Whilst this work was in progress, Fischer, in a note appended to a paper by Fischer and Libowitzky[3], claimed that such a separation of uroporphyrin (m.p. 286°) from the Petry case into uroporphyrin I and uroporphyrin III had been effected in his laboratory by a chromatographic technique which was not described. No coproporphyrin specimens were examined. A paper by Fischer and Hofmann[4] has now appeared in which their technique is described, using talcum and chloroform-methyl alcohol.

It would appear highly probable that small quantities of series III pigments accompany those of series I excreted by congenital porphyrinurics. The uroporphyrin of acute idiopathic porphyrinuria has recently been shown to be uroporphyrin III by Waldenström[5] and by Mertens[6] (m.p. 255–58°). Any theory seeking to explain these diseases must now take cognizance of these facts.

The various forms of porphyry are probably brought about by failure of, or interference with, a particular aspect of the hæmoglobin synthetic mechanism, as is suggested in my forthcoming paper. The *site* of interference serves to determine which isomer is excreted in quantities above the normal.

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Retention of Radioactive Substances in the Body of Rats and the Lethal Dose

THERAPY by radioactive substances introduced directly into the organism is limited only to a small number of elements, as the use of radioactive salts deposited permanently in the bones proved to be dangerous[1]. For this reason only two elements have been studied, namely, radon and polonium, with regard to their retention in the organism and quick elimination by means of various vehicles. Experiments were carried out with rats, the weight of which varied from 66 gm. to 290 gm. The present communication deals with the results obtained with radon only. A physiological solution, namely, a 10 per cent solution of glucose or emulsion of tungsten in olive oil, is used as vehicle. The rats received an injection of a maximum dose of 1 c.c. of these substances either subcutaneously or intermuscularly. The solutions were activated with radon in such a manner that the activity of one injection was 0·5–14 millicuries. The rate of elimination of radon from the body of the rats was measured electrometrically by the method of gamma rays of the active deposit of radon.

The results were as follows:

(1) In the case of physiological solution and glucose, radon is eliminated from the body of rats at the same rate, irrespective of the method of injection (intermuscular or subcutaneous), in a period of 30 minutes, which coincides with the period of elimination of radon ascertained in drinking and inhalation cures.

(2) In the tungsten emulsion radon is bound more permanently, 67 per cent of the initial dose injected remaining after two hours, whereupon it is eliminated in a period of 100 minutes.

(3) The elimination of radon with each of the vehicles is effected mainly by breathing.

(4) Even a dose of 14 millicuries is not capable of killing, and does not even disturb any of the basic vital functions.

(5) In the case of tungsten emulsion, an approximate calculation of energy of alpha rays absorbed in the organism, which constitute almost entirely the physiological effect of the injected radon, was carried out. The maximum dose of 14 millicuries gives about 17×10^6 ergs of energy absorbed, which, compared with gamma rays, would correspond to irradiation with the quantity of one gram of radium (with soft gamma rays absorbed) attached directly to the body of the animal for a period of about 30 minutes.

(6) In the case of polonium injections, on which a separate report will be made, the lethal dose was reached at an average absorbed energy of about 6×10^6 ergs. This energy was absorbed at a much lower rate than the maximum energy supplied by radon, which proves that the effect of equal doses of radioactive radiation grows with the period of its duration.

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Nature of the Diffusion Process in Rubber

IT is known[1,2], that silica-gas diffusion systems exemplify a type of non-specific activated diffusion process, as opposed to the specific type of diffusion

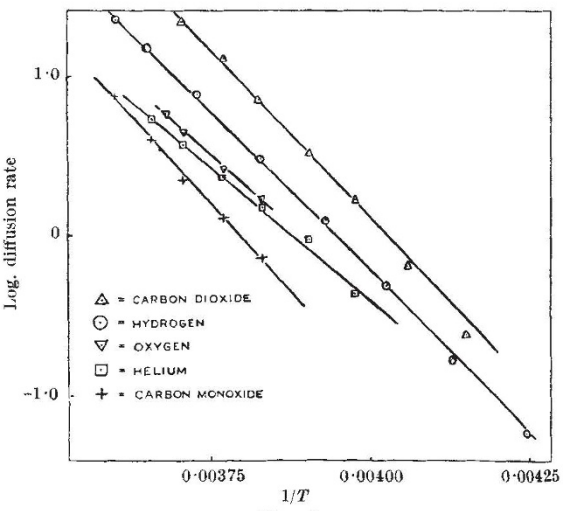

Fig. 1.

DIFFUSION THROUGH PURE PARA-RUBBER (DEWAR'S DATA). DIFFUSION RATE IN C.C./DAY/CM.²/ATMOSPHERE; THICKNESS OF MEMBRANE, APPROXIMATELY 1 MM.; T = ABSOLUTE TEMPERATURE.

system such as hydrogen-palladium. It seemed that the diffusion of gases through other 'glass-like' materials such as some organic membranes, for example, rubber, might offer further examples of