An application of diamide alone (156 mg/kg) on gestation day 8 in mice had a teratogenic effect of 5·69%. In combined treatments diamide was injected i.p. 30 min before irradiation with 25, 50 and 100 R of different kinds of radiation.

Contrary to lucanthone as a very effective radiosensitizer (Michel, *Experientia*, 1974, **30**, 1195), no synergistic effect could be observed with diamide and radiation doses of 50 or 100 R. However, with 25 R of 200 keV roentgen rays a possible synergistic effect is not to be excluded.

ACTION OF DRUGS ON REPAIR PROCESSES. M. C. L. Zumel, G. Cobreros and M. D. Astudillo, Instituto Química Física " Rocasolano " CSIC, Madrid.

The study of chemical compounds acting as modifiers of radiation effects requires the understanding of their ways of action. Inhibition of repair processes is one of the mechanisms by which some radiosensitizers act on living cells. In this paper the effect of chloroquine on the non-scheduled synthesis of DNA after irradiation of mice spleen cells is studied. Methyl-^{3}H thymidine is used in order to follow the kinetics of this synthesis and 10^{-2} mol hydroxyurea and 5×10^{-4} mol chloroquine are incorporated into Hanks' incubation medium. A 50% inhibition on the repair replication process is obtained. Ultracentrifugation studies on DNA γ-irradiated samples with and without the compound and quantitative determinations of phosphate groups and spectrophotometrical measures on UMP and OPEA supply information about the way in which chloroquine joins at important biological molecules.

EFFECT OF CAFFEINE ON THE SURVIVAL OF PAIRS OF MAMMALIAN CELL LINES OF DIFFERENTIAL SENSITIVITY TO RADIATION AND ALKYLATING AGENTS. D. Scott, M. Fox and R. R. Marshall, Paterson Laboratories, Christie Hospital and Holt Radium Institute, Manchester.

The possibility that pairs of mammalian cell lines differing in sensitivity to the lethal and chromosome damaging effects of x-rays, UV and alkylating agents might differ in post-replication DNA repair capacity has been investigated by studying caffeine potentiation of lethality. Caffeine strongly enhanced sulphur-mustard (SM) induced lethality in rat lymphosarcoma cells which are resistant to this drug but had a lesser effect on SM sensitive cells. No such differential enhancement of lethality was observed between x-ray and UV sensitive mouse lymphoma and Chinese hamster cells compared with x-ray and UV resistant mouse and hamster cells. Only with the alkylating agent, therefore, does the differential sensitivity of cell lines appear to be mediated through differences in the capacity for post-replication repair.

EFFECTS OF HYDROXYUREA AND 5-FLUORODEOXYURIDINE ON EXCISION REPAIR IN HUMAN CELLS. K. Erixon, B. Johansson and G. Ahnström, Wallenberg Laboratory, University of Stockholm.

Incubation of UV irradiated human cells results in the production of strand-breaks due to endonuclease attack at the site of a pyrimidine dimer. These breaks are, however, hardly detectable by the use of alkaline sucrose gradient sedimentation. By applying the rate of strand separation technique (Ahnström and Edvardsson, *Int. J. radiat. Biol.*, 1974, **26**, 493) it has been possible to follow the kinetics of the enzyme reactions in which the breaks are produced and sealed. Hydroxyurea and 5-fluorodeoxyuridine, both potent inhibitors of DNA synthesis, markedly increase the number of breaks, which are detectable during the repair process. This is probably caused by a decreased polymerization rate due to lack of deoxynucleotides because addition of TdR to FUdR treated cells will drastically reduce the number of breaks observed.

Xeroderma pigmentosum cells were also investigated. Cells belonging to complementation group A showed no UV induced strand-breaks, either in the absence or presence of HU, whereas Xp-variant cells had activity like normal cells.

ACTIONS OF SOME DRUGS ON ENZYMES INVOLVED IN DNA REPAIR AND SEMI-CONSERVATIVE DNA SYNTHESIS. E. Wawra, W. Klein, F. Kocsis and P. Weniger, Institut für Biologie, Forschungszentrum Seibersdorf.

Different antirheumatic and cytostatic drugs had been tested by measurement of the