

listed in an appendix to the report. The Commission, together with the ten Australian universities, constitutes the corporate membership of the Australian Institute of Nuclear Science and Engineering, which is governed by the Institute Council consisting of one representative from each of the universities and four from the Commission. All member universities are engaged in training nuclear scientists and engineers and in related research. 112 projects were supported by research and training grants of the Institute, and the expenditure amounted to about £A100,000. Plasma physics, in particular, received special support. An informal conference on plasma physics was held during November 1963, and the research effort at three universities was assisted by providing on loan a special high-speed camera capable of photographing the formation and decay of plasmas. Two other informal

specialists conferences were held at Lucas Heights under the auspices of the Institute—a "Heat Transfer and Fluid Flow" conference during August 1963, and a "Radiation Chemistry" conference during October 1963.

In conjunction with the University of New South Wales, the Commission is to establish an Australian School of Nuclear Technology with headquarters at the Lucas Heights Research Establishment. The facilities of both the Research Establishment and the University will be available to the School. The aim is to promote formal training and education in nuclear technology; and full-time courses of varying length in the science and technology of nuclear reactors, the production and application of radiosotopes, radiological safety and health physics, etc., will be open to students from Australia and overseas.

S. WEINTROUB

## BRITISH CHEMICAL REFERENCE SUBSTANCES

IN late 1963, the General Medical Council and the Pharmaceutical Society of Great Britain agreed to set up a joint authority to prepare and distribute chemical reference substances needed to carry out certain tests and assays described in the *British Pharmacopoeia*, the *British Pharmaceutical Codex* and the *British Veterinary Codex*. The Joint Committee held its first meeting in March 1964, and established a number of panels. Each panel was charged with the task of establishing one or more of these reference substances, and, since these substances might be of value for other purposes, the panels were asked, should it prove impracticable to obtain absolute purity, to ascertain so far as possible the amounts of all impurities.

The first two "British Chemical Reference Substances" have now been made available: digoxin and 2-*t*-butyl-4-methoxyphenol (the most active isomer present in butylated hydroxyanisole); these are required for the *Addendum* 1964 to the *British Pharmacopoeia* 1963, which became official as from June 1, 1965. The reports to the Joint Committee of the panel responsible on the preparation and purity of these substances have now been published.

The digoxin reference substance is required in the assay of digoxin and of its two preparations, the injection and the tablets, and for purposes of comparison (in place of the previously used authentic specimen) in the infra-red identification test. From its examination of the reference substance, the panel concluded that the substance is at least 99.7 per cent pure, containing not more than a total of 0.3 per cent of gitoxin, acetyldigoxin, digoxigenin and digitoxin.

The 2-*t*-butyl-4-methoxyphenol reference substance is required for the assay of butylated hydroxyanisole and in the infra-red identification test. In this case, a purity

of at least 99.85 per cent has been achieved, the balance being made up of very small amounts of 3,3'-di-*t*-butyl-2,2'-dihydroxy-5,5'-dimethoxybiphenyl (*bis*-BHA), 2,5-di-*t*-butyl-4-methoxyphenol, 4-methoxyphenol and a trace of an unidentified impurity. As well as its pharmaceutical uses, butylated hydroxyanisole has extensive usage in the food industry as an anti-oxidant in oils and fats, and the establishment of this reference substance will be welcomed in fields outside of pharmacy.

Samples of these reference substances are distributed by the Pharmaceutical Society and are available on application to the Assistant Director, Department of Pharmaceutical Sciences, 17 Bloomsbury Square, London, W.C.1, at a cost of £4 10s. for 0.3 g of the digoxin, and £3 for 0.2 g of the 2-*t*-butyl-4-methoxyphenol. Copies of the panel's reports can be obtained from either of the joint secretaries, Mr. T. C. Denston, 44 Hallam Street, London, W.1, and Dr. K. R. Capper, 17 Bloomsbury Square, London, W.C.1.

Because there may be some confusion between "British Chemical Reference Substances" and "Authentic Specimens", both of which are distributed by the Pharmaceutical Society, it is appropriate to explain that the reference substances are samples which have been purified so far as is practically and economically feasible, any remaining impurities having been identified and a limit set on their presence. They are used in assay procedures and to serve as the reference material in tests used to limit the presence of certain impurities in pharmacopoeial and *Codex* substances. Authentic specimens, on the other hand, are only tested samples of good quality commercial material which are needed for certain tests, notably infra-red identification tests, for which a comparison material having the purity of a reference substance is not essential.

## PESTICIDES IN THE ENVIRONMENT

AN advanced study institute on "Pesticides in the Environment and their Effects on Wildlife", sponsored by the North Atlantic Treaty Organization, was held at Monks Wood Experimental Station during July 1-14.

The main purpose of the Institute was to enable those working on the effects of pesticides on wildlife to exchange ideas and to discuss future research. Thirty-four papers were read, and dealt with the background of the wildlife problem and with field and laboratory studies of the effects of pesticides in terrestrial, freshwater and marine environments. Seventy-one scientists from Government

and university laboratories attended the meeting, including chemists, toxicologists and zoologists of eleven nationalities.

The papers and discussions showed that pesticide residues have been detected in a wide spectrum of physical and biological samples from diverse environments, indicating that contamination is widespread. In some instances, harmful effects on wildlife populations were clearly demonstrated, but more frequently the effects of residues are unknown.

It was concluded that in order to understand the effects of pesticides more fully, there was need for more work,