

## Case 14

# Mount Palomar “Hale” Telescope

*Rockefeller Foundation, 1928*

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*Background.* George Ellery Hale remains today among the greatest astronomers of all time. He made groundbreaking discoveries of his own, and organized many scientific projects of enormous significance. Among these are the founding of *The Astrophysical Journal*, and the establishment of several cutting edge observatories.<sup>206</sup> But Hale’s greatest triumph may be one he did not live to see completed. In April 1928, Hale wrote an article in *Harper’s Magazine* arguing that a massive new telescope would be a worthy investment in scientific progress. Later that month, Hale followed up on his argument by sending a letter making his case to the International Education Board<sup>207</sup> of the Rockefeller Foundation. Hale contended:

No method of advancing science is so productive as the development of new and more powerful instruments and methods of research. A larger telescope would not only furnish the necessary gain in light space-penetration and photographic resolving power, but permit the application of ideas and devices derived chiefly from the recent fundamental advances in physics and chemistry.<sup>208</sup>

*Strategy.* Hale’s request was approved, and the Foundation committed \$6 million<sup>209</sup> for a new 200-inch telescope, which would be the largest by far in the world. At the time, the record-holder was the 100-inch telescope of the Mt. Wilson Observatory, which George Hale had also helped to build, and of which he served as director until 1923. Many different locations were tested out as possible sites for the new telescope, and in 1934, Mount Palomar, California was chosen for its ideal atmospheric conditions.

*Outcomes.* Construction of the new telescope took twenty years from the time Hale’s funding request was granted to the day the telescope began operation: June 3, 1948. During those years, it had had been “easily the most famous scientific undertaking of the 1930s.”<sup>210</sup> Although George Hale had died in 1938, the new colossus was named the Hale Telescope, after the man who had conceived it and worked to make it a reality. Once it was ready, the Hale Telescope could see a billion light years away—twice as far as any other telescope in the world. It gathers four times as much light as the Mt. Wilson Telescope, and enables scientists to photograph and resolve objects 40,000,000 times dimmer, from Earth, than anything visible to the naked eye.

*Impact.* The Hale Telescope was not built for “practical” uses. Rather it is an instrument of discovery for discovery’s own sake. As a 1948 article in *The New York Times* reminds us, “[l]ife was not made any easier or business more profitable after Galileo added to the known universe 500,000 stars which had never been seen before he turned his little telescope on the celestial vault.”<sup>211</sup> Yet we honor Galileo all the same. Furthermore, “scientific research at Palomar Observatory since 1948 has been remarkably productive.”<sup>212</sup> In 1963, for example, Maarten Schmidt—looking through the Hale Telescope—became the first human ever to observe quasars, “quasi-stellar objects,” billions of light years away, that have bewildered astronomers and astrophysicists ever since.<sup>213</sup> The Telescope remains a powerful means of exploration. It is owned and operated by the California Institute of Technology, and has been pointed skyward almost every clear night since June 1948. It is no longer the largest telescope in the world, but its Pyrex reflective mirror, cast in 1936, is still as advanced as any in the world.<sup>214</sup> Certainly, the Hale Telescope stands as a monument to the man whose name it bears. But the exploration, research, and discovery that it has enabled certainly owe something as well to the Rockefeller Foundation, which brought it forth from Hale’s imagination onto the slopes of Mount

Palomar.

## Notes

206. Available from <http://www.hao.ucar.edu/public/education/sp/images/hale.html>.
207. This body was soon absorbed into Rockefeller's General Education Board.
208. National Park Service website, Astronomy and Astrophysics: Palomar Observatory 200-inch Reflector, available from [http://www.cr.nps.gov/history/online\\_books/butowsky5/astro4e.htm](http://www.cr.nps.gov/history/online_books/butowsky5/astro4e.htm).
209. In fact, the Telescope eventually cost \$6.55 million (after a supplemental appropriation in 1946), a sum equivalent to approximately \$71.6 million in 2004 dollars. Waldemar Kaempffert, "The Supreme Task of Science," *New York Times*, 10/24/1948.
210. National Park Service website, Astronomy and Astrophysics: Palomar Observatory 200-inch Reflector, available from [http://www.cr.nps.gov/history/online\\_books/butowsky5/astro4e.htm](http://www.cr.nps.gov/history/online_books/butowsky5/astro4e.htm).
211. Kaempffert, "The Supreme Task of Science."
212. RedNova Reference Library website, available from [http://www.rednova.com/education/reference\\_library/?article\\_id=5](http://www.rednova.com/education/reference_library/?article_id=5).
213. National Park Service website, Astronomy and Astrophysics: Palomar Observatory 200-inch Reflector, available from [http://www.cr.nps.gov/history/online\\_books/butowsky5/astro4e.htm](http://www.cr.nps.gov/history/online_books/butowsky5/astro4e.htm).
214. Ibid.