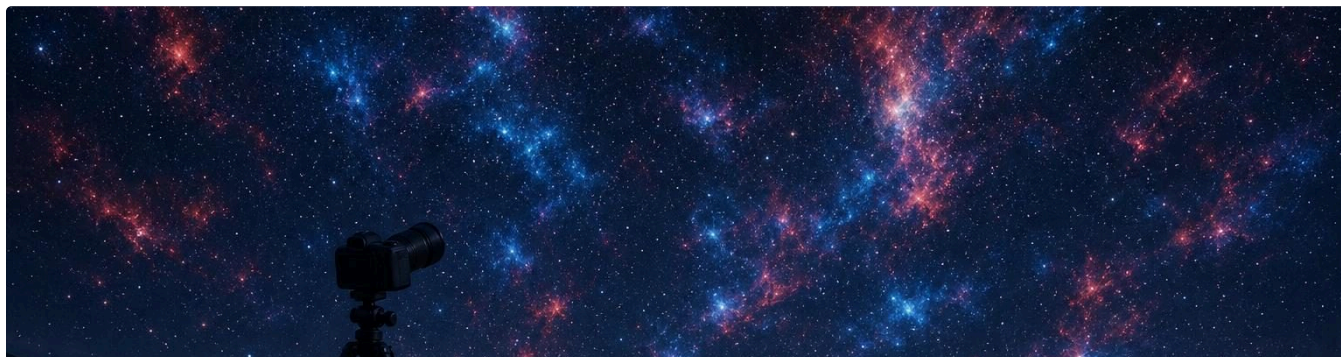


One Picture Holds 313 Glowing Space Clouds

A new NASA-featured image shows how many hours it can take to photograph faint objects in the night sky.



A camera under a dark sky photographs many colorful glowing clouds in space.

NASA's Astronomy Picture of the Day shared a giant space image on Oct. 2. According to NASA, the picture brings together the complete Sharpless **Catalog**, an organized list, or catalog, of 313 **glowing** objects in space.

Most of the objects are nebulas. A **nebula** is a huge cloud of gas and dust in space. Some look like soft red smoke. Some have shapes that earned them nicknames, such as the Eagle, Heart, and Orion nebulas.

This picture matters because it shows how patient space watching can be. The astrophotographer, Bing Xin, traveled under dark skies in Eastern China and Inner Mongolia to collect the images. Each object took two to six hours to capture. NASA says the whole catalog took about 800 hours.

That is like spending many school days on one project. But the work could not be rushed. Very faint space clouds do not shine like a lamp in a room. A **camera** has to gather their light for a long time.

Xin also used special filters. A **filter** is like a pair of colored glasses for a camera. Some filters mostly caught light from **hydrogen** and **oxygen**. Those are gases found in many space clouds. Other filters caught red, green, and blue light, the colors cameras use to build a full-color picture.

NASA says the catalog is a list of H II regions. That means clouds where hydrogen gas is glowing. But the set is not only that. It also includes other kinds of

space objects. That matters because a label can help scientists organize things, even when the real universe is messier than the label.

Imagine standing where the sky is very dark. There are no bright city lights nearby. The camera points at one patch of sky for hours. Then it moves to another. Night after night, the separate pictures become one huge collection.

For a classroom, the image is also a reminder about labels. A catalog can sound dry, like a list in a notebook. But this catalog is full of color, shape, and careful work. It shows that science is not only about sudden discoveries. Sometimes it is about keeping at a task until a hidden pattern becomes visible.

Written from reporting by NASA.

THINK IT THROUGH

1. If a project takes 800 hours, what would make it worth doing?

A strong answer: A strong answer should weigh time and effort against what people can learn or see because of the project.

2. What can a giant catalog show that one beautiful space picture cannot?

A strong answer: A strong answer should compare seeing one example with seeing many examples together.

3. Do camera filters make a space image less real or more useful? Defend your view.

A strong answer: A strong answer should discuss how tools can change an image while also helping us notice details.

One Picture Holds 313 Glowing Space Clouds

N C H A E W I T E X R E
G L O Y A N A O O G G G
A X Y E O M C A T O A L
U R L O E R A C I N H O
N A O R S R M U A E Y W
B T E N O Y E N L B D I
O L Y O E O R C A U R N
L O T X C C A T A L O G
T W H Y R R V P R A G A
E B D G G R F I L T E R
G O N E M A U N A I N Q
M U H N I I T A I G R H

CAMERA

CATALOG

FILTER

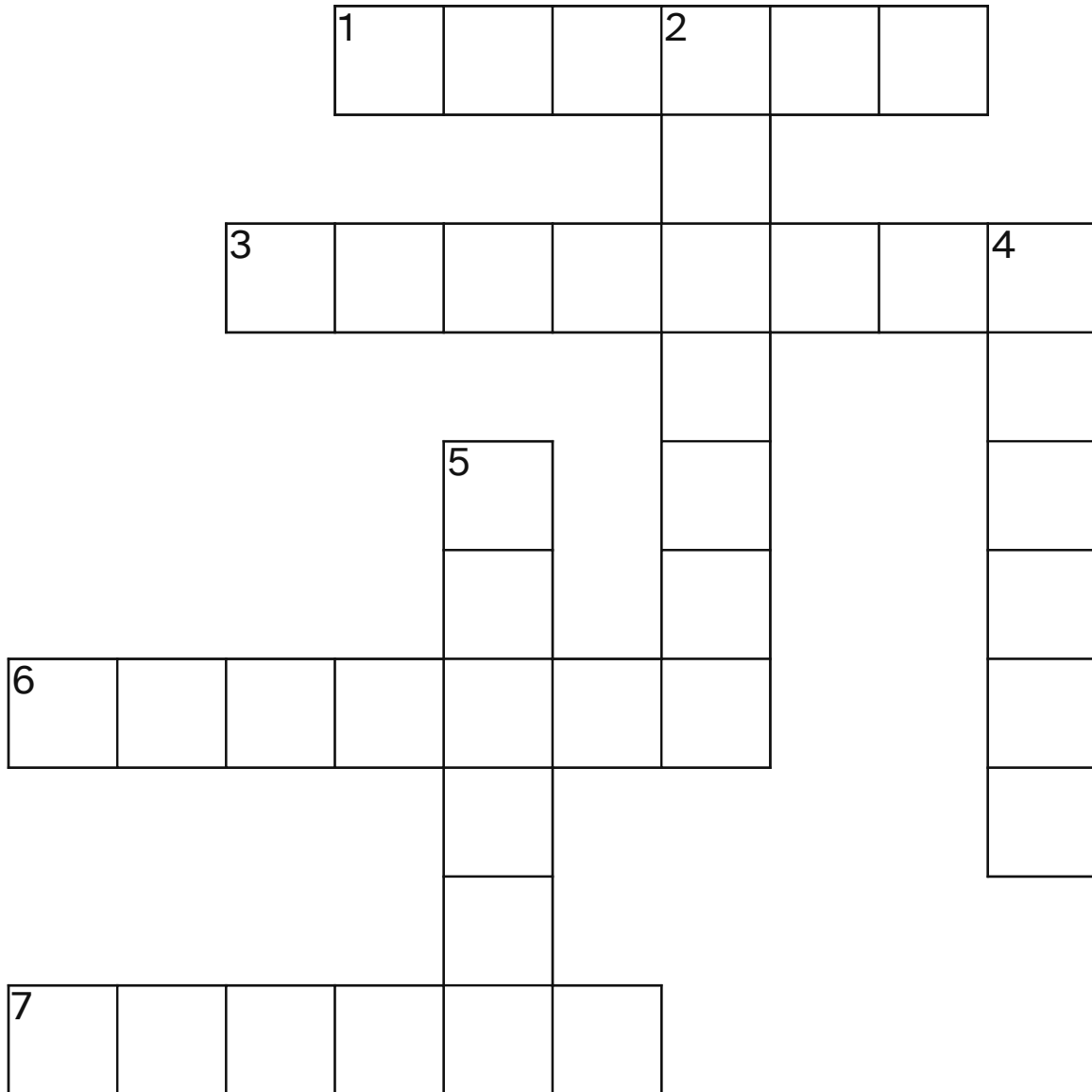
GLOWING

HYDROGEN

NEBULA

OXYGEN

One Picture Holds 313 Glowing Space Clouds



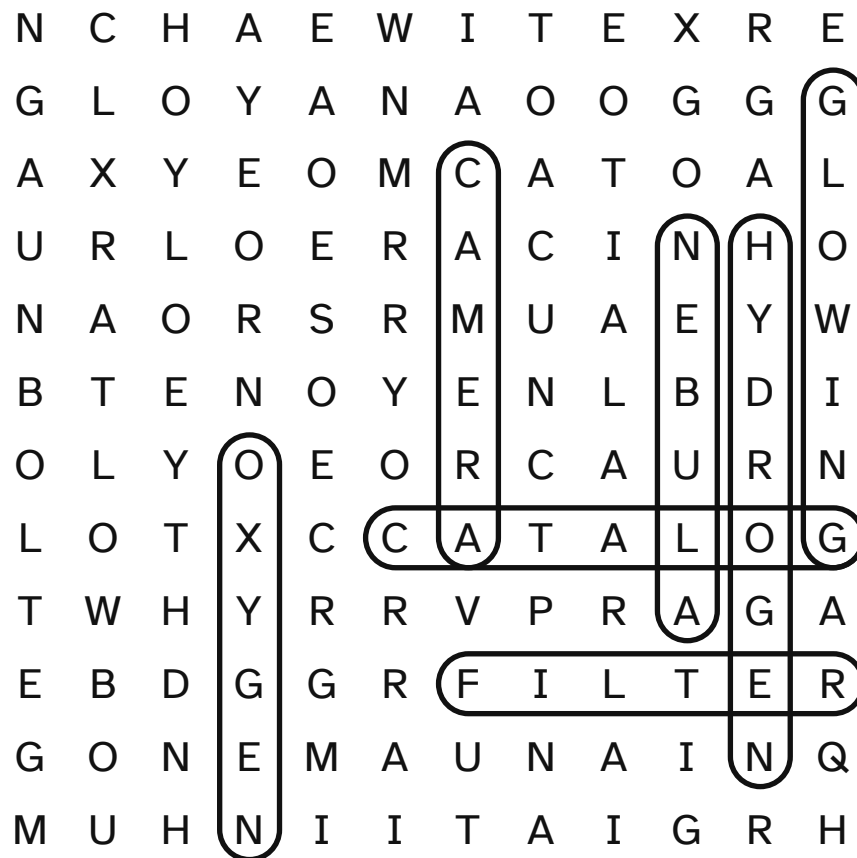
ACROSS

- 1 Gas found in some clouds in space
- 3 Gas that can shine inside many clouds in space
- 6 Organized list of things
- 7 Device that collects light and makes pictures

DOWN

- 2 Giving off a soft light
- 4 Huge cloud of gas and dust in space
- 5 Camera tool that lets certain kinds of light pass through

One Picture Holds 313 Glowing Space Clouds — answer key



CAMERA

CATALOG

FILTER

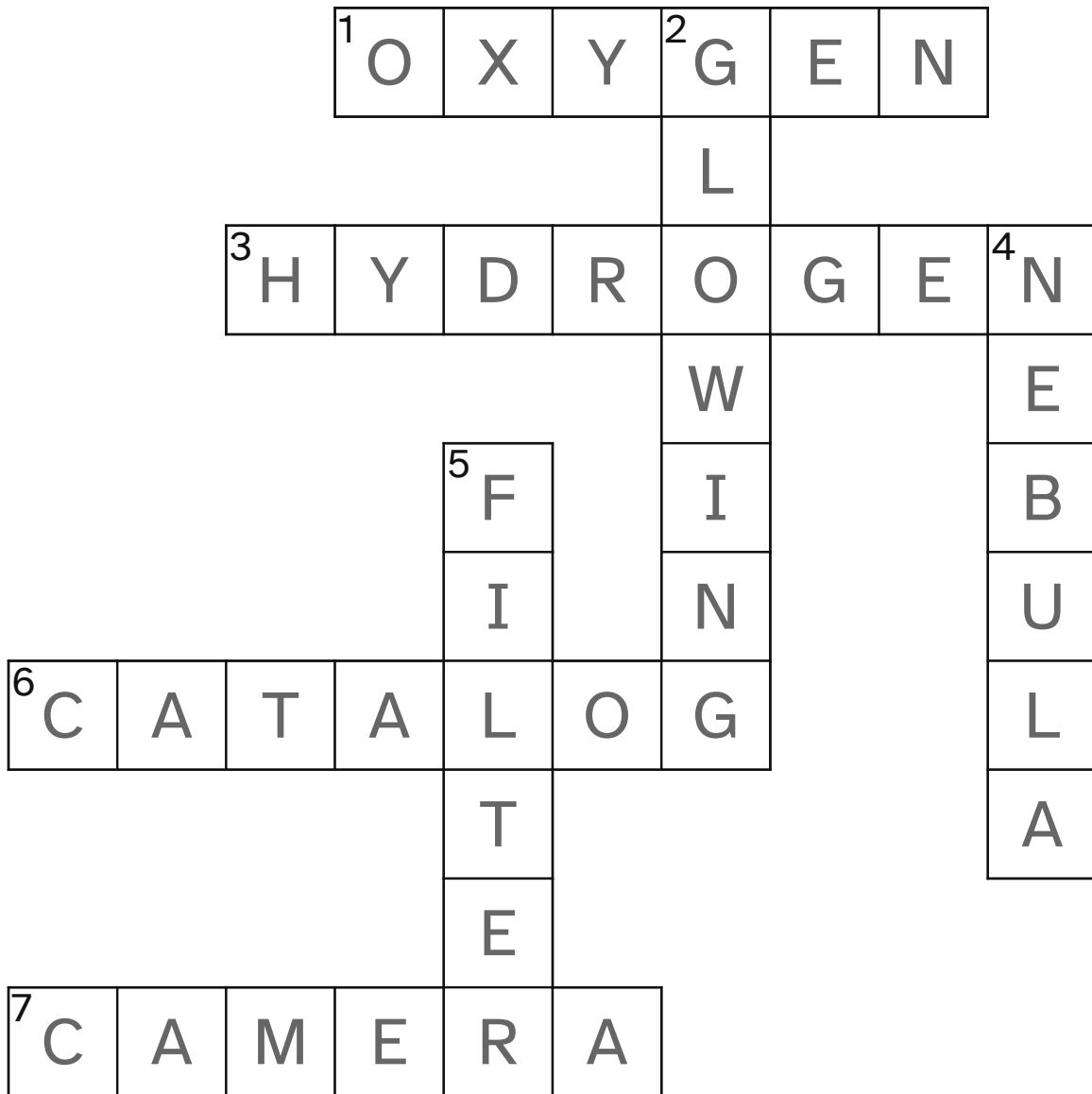
GLOWING

HYDROGEN

NEBULA

OXYGEN

One Picture Holds 313 Glowing Space Clouds — answer key



ACROSS

- 1 Gas found in some clouds in space
- 3 Gas that can shine inside many clouds in space
- 6 Organized list of things
- 7 Device that collects light and makes pictures

DOWN

- 2 Giving off a soft light
- 4 Huge cloud of gas and dust in space
- 5 Camera tool that lets certain kinds of light pass through

Where this came from

This article was written for 3andB from the reporting below. It is not a reprint — the wording is ours and the facts are theirs.

NASA

“APOD: 2026 October 2 – The Complete Sharpless Catalog: 313 Nebulas”

Published Friday, October 2, 2026

Read by us on Friday, October 2, 2026

<https://science.nasa.gov/image-article/apod-2026-october-2-the-complete-sharpless-catalog-313-nebulae/>

WHAT IS IN THIS PACKET

The article with a note on each question, a word search, a crossword, and the answer key to both.

COPYING AND REUSE

Free to print, copy and hand out for classroom use. Please keep this page with the packet, so the next teacher can see where the story came from.

More where this came from

If this short lesson worked for your class, our full workbooks go further with the same care:

- Complete units with student and teacher editions
- Worked solutions for every exercise
- Standards-aligned, classroom-tested, print-ready

See the full lessons at 3andB.com