α* POLARIS (po-lär’īs), from the Latin stella polaris, "the pole star," which it has been from about 300 A.D. Polaris will be nearest the north pole of the heavens during the year 2102, at a distance of about 27° 57′.

β KOCHAB (kō’kāb), from the Arabic الكوكب الشمالي, al-Kaukab ash-Shamālī, "the north star," so named during the period when it was the brightest star near the pole, from about 1500 B.C. to 300 A.D.

2° 24′ K5

γ PHERKAD (fe’r’kād), from the Arabic الفردان, al-Farqad, "the calf," having been called أئور الفردان, Anwar al-Farqadānī, "the more brilliant one of the two calves," and أخرب al-Farqadānī, "the more concealed one of the two calves." In popular story β and γ were also called Nād Mānī Jadhīm, "the two pot companions of Jadhīm," a famous king of the Arabs in 'Irāq, who would drink with the Farqadānī only, and never with mortal men!

3° 14′ A2ne

VIRGO (Vir)

α* SPICA (spi’kā), from the Latin, "the ear of corn." The ancient Arabs called this star السماك الأعزل, as-Simak al-A‘zal, "the unarmed prop," Arcturus being "the armed prop."

1° 21′ B3n

β ZAVIJAVA (zāv’ē-jāv’ā), from the Arabic زاوية العواء, Zāwyat al-‘Awāw, "the corner of the barking dog," al-‘Awāw being the name of the 13th L.M., which consisted of β, γ, δ, ε, and η Vir. This name, which remained a mystery to scholars for centuries, shows the influence of ancient Babylonian astronomy, in which β Leo was called kakkab Zibbat, Kalbi Ari, "the tail of the dog of the lion."

3° 80′ F8

γ PORRIMA (pōr’ē-mā), the name of a Roman nymph or goddess of prophecies and child-birth, and one of the companions, or one of the ancient attributes, of Carmenta, the leader of the Camenae.

2° 30′ F0

ε VINDBIATRIX (vīn-dē’mē-ā’trīks), from the Latin, "the female grape-gatherer."

2° 35′ G6

η ZANIAH (zān’yā), from the Arabic الزاوية, az-Zāwyah, "the corner."

4° 200′ Ao

ζ SYRMA (sēr’mā), from the Greek σύρμα, "the train."

4° 16′ F5
time is due in great measure to the generosity of my sister, Gladys D. Simson.

Notes
2 Ibid., page 353.
3 For a good description of the position of the ancient Arabs with reference to Babylonia and Egypt, see de Lacy O'Leary's Arabia Before Muhammad, pages 43 and 44 (New York, 1927); and consult also Stephen H. Langdon's excellent "Semitic Mythology" in The Mythology of All Races, Vol. V, pages 1-5 (Boston, 1931).
4 I am indebted to Professor Philip K. Hitti for this very pertinent comparison; see his scholarly and exciting History of the Arabs, pages 269, 271, 337, and 419 (London, 1937).
5 Harvard Annals, 91-99, 1918-1924.
BUFFALO, NEW YORK, OCTOBER 1, 1943.

Planetary Phenomena in 1944
By WILLIAM A. CALDER

Note: Greenwich Civil Time is used unless otherwise stated. To obtain Eastern War Time, subtract 4 hours, Central War time, 5 hours, etc. The data have been taken from the American Ephemeris and Nautical Almanac. A complete description of the four penumbral eclipses has been given by Alexander Pogo in the August, 1943, issue of Popular Astronomy, from which information concerning these events has been taken.

Eclipses

Theoretically, there will be six eclipses in 1944, two of the sun and four of the moon. The lunar eclipses, however, are all penumbral. This means that the moon does not enter the central cone of the earth's shadow. In only one case, that of December 29, is the diminution of light sufficient to become apparent to the naked eye. For the smaller eclipses, a hypothetical observer suitably located on the moon would see the earth take a small nick out of the sun's disk. These grazing eclipses take place on February 9, July 6, and August 4 and are worthy of being noted inasmuch as they are in the beginnings and endings of saros cycles. But from the viewpoint of the amateur observer, we may say that 1944 offers three eclipses:

I. A total eclipse of the sun will occur on January 25, 1944. As may be seen in Figure 1, the path of totality begins in the Pacific Ocean some 2500 miles west of South America, and about 3 degrees north of the equator. The track runs across Peru and Brazil, crosses the Atlantic and ends in Africa.

Circumstances of the Total Eclipse of the Sun, January 25, 1944:

<table>
<thead>
<tr>
<th></th>
<th>Greenwich Civil Time</th>
<th>Longitude</th>
<th>Latitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eclipse begins</td>
<td>January 25 12 48.3</td>
<td>99 12</td>
<td>0 31</td>
</tr>
<tr>
<td>Central eclipse</td>
<td>25 13 44.9</td>
<td>111 59</td>
<td>3 23</td>
</tr>
<tr>
<td>Central eclipse</td>
<td>25 15 29.3</td>
<td>49 15</td>
<td>7 23</td>
</tr>
<tr>
<td>at local apparent noon</td>
<td>25 17 7.6</td>
<td>- 9 23</td>
<td>18 48</td>
</tr>
<tr>
<td>Eclipse ends</td>
<td>25 18 4.2</td>
<td>3 16</td>
<td>14 56</td>
</tr>
</tbody>
</table>