organic solvents. The precise mechanism will no doubt be worked out later. They do not look for sudden breakthroughs at the Air Pollution Research Unit.

INTERSTELLAR DUST

Ultraviolet Observations a Problem

by our Astronomy Correspondent

A NEW observation of Barnard's Loop Nebula in the constellation Orion, reported in *Science*, has turned up another piece in the jigsaw which one day will reveal the nature of the interstellar dust (170, 527; 1970). The new data refer to the far ultraviolet part of the spectrum, which, according to recent observations of stars that are partially obscured by dust clouds, is removed by the dust to at least the same extent as the near ultraviolet, if not more. Either absorption or scattering of the starlight by the dust must be responsible. In the near ultraviolet, the more accessible part of the spectrum, scattering seems to be important. Barnard's Loop Nebula has been detected at these wavelengths, by an ultraviolet camera carried on a Gemini flight in 1966, presumably because the dust in the nebula is scattering ultraviolet radiation from the hot stars in Orion toward the Earth. It might be expected that the nebula could be detected in the far ultraviolet by the same scattering process, but rather surprisingly this has turned out not to be the case.

In the *Science* article, three photographs of Orion which ought to have shown Barnard's Loop Nebula are discussed by Richard C. Henry and by George R. Carruthers, who first reported observations of interstellar molecular hydrogen. Using a special camera developed at the Naval Research Laboratory and to be carried on one of the later Apollo missions, assuming there are no more cancellations, photographs of Orion

and the Monoceros constellation were obtained in the wavelength band 2100–1230 Å in the far ultraviolet. This stops short of the Lyman α emission at 1216 Å which could easily have fogged the photographs. Although a conservative estimate makes their camera at least as sensitive as that which recorded Barnard's Loop Nebula in the near ultraviolet, Henry and Carruthers found no sign of the nebula on their photographs.

What this implies about the material of the nebula is by no means certain, but at least it shows that the far ultraviolet is not being scattered toward the Earth like the longer wavelengths. There are no strong reasons for supposing that the stellar radiation falls off toward the far ultraviolet to account for the non-detection of the nebula at 2100–1230 Å. Either absorption by the dust is coming into play at these wavelengths, or the radiation is not being scattered through sufficiently large angles for significant amounts of it to be directed at the Earth. Either way Henry and Carruthers see their data as relevant to the question of the nature of the dust particles although none of the models which have been put forward so far seem to fit their observations at a first glance.

Altogether the camera took thirty photographs during a rocket flight last year, each with a seven second exposure made possible by a combined electronic and photographic system. The image is formed on a photocathode at the focus of the collecting mirror, and a solenoid surrounding the optics directs the photoelectrons onto an emulsion behind the mirror. In this system each electron has enough energy to blacken a grain in the emulsion, making possible the large return of photographs from a short flight. Nobody was surprised that one of the brightest optical stars in the sky, Betelgeuse, should be missing from the ultraviolet photographs which otherwise show the Orion constellation distinctly. Cool supergiants would not be expected to register at those wavelengths.

MYCOLOGY

Guide for Fungus Collectors

Strobilomyces floccopus (a), *Boletinus cavipes* (b) and *Suillus grevillea* (c) are three of the fungi described in the latest volume of the *British Fungus Flora* (R. Watling, Boletaceae: Gomphidiaceae: Paxillaceae, HMSO, 1970, £2 10s). Many a mycologist will doubtless be grateful to take up this book when returning from a profitable fungus foray.