

reaching various air sampling stations showed that there were many cases when refineries could not be the source of the hydrocarbons and the smog manifestations, but that automobile traffic could be responsible.

The state of California has passed a law which requires that all automobiles will have to be equipped with devices which will prevent the emission of hydrocarbons into the atmosphere. These devices doubtless will have an effect in reducing the amount of hydrocarbons ejected into the atmosphere. However, unless there is some testing procedure to ensure that the device on all vehicles is in good operating condition the effect will be counteracted by the constant increase in the total number of motor vehicles. For this reason Professor Neiburger was not optimistic about the elimination of the smog problem in Los Angeles in the near future.

26 October 1961

### SNOWDRIFT IN ANTARCTICA

by U. Radok

Dr. Radok of Meteorology Department, University of Melbourne, first described an extensive series of drift measurements made at Wilkes in 1959 by R. Dingle and interpreted its results in terms of steady-state diffusion.

Good agreement was shown between the observations and the theory according to which the drift density must decrease with height according to a power law, with exponent depending on the particle fall velocity and the vertical wind shear. A further deduction made and confirmed was that the drift density at any level should be an exponential function of the negative reciprocal wind velocity at that level. This claim was queried in the discussion following the talk, and later exchanges led to the agreed conclusion that such a relation holds strictly only if the surface drift density is independent of wind velocity (as seems to be the case for the Wilkes data).

The speaker next applied the results of the Wilkes' work to drift observations reported from other parts of Antarctica and showed that agreement was as good as could be hoped for, in view of the different methods used by different expeditions. The same data showed that a small but distinct change in particle fall velocity with height represents a steady trend, rather than a discontinuity at a height between 25 and 50 cm above the surface, as had been suggested by the Wilkes data.

In conclusion mention was made of an extensive new drift program to be carried out at Byrd Station next year, when it is hoped also to compare the main types of traps which have been used to measure snow drift in Antarctica.

30 November 1961

### RESEARCH IN OZONE AND OTHER PHENOMENA

by A. B. Pittock

Mr. Pittock of Physics Department, University of Melbourne, gave some brief comments on the proceedings of the International Symposium on Atmospheric Ozone and General Circulation which he attended in Switzerland in August, and also of the Radiation Symposium held in Vienna the following week. The status of the various ozonesonde developments was discussed. The Paetzold and Vassy optical sondes were regarded as reliable although not ideal for routine synoptic determinations of the vertical distribution of ozone. The Brewer electro-chemical sonde, which is being adopted by the British Meteorological Office for synoptic work, was favourably reported, while Regener's chemi-luminescent sonde was described as promising but not yet satisfactory. Considerable discussion over multiple scattering corrections in the umkehr method and the possible effect and

importance of stratospheric aerosols was reported, as well as an unexplained observation of greatly increased humidity mixing ratios at about 90,000 ft. (0.04 g/Kg) compared to that at 50,000 ft (0.002 g/Kg).

The remainder of the colloquium consisted of a discussion and comparison of the echo satellite photometry method of determining ozone distributions being used at China Lake, California, with the proposed Scout II satellite ozone observations of the British Meteorological Office and the balloon photometry method being attempted at Melbourne University. The influence of the finite size of the sun on the attainable accuracy was discussed, as well as the merits of working in the Chappuis band rather than the ultra-violet for observations of meteorological interest. The importance of the satellite photometry method in obtaining ozone distributions over remote geographical locations, particularly the Antarctic region, was emphasised.