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955 L'Enfant Plaza North, S.W
Washington, D. C. 20024

date: July 16, 1971

to Distribution

B71 07023

from: J. W. Head

subject: Derivation of Topographic Feature Names in the Apollo 15 Landing Region - Case 340

ABSTRACT

The topographic features in the region of the Apollo 15 landing site (Figure 1) are named for a number of philosophers, explorers and scientists (astronomers in particular) representing periods throughout recorded history. It is of particular interest that several of the individuals were responsible for specific discoveries, observations, or inventions which considerably advanced the study and understanding of the moon (for instance, Hadley designed the first large reflecting telescope; Beer published classic maps and explanations of the moon's surface). It is indeed fitting that these steps in the advancement of lunar science should be climaxed by the scientific exploration of this area of the lunar surface by the Apollo 15 crew, David R. Scott and James B. Irwin.

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MEMORANDUM FOR FILE

Introduction

The topographic features in the region of the Apollo 15 landing site (Figure 1) are named for a number of philosophers, explorers and scientists (astronomers in particular) representing periods throughout recorded history. It is of particular interest that several of the individuals were responsible for specific discoveries, observations, or inventions which considerably advanced the study and understanding of the moon (for instance, Hadley designed the first large reflecting telescope; Beer published classic maps and explanations of the moon's surface). It is indeed fitting that these steps in the advancement of lunar science should be climaxed by the scientific exploration of this area of the lunar surface by the Apollo 15 crew, David R. Scott and James B. Irwin.

Derivation of Topographic Feature Names

Hadley - Hadley Rille, Mount Hadley in the vicinity of the landing site, and other craters. John Hadley, 1682-1744, English mathematician, and inventor. Born and died in London; in the interim, member of Royal Society. Hadley made the first large reflecting telescope for practical use. The fact that the astronomer Edmund Halley used it so successfully made it one of the most significant telescopes of the 18th century. Hadley is also known for his invention of the seaman's reflecting quadrant, a precursor of the modern sextant - it was not the only one of its type but it was preferred by navigators. It used two small mirrors, one half-silvered and fixed to a wooden frame and the other attached to a movable arm that traversed a scale. The image of a star whose altitude was being measured was thus brought to the level of the horizon turning a double observation into a single one. The maximum altitude measured was 90°; hence the name "quadrant." But because a mirror was used the arc on the instrument was an eighth of a circle; hence the alternative name "octant."

Autolycus - crater about 175 km NNW of the landing site. Autolycus, Greek astronomer and mathematician circa 310 B.C. at Pitane, Asia Minor. He wrote the earliest Greek mathematical treatise which is extant in its entirety. He also compiled a work on the risings and settings of celestial bodies. The first describes a revolving sphere's concentric circles. The second explains how variations in the brightness of the sun, the stars, and the planets determine the distance of these bodies from the earth.

Aristillus - Crater approximately 280 km NNW of the landing site. Aristillus (Aristyllus), belonged to the school of Alexandria (as did the more renowned Aristarchus) the center of studies (circa 322 B.C.) after the Aristotelian era moved from Greece. Along with a library was an observatory where Aristyllus and Timocharis determined new positions of the principal stars, which they collected in a catalogue with precise numerical data.

Eratosthenes - Crater about 700 km SW of the landing site. Eratosthenes, another Alexandrian astronomer (circa 230 B.C.) who was among the first to calculate the size of the earth. During the summer solstice he measured the zenith distance of the sun at noon in Alexandria and he knew that at the same instant the sun was in the zenith at Syene in upper Egypt. Assuming that Syene had the same longitude as Alexandria and knowing the distance between the two places, he concluded that the circumference of the earth was about 250,000 stadia.

Ampère - A mountain peak of the Apennine Mountains about 300 km SW of the landing site. Andre Marie Ampère, 1775-1836, French physicist and mathematician, discovered the relationships between magnetism and electricity; also investigated the flow of electric currents. His laws form basis of modern electrical practice (1) two parallel currents having the same direction attract each other (2) two parallel currents having opposite directions repel each other. Invented astatic needle--detects and measures electrical currents. Served as professor of physics and science at the College of France.

Fresnel - Several rilles and a ridge in the area about 50 km NW of the landing site. Augustin Jean Fresnel, 1788-1827, French physicist and engineer who helped to establish the wave theory of light-confirmed Huygen's theory-disproved Sir Issac Newton's theory that light consists of tiny corpuscles.

Huygens - A mountain peak in the Apennine Mountains about 300 km SW of the landing site. Christian Huygens, 1629 - 1695,

Dutch physicist, mathematician, and astronomer. Discovered polarization of light; developed the wave theory of light (the foundation of modern optical science; coined the word ether to explain his theory); constructed the first powerful telescopes which enabled him to discover a satellite and ring of Saturn; first to use a pendulum to regulate a clock; invented a micrometer; Royal Society of England (1663); later worked for Louis XIV.

Aratus - A crater in the Apennine Mountain area about 100 km South of the landing site. Aratus, c. 315-c. 245 B.C., Greek poet known for his poem on astronomy, Phenomena, a didactic poem in hexameters - the first portion versifies a prose work by Eudoxus on astronomy followed by a treatment of weather signs. The poem became popular at once and provoked many commentaries, the most important being that by Hipparchus (c. 150 B.C.). One verse invoking Zeus is quoted by St. Paul in Acts XVII, 28.

Archimedes - A large crater and associated craters and a series of rilles about 280 km NW of the landing site. Archimedes (c. 287-212 B.C.) Greek mathematician and inventor - his greatest work was in geometry extending methods begun by Eudoxus and followed by Euclid to become equivalent in several cases to integration though it remained purely geometrical in form. He made several inventions such as the water screw still used in irrigation in Egypt. "Give me a place to stand and I will move the world," was his contention that a great weight could be moved by a very small force. He is said to have fixed on a large and fully laden ship by way of illustration and moved it, but accounts differ as to how he did it.

Conon - A crater in the Apennine Mountains about 175 km SSW of the landing site. Conon of Samos - (3rd Century, B.C.): Greek astronomer and geometer; friend of Archimedes wrote on astromony in seven books and made a list of observations of solar eclipses recorded in Egypt. He also investigated the question of the maximum number of points of intersection of two conics, and of a conic and of a circle. Named the constellation Coma Berenices after the wife of a leader Ptolemy who had made an offering of her hair for the safe return of her husband from battle - it disappeared from the temple and Conon claimed it had been placed among the stars.

Wallace - A crater in Mare Imbrium about 450 km SW of the landing site. Alfred Russel Wallace - (1823-1913): English naturalist, famous for his work with Darwin on the origin of species by natural selection. During a fever attack he began

to think on Malthus' "Essay on Population" after completing extensive travels in Bali, Borneo, and the Malay archipelago and ". . . there suddenly flashed upon me the idea of the survival of the fittest." He got together his theory and sent it to Darwin in England whom he didn't know. Darwin's response was, "I never saw a more striking coincidence - if Wallace had my manuscript sketch written out in 1842, he could not have made a better short abstract! Even his terms now stand as heads of my chapters."

Wolff - A mountain peak and associated craters about 450 km SW of the landing site. Christian Wolff - (1679-1754): German philosopher and mathematician - presented his system in a series of writings in which he attempts to demonstrate the power of human reason to reach absolutely certain knowledge about every aspect of human existance and cited the moral principles of Confucius as an example. He was not an original thinker, but his comprehensiveness and orderliness were a form followed by the thinkers of his day, i.e., Kant.

Bradley - A mountain and rille about 150 km SW of the landing site. James Bradley - (1692-1762): English, third astronomer royal who discovered the aberration of light. He observed the eclipses of Jupiter's satellites for many years to correct the existing tables which he then used to make accurate determinations from Greenwich of the longitudes of Lisbon and New York - his work is considered to mark the beginning of the modern era in physical astronomy.

Marco Polo - A series of craters about 350 km SW of the landing site. Marco Polo - (1254-1324): Venetian traveler who with his father and uncle, spent much time in the court of Kublai Khan with whom he was a great favorite due to his skill with languages and flair for diplomacy. He was captured in a sea fight in 1298 and imprisoned by the Genoese for a year during which time he wrote on his experiences which served to assure European interest in the Far East. It is said Columbus had a well-read copy and tried to identify some of his American discoveries with places described by the Venetian two centuries before.

Sulpicius Gallus - A crater and rilles in southwest Mare Serenitatis about 300 km SE of the landing site. Sulpicius Gallus: A distinguished orator was praetor B.C. 169 and consul 166 when he fought against the Ligurians. In 168 he served as tribune of the soldiers under Aimilius Paulus in Macedonia and during this campaign predicted an eclipse of the moon.

Manilus - A crater and associated craters about 450 km SE of the landing site between Mare Vaporum and Mare Serenitatis. Marcus Manilius (early 1st Century A.D.), Roman didactic poet, was the author of Astronomica, an unfinished poem on astromony and astrology, of which five books remain. The poem consists of over 4,000 hexameters and was composed in the reigns of Augustus and Tiberius. To the reader unversed in astrological calculations the interest chiefly resides in the attractive prefaces to each book and the mythological or moralizing digressions.

Menelaus - Crater and associated craters in SW Mare Serenitatis about 500 km SE of the landing site. Menelaus, in Greek mythology, the younger son of Atreus and king of Sparta, the abduction of whose wife, Helen, led to the Trojan War. After the fall of Troy, Menelaus recovered Helen and brought her home. Menelaus figures largely in the Iliad and the Odyssey where he is promised a place in the Elysian fields after his death because he is married to a daughter of Zeus.

Beer - A crater in Mare Imbrium about 400 km east of the landing site. Beer (1797-1850): German selenographer, with Mädler published a map of the moon in 1837 which remained the standard reference for years.

Feuille - A crater in Mare Imbrium about 400 km east of the landing site. Feuille - (1660-1732) French astronomer.

Linné - Several craters in western Mare Serenitatis about 300 km ENE of the landing site. Linné - (1707-1778) Swedish botanist.

James W Head

2015-JWH-lhd J. W. Head

Attachment

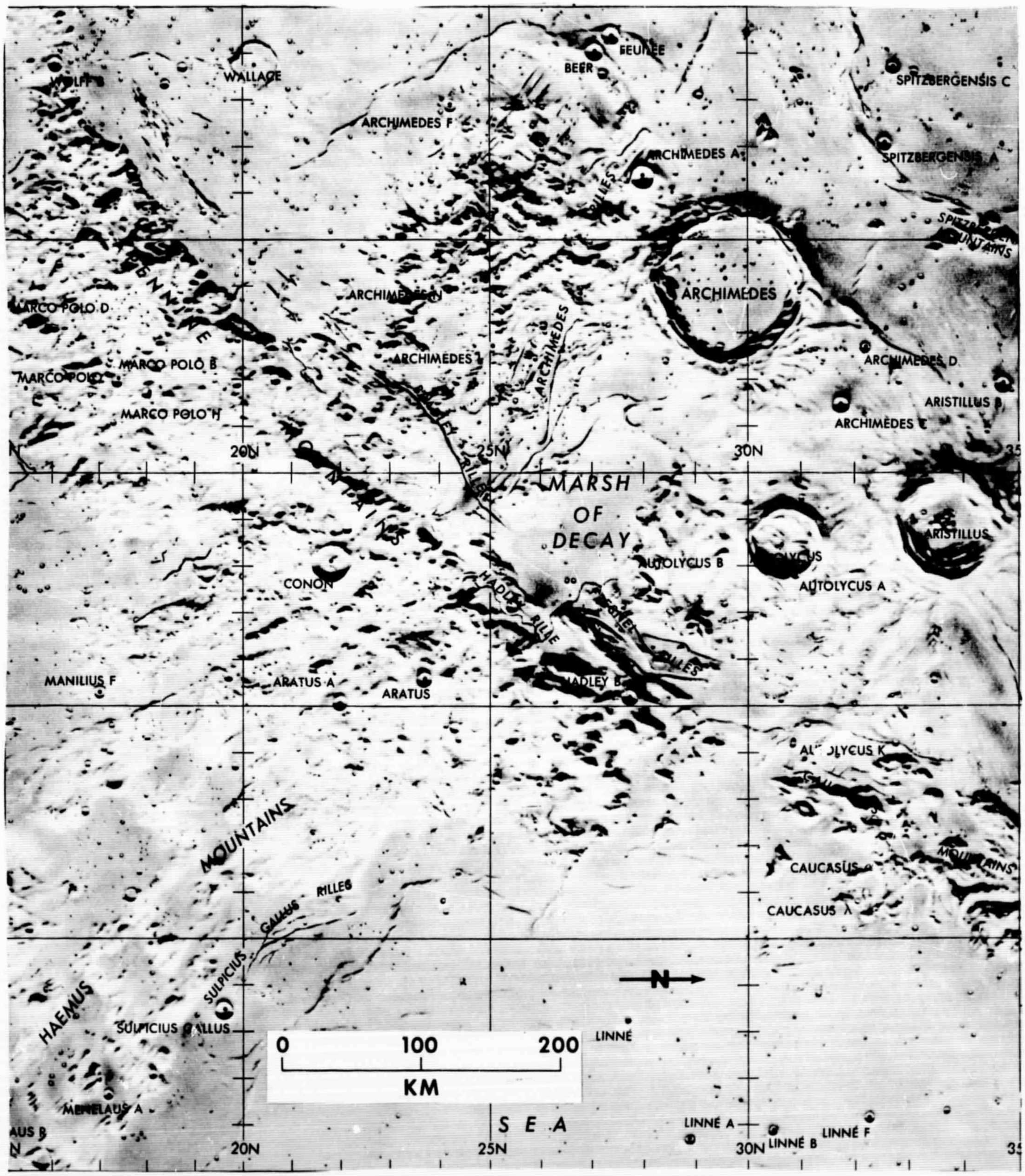
WALLACE
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FIGURE 1