taken into account. Particles or aggregates above 5 or below 1 micron should not be included. The only instrument in common use that enabled this to be done was the thermal precipitator which collected the dust without breaking up the large particles or aggregates. Its chief handicap was that relatively short-term samples were taken and assessment of average conditions over a period of a week or more became laborious.

The essential requirements of a suitable sampling instrument were to enable an estimate to be made of the concentration and composition of airborne dust particles and aggregates in the respirable size range ; to yield a sample which can be reasonably easily and accurately assessed ; to be capable of integrating its exposure over at least one working week ; to be cheap, robust, light, portable, self-contained, and automatic. Until such an instrument had been produced and used over a period of many years, safe limits of dust exposure could not be established with any precision.

Dr. Wright displayed several new pieces of sampling apparatus, including a double aspirator for the thermal precipitator, an automatic sedimentation cell, and a selective mass-sampler.

The final paper of the conference was presented by Dr. W. G. Marley, Head of the Division of Health Physics, Atomic Energy Research Establishment, Harwell, on " Permissible Levels of Exposure to Ionising Radiations and Radioactive Materials ".

With the development of atomic energy and the use of artificial radioactive isotopes it had become necessary to examine early information on permissible levels of exposure to *x* rays and gamma rays, and to extend their application to the new substances.

The work in various countries had been reviewed by the International Commission on Radiological Protection. At the 1953 meeting of the International Congress of Radiology, the Commission recommended values for the maximum permissible body burden of a wide range of isotopes and of the corresponding levels in air and drinking water. These were to be published shortly.

Dr. Marley discussed the methods of arriving at these recommended values. Wide experience with *x* rays and gamma rays had made it possible to define a basic tolerance for external irradiation and this had been set at 0·3 roentgen/week in the tissue (corresponding in certain circumstances to approximately 0·5 roentgen/week measured with back-scatter on the surface of the body). A further basic tolerance figure from human exposure had been derived from the study of the effect of radium ingestion by radium dial painters, namely 0·1 microgram of radium fixed in the skeleton, which was thought to be safe over a working life time.

Different types of radiation or different isotopes could be compared experimentally and theoretically with these basic criteria, and the permissible level of exposure for the particular radiation or material could be calculated by allowing for the relative biological effectiveness of the particular radiation. Parameters that effected this calculation included the fractional uptake from lungs or gut, the metabolism of the element, the organ of concentration, the biological half-life, and the overall relative toxicity. These had been determined from animal studies and from a limited experience of accidental exposure in men.

To achieve agreement between the various laboratories undertaking research in this field, it was found necessary to define a " standard man " for whom the weight and constitution of various organs had been set. The levels recommended by the International Commission were intended for application to individuals who were exposed in their occupation. Should more than a small fraction of the population be exposed, the genetic effects would have to be considered.

Dr. Marley also discussed problems resulting from exposure due to accident or emergency, where a much more intense level had been present for a short period.

The conference was attended by 150 members of the Society and visitors. Copies of the proceedings will be available from the Hon. Secretary, Mr. Peter C. G. Isaac, Public Health Engineering Laboratory, King's College, Newcastle-upon-Tyne.

The next conference of the Society is to be held on November 1, 1954, at the London School of Hygiene and Tropical Medicine. This will be devoted to discussion of the hazards associated with radioactivity and the use of *x* rays in industry.

Correction.—We regret that in the paper " Fatal Emphysema in Two Men Making a Copper Cadmium Alloy " by Ronald E. Lane and A. C. P. Campbell in the April issue an error was printed. On page 121 the cadmium concentrations should be stated in μg. per 100 g. fresh tissue and not mg. per 100 g.