The enormous popular appeal of this image of the Eagle Nebula was highlighted recently when the readers of Sky and Telescope magazine voted it the second “most influential astrophoto of the 20th century” – beaten only by the famous “Earthrise” photograph taken during the Apollo 8 lunar mission (see page 19). The Eagle Nebula image has also appeared on numerous magazine covers and posters, and was one of four images chosen for a special set of US stamps to mark the 10th anniversary of the Hubble Space Telescope. “We knew when we took the picture that it was a corker,” says Paul Scowen of Arizona State University, who obtained the image with colleague Jeff Hester in 1995. “However, the degree to which it became so popular was surprising.”

The Eagle Nebula (M16) is a large star-formation complex in the constellation Serpens, some 7000 light-years from Earth, and the image shows evaporating gaseous globules emerging from pillars of molecular hydrogen gas and dust. The giant pillars – which are 11 trillion miles high – are so dense that the gas inside them contracts gravitationally to form stars. The intense radiation from the bright young stars causes low-density material to boil away at the end of each pillar, exposing the globules (J J Hester et al. 1996 Astronomical Journal 111 2349).

The unusual shape of the image was dictated by the field of view of the WFPC-2 camera on the Hubble telescope. “The three columns are of different lengths and to get them in the picture, the camera and the observatory had to oriented just so to make it work,” recalls Scowen. Hester and Scowen also combined images taken with filters at three different wavelengths to create the final image. For instance, the blue areas in the image are very hot and rich in doubly ionized oxygen atoms, whereas the red areas are quite cool in comparison and rich in singly ionized sulphur.

Scowen points out that the photograph is a false-colour image and that the Eagle Nebula would actually look mostly green if we could see it. “This is because the human eye is most sensitive in the mid-green area,” he explains, “and that is where the oxygen emission is strongest.” Although the false colours are undoubtedly eye-catching, Scowen stresses that they are chosen for scientific reasons rather than principles of realism or aesthetics. For instance, hydrogen is coloured green in the image, even though it is really red, because sulphur is also red and astronomers need some way of telling them apart.

The widespread visibility of stunning images like this shot of the Eagle Nebula is one of the reasons for the popularity of astronomy with the general public. “We are working with some of the most gorgeous images humankind has ever seen,” says Scowen. However, he is also keen to convey the science behind the photograph. “I have given enough talks to the public to have a pretty good feel for what works and what doesn’t,” he says, “but I always try to highlight the scientific value of the images as well, so that the public sees more than the simple ‘gee whiz’ factor.” Indeed, some astronomers have recently questioned if evaporating gaseous globules play a major role in star formation – still one of the least understood processes in astrophysics – but there can be little doubt about the lasting impact of this image.

Credit: J Hester and P Scowen, Arizona State University/NASA

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