

# Herschel 400 Introduction

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## Introduction:

For many years, Amateur Astronomers have enjoyed the challenge and excitement provided by the Messier Program of deep-sky objects. The 110 or so objects in the Messier Catalog introduced the observer to the importance of careful observing and record keeping. Upon completion of this project, however, the amateur was left somewhat in a void. He or she wanted to further the quest for deep-sky objects, but outside of the vast *New General Catalog*, there was no organized program that would provide that next vital step upward. With this idea in mind, the formation of the Herschel Program began.

It started over four years ago, when several members of the Ancient City Astronomy Club in St. Augustine, Florida, who had recently completed the Messier Program, noticed a letter in [Sky and Telescope](#) magazine from James Mullaney of Pittsburgh, Pennsylvania. Mr. Mullaney alerted amateurs to the William Herschel Catalog of deep-sky objects, and suggested this would be a good project to get into after completion of the Messier Lists. He went on to say that Herschel's listings could be found in the original *New General Catalog* by Johann Dreyer, available from the Royal Astronomical Society in England.

The *New General Catalog* was a compilation of several deep-sky catalogs circa 1880; it contained almost 8,000 objects of which 2,477 of these objects were observed by William Herschel. Ancient City Astronomy Club (A. C. A. C.) members began the difficult process of separating his objects, which used a rather unique classification system with eight sub-categories; each individual object was placed into a particular subcategory. These subcategories are:

Class I - Bright Nebulae;

Class II - Faint Nebulae;

Class III - Very Faint Nebulae;

Class IV - Planetary Nebulae;

Class V - Very Large Nebulae;

Class VI - Very Compressed and Rich Clusters of Stars;

Class VII - Compressed Clusters of Small and Large Stars;

Class VIII - Coarsely Scattered Clusters of Stars.



Photo Courtesy of Yerkes Observatory

**Friedrich Wilhelm Herschel**

It was soon discovered that a vast majority of Herschel's objects were in Class II and III, faint and very faint nebulae, with magnitudes fainter than thirteen, beyond the reach of many amateur telescopes. We of the A.C.A.C. decided that

the proposed Herschel Program should consist of enough objects to present a distinct challenge, yet still be within range of amateurs who possessed only modest equipment and were affected by moderate light-pollution problems. After considerable study, we set 400 as the best number of objects to comprise the Herschel Program. Our main references through this process were the *Atlas of the Heavens* and *Atlas of the Heavens Catalog* by Antonin Becvar. These two volumes are readily available to the amateur astronomer and contained all the positions, magnitudes and other pertinent data used in this manual.

All the objects can be seen in a six-inch or larger telescope. All descriptions have been taken from observations by two or more members of the A. C. A. C.; most of these observations were made from within the city of St. Augustine, with approximately 14,000 population, in average to good sky conditions. Faintest naked eye star visible at the zenith was about 5.5 magnitude in most cases. You will notice a few Messier objects in the listings, also the Double Cluster, along with most of the brighter deep-sky objects that did not find their way into Messier's Catalog. However, beyond these few bright ones, the rest of the Herschel Program objects are faint and inconspicuous. The Virgo galaxy field along with the Monoceros Milky Way will present the toughest challenges.



This is meant to be an advanced project for amateurs who already have a fair degree of deep-sky experience. Anyone just starting out should go for the Messier Program first. This will provide the basic groundwork that this project is built on. To those who engage in or complete work on the Herschel Program you can be assured that you will know the sky and the instrument you are using; you will also know your own observing skill. Finally, you will have the curiosity and knowledge that are so important when studying the vast and beautiful universe that we live in.

-Paul Jones

## Special Note:

It has come to our attention that there is an object on the list on the website that is different from an object that appears on the list in the manual. Either object may be used to achieve the Herschel 400 certification.

If you are working from the manual, then there is an object NGC 1750 on the list.

If you are working from the list on the website, then there is an object NGC 7814 on the list.

We will be updating the list on the website.

Your collection of 400 observations may contain either one.

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