

## NEW LIGHT ON THE DOGON AND SIRIUS

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(With a note on Sirius B by Laurie Ryan)

The previous essay gave a very brief summary of the Dogon's celestial knowledge, and strongly suggested that the science of the Dogon and other Africans was paradigmatically different from what we know today as science. But despite that, the question remains: How did they know what they knew? With the evidence presented here—new archeological finds, the recent discovery of another star, apparently a part of the Sirius system, and some newly discovered insights into the perceptual range and capacity of "dark-adapted eyes"—we can now approach the threshold of an answer.

On page 132 of a Peruvian dictionary compiled by a Dominican monk, Domingo de San Tomas, published in 1560, there is a description of a *Quilpi*—an optical instrument for looking into the distance, i.e., a telescope. *Quilpi* is etymologically related to *quillaquiz*, meaning a planet or a star.<sup>1</sup> This is the first documented evidence to support Galileo's claim that the ancients had telescopes. How widespread they were and whether the Dogon had access to them we simply do not know.

Recently Xi Ze-Zong of China's Institute for the History of Natural Science Academia Sinica uncovered a record of one of China's earliest astronomers, Gan De. In it he reported *observing with the naked eye* one of the moons of Jupiter (known by the Chinese as Sui-Xing, the Year Star). This moon was probably Ganymede. This sighting occurred in the summer of 364 B.C., which is 2,000 years before Galileo's discovery of these moons. Theoretical calculations say it is in fact possible, if the conditions are just right, to see some of Jupiter's moons.<sup>2</sup>

Astronomer, Liu Jin-yi, of the same institute, along with six observers in a 1981 observation experiment, reported seeing Ganymede, Jupiter's largest moon. Three of them saw Europa as well.<sup>3</sup>

An American missionary, D.T. Stoddart, in an 1852 letter to astronomer John Herschel from Oroomisha, Persia, wrote, "at twilight Jupiter's satellites could be *seen with the naked eye* and the elongated shape of Saturn also."<sup>4</sup> In the Northern hemisphere, under the right conditions, a person can *see with the naked eye* two galaxies—M31 the Andromeda galaxy and M33 a spiral galaxy in the constellation Triangulum.<sup>5</sup>

These are extremely significant finds—they strongly support the Dogon's

claim of observing four of Jupiter's moons, Saturn's rings, and spiral galaxies. Explaining some of the Dogon's observation techniques, film-maker/anthropologist Jean Rouch of the Musée de l'Homme in Paris, France, who worked closely with Marcel Griaule and Germaine Dieterlen, said, "the Dogon astronomer/priests stay up all night and watch the sky. They watch from caves and from the roof-top terraces of their homes."<sup>6</sup> Their dark eyes would then be extremely dark-adapted i.e. very light sensitive.<sup>7</sup> They also make use of natural foresights and hindsight in their observations.

One of the most awe-inspiring and terrifying spectacles ever experienced by man are star flares—stars that explode at the end of their life-cycle (e.g., supernova) or stars that expand and contract in a rhythmic fashion, sometimes reaching a superluminosity (e.g., dwarf nova). Ancient records of star flares have been found by archeologists (e.g., the Crab Nebula supernovae of 1,054 C.E. was recorded by Chinese astronomers and depicted in rock art by Indians of the American southwest). The ancient Sumerians have a record of one that occurred in the constellation Vela about 6,000 years ago.<sup>8</sup>

Imagine an ancient Sumerian astronomer, with his dark-adapted eyes, watching the sky reverently every night when, "suddenly a dazzling ball of light blazed forth, hanging just above the watery southern horizon. Depending on the season, it was brilliant as a second sun by day or brighter than the full moon by night, and its (shimmering) luminous reflection on the waters of the Persian Gulf stretched like a shiny ribbon from horizon to shore. . ."<sup>9</sup>

Recently another star flare has been found with the "Einstein" orbiting observatory. This one is a X-ray emitting dwarf nova 9' south of Sirius.<sup>10</sup> What is most significant is that the Dogon have a sand drawing which shows this star of the Sirius system in different states of emergence.<sup>11</sup>

Interestingly, the astrophysicists who made the discovery in March of 1979 found this same star in their cursory examination of about 70 photographic plates from 1894-1952 of the Harvard-Smithsonian Center for Astrophysics but it had gone unrecognized. That is a very important find because a host of scholars, such as Carl Sagan, have refused to accredit the Dogon's detailed astronomical knowledge to the Dogon themselves, always pointing out that *no* other star had ever been observed near Sirius except its white dwarf companion. Jean Rouch said that he and Griaule *never doubted* the authenticity of what they learned from the Dogon, even though they could not explain how they knew what they knew.

According to astrophysicist Michael Burns of NASA's Goddard Space Flight Center, "long term optical observations may reveal information concerning the star's orbit (if it is truly, as it appears, part of the Sirius system) and other characteristics of dwarf novae like supermaxima events."<sup>12</sup> At a supermaxima, the star's apparent magnitude could be 8-6. That could mean that the Dogon astronomer/priests could have seen it in the past (1,300 A.D.?) and recorded it. Perhaps that event was the catalyst that initiated the Dogon's new historical cycle.

## Notes

1. Charroux, Robert, "The Mysterious Unknown," Neville Spearman, London 1972, pp. 39, 40.
2. Ze-Zong, Xi, "The Siting of Jupiter's Satellite by Gan De 2000 years before Galileo," *Chinese Journal of Astrophysics*, Vol. 5, 1981, pp. 242-243.  
The brightness of any celestial body is known by its apparent magnitude. The four largest moons of Jupiter have an apparent magnitude of 6-5; Sirius A is 1.42 and Sirius B is 8.7 (the smaller the number the brighter the source).
3. Frazier, Ken, "Pre-Galileo Siting of Jovian Moon," *Science News*, 23 Jan. 1982, p. 59.
4. Banos, George, "Was the Star of Bethlehem the Planet Uranus?," *The Astronomy Quarterly*, Vol. 3, No. 12, 1979-1980, p. 168.
5. Hynek, Allen J., *Science Digest*, Dec. 1982, p. 38.
6. Rouch, Jean, interview at the Field Museum's of Chicago Anthropological Film Festival, Sept. 1980.
7. For blue- and green-eyed persons the apparent visual magnitude limit is 6.5 and is achieved only in very dark areas; however for dark-eyed, dark-skinned, and dark-haired persons under similar conditions the limit approaches 8.1
8. Michanowsky, George, "The Once and Future Star," Hawthorn, New York, 1977.
10. Its X-ray emission exhibits high and low states. Optical monitoring show outbursts occur at intervals of about 15 days. It has a visible magnitude of 10; it has a high magnetic field strength of 15-25 mega-gauss ( $10^7$ ). Chlebowski, T., Halpern, J.P., Steiner, J.E., "Discovery of a New X-Ray Emitting Dwarf Nova IE0643.0-1648," *Astrophysical Journal Letters*, Vol. 247, 1 July 1981, pp. L35-L38.
11. Griaule, M., Dieterlen, G., "Le Renard Pale" (Tome 1 Fascicule), Institute d' Ethnologie, Musee de l'Homme, Paris, 1965, pp. 310 and 440.
12. Burns, Michael, personal communication, 1981.

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