Professor Wirtz reported on evaluations made at Karlsruhe of various types of reactors from a number of points of view - cost per kilowatt hour, utilization of fuel, long-term prospects and technological feasibility. These indicated that there can be a good place for the high temperature reactor incorporating the use of thorium even in competition with fast breeder reactors.

Studies at Oak Ridge National Laboratory were mentioned by Trauger, who said that safety was an overriding question, and methods of emergency heat removal were being actively investigated. He thought they could exploit the high thermal efficiency of the high temperature gas-cooled reactor as well as its fuel and load feasibility.

As a closing comment Dr. Spinrad said that the coated particle fuel gave the opportunity of obtaining high temperatures to compensate for the poorer heat transfer properties of a gas and they all hoped the developments would continue.

DRUGS TO COMBAT EFFECTS OF RADIATION

Advances in the knowledge of the injurious effects of radiation on living cells and tissues have also brought information of conditions under which such harm may be repaired. An Agency panel meeting revealed optimism about future development of drugs capable of protecting living organs from radiation injury.

A number of promising chemical compounds known as "radioprotectors", which when given before irradiation decrease the final damage caused by radiation, have already been developed. Their medical applications are still limited, but they could become valuable in protecting patients undergoing radiotherapy (use of radiation to treat diseases), or of workers who either handle radioactive materials or are exposed to strong radiations in the nuclear industry.

Progress in the long search for safe and effective radioprotectors was reported and discussed at the panel meeting of experts in Vienna at the end of October. Their meeting was timely, since research in many laboratories has thrown much new light on the mechanism by which cells are

harmed through exposure to radiation, and how these injured cells recover in certain conditions. The studies have been going on for many years and were particularly stimulated as a result of the discovery that most of the radiation effects on living material are due to short-lived toxic products in irradiated water. This has been demonstrated by the fact, for example, that bacteria irradiated in salt solution are slightly more sensitive to X-rays than bacteria in broth, where these radiation products are neutralized. From this basis research has expanded and progressed.

Scientists from thirteen Member States of the Agency, together with representatives and observers from EURATOM and a number of national research institutes were present for the meeting. Among them were such leading pioneer workers in radiation biology and protection as Z.M. Bacq (Belgium), A. Kusin (USSR), P. Alexander (UK) and A. Hollaender (USA).

At the end of the meeting, the panel adopted a report indicating the most promising areas of further research and making recommendation to the Agency on future activities in radiation biology and its practical applications.

WHEN THE CHAIN REACTION STARTED

It was 2 December 1942. Just as the band of distinguished scientists were waiting for the world's first chain reaction to start in the first atomic pile Enrico Fermi looked at his watch and said "Gentlemen, time for lunch". This incident was part of the first-hand story related to members of the Agency staff on 3 September this year by Professor Herbert L. Anderson of Chicago University, one of the team engaged in the project.

Professor Anderson's connection with the historic event began with an encounter in January 1939 with Niels Bohr, who was excited about news given him by Lise Meitner and Otto Frisch. This initiated a long collaboration with Fermi, which led to the setting up of an experiment proving that fission took place, and eventually the construction in a squash rackets court of the first atomic pile in which a self-sustaining chain reaction was proved to be possible.