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## **SOLAR SYSTEM NOMENCLATURE A TRIBUTE TO MERTON E. DAVIES**

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Solar system nomenclature as defined by the International Astronomical Union (IAU) consists of the names of newly discovered objects and names assigned to surface features on planets, satellites, asteroids and comets. The naming of asteroids themselves is carried out separately.

The IAU was founded in 1919, and its nomenclature work was carried out initially under the oversight of Commission 16: Physical Studies of Planets and Satellites. This work was originally restricted to assigning names to features on the lunar surface and standardizing lunar maps. With the dawn of space exploration in the 1960's, it became necessary to revise and extend nomenclature on the surface of Mars and an ad hoc committee was developed to do this.

The Lunar Orbiter and Apollo Programs of the United States led to the casual, unilateral assignment of names to features on the lunar surface by astronauts and others, which angered the Soviets, who also had a lunar program. Matters came to a head at a meeting of the IAU in Sydney, Australia in 1973. There the Soviets requested the right to name features on the far side of the moon, as they had obtained the first photograph of this hitherto unseen hemisphere in 1959 (Figure 1). Crude as this picture was, it revealed the most striking aspect of the lunar farside, the near-absence of Maria. But there was one small Mare, and the Soviets proposed to name it the sea of Moscow.

This caused considerable consternation among the other scientists present at the meeting, since the IAU-endorsed tradition for naming Maria on the near side of the moon relied mainly on names of various hydrological phenomena (Mare Imbrium, the Sea of Rains; Oceanus Procellarum, the Ocean of Storms; Palus Putredinus, the Marsh of Corruption; etc.) or else states of mind (Mare Serenitatis, the sea of serenity; Mare Tranquillitatis, the Sea of Tranquility, etc.). The Soviets were adamant. Clearly some of their frustration at being excluded from

previous nomenclature decisions as well as some national pride was in the air. In a beautiful piece of French diplomacy, Audouin Dollfus, the contemporary president of Commission 16, used his authority to rule that Moscow was in fact a state of mind! Thus we have the Sea of Moscow comfortably established on the lunar far side.

This exercise reinforced a formal request from the Soviet Academy of Sciences to the IAU at the Sydney meeting to open up the nomenclature activity to international participation and review. Accordingly, the IAU established the “Working Group for Planetary and Satellite Nomenclature” (WGPSN) which has handled these matters ever since.

The first president of the WGPSN was the Canadian astronomer Peter Millman (1973-1981), followed by the American geologist Hal Masursky (1982-1990), followed in turn by the Norwegian astronomer Kaare Aksnes (1991-present) who is the current president.

The WGPSN is organized into several Task Groups, each of which has a chair and several members, all drawn from the international community of scientists. The current chairs of these Task Groups are listed in Figure 2. The current membership of the WGPSN is given in Figure 3. In addition to the President and the Task Group Chairs, the WGPSN always includes the President of Commission 16 and the President of Division III of the IAU, as this Division includes the solar system activities. There are presently three consultants, of whom I would like to single out Jennifer Blue for special mention. Ms. Blue is at the USGS in Flagstaff, Arizona and is the *sine que non* of the WGPSN. She assembles and dispatches all inquiries and requests for nomenclature and has developed and now maintains the on-line Gazetteer that catalogues all the approved names.

Mert Davies was a highly active member of the Outer Solar System Task Group and was Chair of the Mercury Task Group for some years. In fact, he played a major role in all of the nomenclature activity during the most intense period of this work, from 1973 – 1993, when names were required for the Viking, Voyager, and Magellan discoveries. Although the WGPSN is divided into discrete Task Groups, in practice several of these groups often met together so everyone was aware of what everyone else was proposing. Mert was strongly involved in all of these discussions, his graciousness and good humor repeatedly coming into play during emotional confrontations. It is hard to imagine this massive effort taking place without his creative and steady influence.

One of Mert’s many important roles in this activity was his strong and steadfast support of international participation. This was particularly critical in the case of the Soviet scientists. We were deep into the Cold War and it was very difficult for them to attend meetings outside their country. As a result, we frequently went to the USSR, and Mert was always game to make these long trips. He often brought along his wife Louise, whose

kindness, patience, and unflagging good humor were much appreciated. The two of them hosted Russian scientists visiting the US, again breaking the political barriers that were making our work difficult.

Mert supported the idea of including some discussions of scientific results, which became a standard part of these meetings. Thus all participants could present some short reports on their own research and scientists from the host institutions (or others nearby) who were not involved in the WGPSN and its primary function were invited to participate. Thus “nomenclature” became an important pathway for scientific exchanges.

In the end, all this good will and hard work had the desired effect. The WGPSN assigned roughly 5000 names, with full participation from Soviet (now Russian, Kazakh etc.) and European scientists.

The work is continuing, with new names required from the Galileo Mission studies of Jupiter’s satellites, ongoing Mars exploration, and the anticipation of many new images of Saturn’s satellites from the Cassini-Huygens mission. The latter can serve as an example of how the nomenclature activity proceeds.

Names for newly discovered satellites are chosen to conform to established traditions. Discoverers are encouraged to select names from a name bank that is established according to this general guideline. In the case of Saturn, the tradition is to use the names of Titans and Giants from Greek mythology, the beings that the Olympian Gods had defeated before becoming the accepted deities of the classical Greeks. Names of surface features are selected from categories that are chosen to be distinctly different for each object, preferably with some association to the object itself (Figure 4). Thus Mimas, discovered by William Herschel in England, was given the category of King Arthur and Knights of the Round Table, a British legend. Enceladus was also discovered by Herschel, but its surface is so strange and mysterious that it was given the Arabian Nights as a name bank, linking a fantasy landscape with a literary fantasy.

These assignments are suggested and discussed by the Task Groups, presented to the WGPSN for further discussion and possible revision and then submitted to the General Assembly of the IAU, which has final approval authority.

An anecdote from one of our meetings may provide some of the flavor of this activity. Figure 5 shows a gathering of members and guests of the WGPSN session that took place in Montreal, Canada at the IAU meeting there in August, 1979. Starting from the upper left the members present were *Back Row*: A. Brahic, A. Dollfus, K. Aksnes, T. Owen, D. Morrison (behind), B. Smith, E. Docheva. *Middle Row*: H. Holt, K. Runcorn, H. Masursky, D. Campbell, S. Miyamoto, **M. Davies**. *First Row*: E. Whitaker, G. Pettengill, W. Brunk. It is worth noting that the Soviet

delegation was not allowed by their government to attend this particular meeting, despite considerable work by Peter Millman who had managed to arrange for their housing and per diem. Shifting political winds and reaction to current events sometimes thwarted our best efforts to break through the icy barricades of the cold war.

One of the main topics of this meeting was the establishment of guidelines for naming features on the surface of Venus. The group was divided between those led by Brad Smith who wanted **all** the names of Venus to be feminine, reflecting the fact that this is our only female planet, and the rest of us, including Mert, who wanted to preserve the names originally assigned to a few unusually radar-bright features first discovered by ground-based observers using the powerful radars at Arecibo and Goldstone. Brad Smith was particularly unwilling to compromise, and we were stuck. At that point, as in a chapter from Homer's *Odyssey*, Aphrodite herself intervened, disguised as an attractive Canadian reporter who invited Brad for an interview. He left the room with her and never returned! We decided that was a clear message from Mt. Olympus, and that is why the map of Venus today continues to preserve the original names of the brightest features first distinguished by observers from Earth (Figure 6).

It should be evident from this brief review that the work on nomenclature has its rewarding moments, despite the tedium of sorting through all those names. What makes any enterprise like this worthwhile is the character of the people who do it. Mert Davies was one of the best. We all loved him and we all miss him. He cannot be replaced.

#### FIGURE LIST

Figure 1. The lunar Far Side, first photographed by Luna 3 in 1959. The Sea of Moscow is Feature number 1. A slice of the hemisphere we see from Earth is visible to the left of the dashed line.

Figure 2. Task Groups of the WGPSN. Chairs as of 1 January 03.

Figure 3. WGPSN Current Membership (1 January 03).

Figure 4. Major Satellites of Saturn: Names and surface nomenclature.

Figure 5. Attendees at the IAU nomenclature meeting in Montreal, Canada, August 1979.

Figure 6. A map of Venus, based on Pioneer Venus Results.

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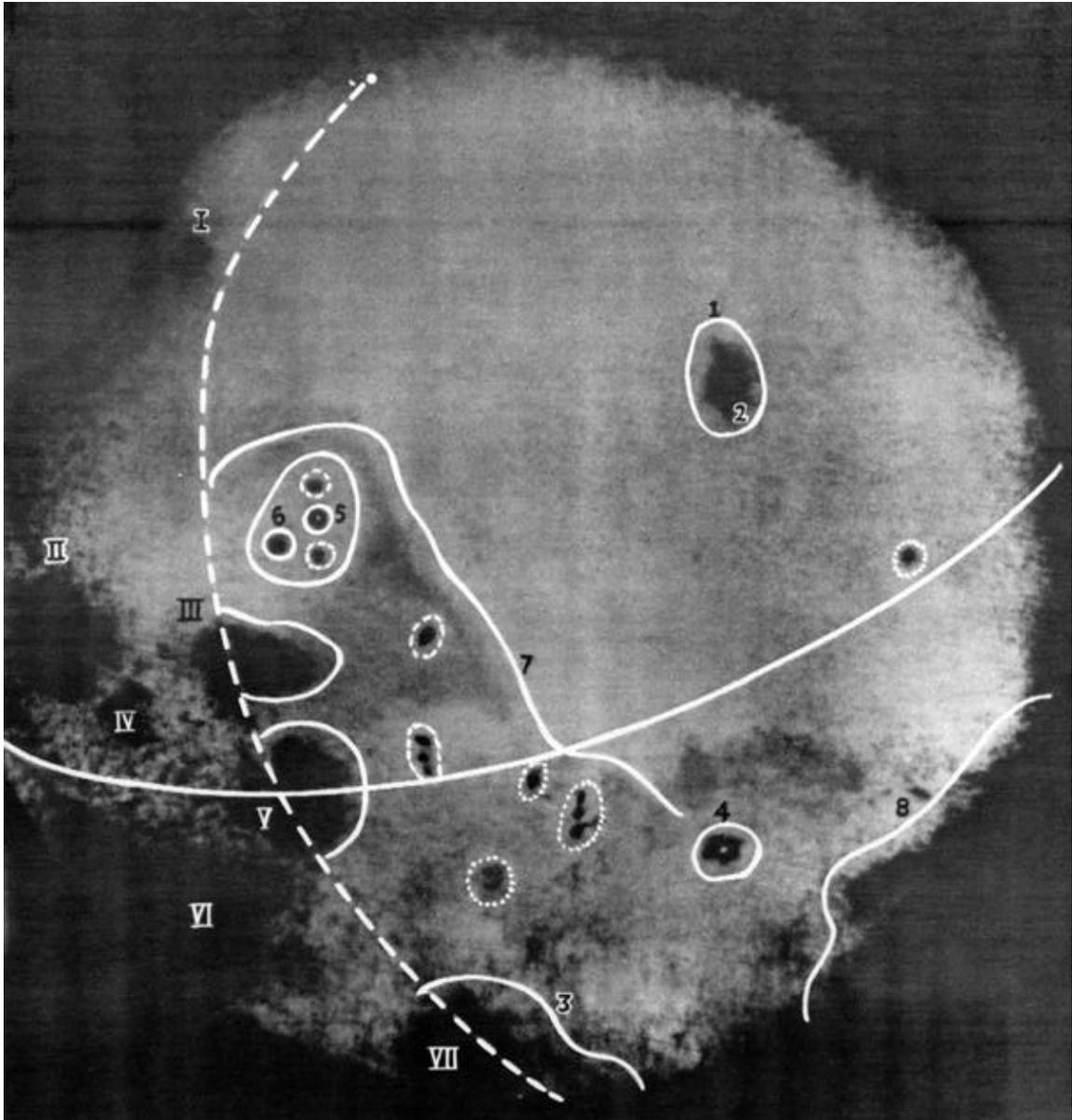


Figure 2. Task Groups of the WGPSN. Chairs as of 1 January 03.

# **WGPSN**

## **TASK GROUPS**

### **Mercury**

**M. S. Robinson**

### **Venus**

**G. A. Burba**

### **Moon**

**V. Shevchenko**

### **Mars**

**B. A. Smith**

### **Outer Solar System**

**T. C. Owen**

### **Small Bodies**

**B. G. Marsden**

Figure 3. WGPSN Current Membership (1 January 03).

## **WGPSN MEMBERSHIP**

### **President + Task Group Chairs**

**Comm. 16 Pres.: D. P. Cruikshank**

**Division III Pres.: M. Ya Marov**

### **Consultants:**

**L. Gaddis (USGS)**

**P. Masson (European Space Agency)**

**J. Blue (USGS-Main Mover)**

## **GAZETTEER**

**[http://planetarynames.wr.  
usgs.gov/](http://planetarynames.wr.usgs.gov/)**

Figure 4. Major Satellites of Saturn: Names and surface nomenclature.

## *Satellites of Saturn*

**Janus** People from myth of Castor and Pollux (twins)

**Epimetheus** People from myth of Castor and Pollux (twins)

**Mimas** People and places from Malory's Le Morte D'Arthur Legends (Baines translation)

**Enceladus** People and places from Burton's Arabian Nights

**Tethys** People and places from Homer's Odyssey

**Dione** People and places from Virgil's Aeneid

**Rhea** People and places from creation myths

**Titan** Enchanted places, worldwide lakes

**Hyperion** Sun and Moon deities

**Iapetus** People and places from Sayers' translation of Chanson de Roland

**Phoebe** People associated with Phoebe, islands of the Greek archipelagos.

Figure 5. Attendees at the IAU nomenclature meeting in Montreal, Canada, August 1979. [Some image defects are present from the original scan of this image.]



Figure 6. A map of Venus, based on Pioneer Venus Results.

