Similar lesions occur in rats naturally infected with pleuro-pneumonia-like organisms.

When injected intravenously, intraperitoneally or subcutaneously in the two strains of mice at our disposal, our cultures failed to produce any clinical-pathological phenomena. As has been previously noted,[6] however, the susceptibility of different strains of mice is very variable.

Although we encountered this disease and this microbe while working with human rheumatic material, we do not feel justified in concluding that our agent came from aught except mice. Our reasons are these. A similar strain was secured by blind passage of mouse lungs. Using appropriate media, we have been constantly unable to grow it directly from human pathological material, even from uncomplicated fatal active rheumatic autopsy material. Yet such material, when passed through mice, readily yielded the organism.

10766

Wheat Germ Oil and Tumor Formation.

E. DINGEMANSE AND W. F. VAN ECK. (Introduced O. Riddle.)

From the Pharmaco-Therapeutic Laboratory, University of Amsterdam.

Rowntree[1] reported the occurrence of sarcoma in rats fed on a diet containing wheat germ oil, all his animals developing tumors after treatment for 15-111 days (54 days on the average) with a daily dose of 4 cc of the oil mixed with their normal food. The ability of the oil to produce tumors depended on the method of extraction, the extract with ether having cancer-producing properties, while that obtained with petroleum ether appeared to be inactive. A repetition of these experiments of Rowntree seems extremely important, because if they could be confirmed it should be possible by slightly modifying the method of extraction to obtain very highly purified preparations. Assuming that the active substance is soluble in ether but not in petroleum ether, extraction of wheat germs with the latter solvent should remove all the fats and

[6] Dienes, L., and Edsall, G., PROC. SOC. EXP. BIOL. AND MED., 1937, **36**, 740.

[1] Rowntree, L. G., Steinberg, A., Dorrance, G. M., and Cicerone, E. F., *Am. J. Cancer*, 1937, **31**, 359.

TABLE I.

Preparation	Quantity per rat per day in cc	No. of days	Total quantity per rat in cc
I. Ether extract from wheat germs, according to Rowntree	3-4	267	817
II. Petroleum ether extract	4-5	73	297
III. Ether extract of the portion insoluble in petroleum ether	4-5	89	361
IV. Wheat germ oil from pressed wheat germs	3-4	291	889
V. Crude ether extract not freed from fatty acids, etc.	4-5	89	361
VI. Olive oil	4-5	73	297

phosphatides, *i. e.* more than 95% of the lipoid fraction, and subsequent treatment with ether should give a solution of the active substance in a highly purified state.

Six groups of 10 rats resulting from a cross-breeding between Piebald and Wistar strains were used. Each group consisted of 7 males and 3 females accommodated in separate iron cages. The initial weights lay between 130 and 342 g. The room temperature was fairly constant between 20-22°C. The ground food, which was an accurate copy of that described by Rowntree, was mixed with the various extracts and the quantity was so chosen that all food was completely consumed.

Practically all the rats remained in excellent condition and increased regularly in weight. Dissection took place 73 to 291 days after the beginning of the test. The extracts used, the time during which they were applied and the total amounts given, are summarized in Table I.

Large tumors like those described by Rowntree were never observed in a single case. All the tissues in the abdomen which showed an abnormal appearance were examined histologically, but no tumor, neither sarcoma nor carcinoma, could be established. The histological examination was checked by the carcinologist, Dr. Korteweg, and found to be correct.

According to recent communications, Day and his coworkers,[2] Carruthers[3] and Halter[4] have also been unable to induce sarcoma in rats with ethereal extracts of wheat germs.

Summary. The experiments of Rowntree and associates have been repeated as accurately as possible but their results could not

[2] Day, H. G., Becker, J. E., and McCollum, E. V., PROC. SOC. EXP. BIOL. AND MED., 1939, **40**, 21.

[3] Carruthers, C., *Ibid.*, 1939, **40**, 107.

[4] Halter, C. R., *Ibid.*, 1939, **40**, 257.

be confirmed. Not a single case of sarcoma was observed in 2 groups of 10 rats after administration of ether extracts of wheat germs in large quantities over a long period (5 times as long as is necessary according to Rowntree). Two groups of 10 rats treated with wheat germ extracts made in other ways and one group of 10 rats treated with crude press oil from wheat germs also failed to develop sarcoma.

10767 P

Correlation Between Secretion of Dyestuffs by the Kidney and Molecular Structure of These Dyes.*

RUDOLF HÖBER AND PRISCILLA M. BRISCOE.

From the Department of Physiology, School of Medicine, University of Pennsylvania, Pa.

Very little is known about the mechanism of the active secretory transport of the kidney. We have tried to attack this problem by investigating the secretory activity of the tubules of the frog kidney as regards dyestuffs, which more or less resemble one another by their molecular configuration. The isolated kidney was perfused with Ringer solution through the aorta under a pressure of about 24 cm of water and with Ringer solution containing 0.0005% of dyestuff through the renal portal vein under a pressure of about 12 cm. About 30 dyestuffs have been tested, all of them being mono-azo-sulfonic acid dyes and all of them being diffusible.

One series of experiments was concerned with 8 naphthalene-azo-naphthalene-disulfonates. The result obtained showed an obvious connection between the structure of the dye and its aptitude for secretory concentration. The main decisive feature is the location of the sulfonate groups in the molecule. If both sulfonates are on the same half of the molecule, as with Fast Violet R, Echtrot B, Acid Violet 6R and Palatine Red A, the injected dye reappears in the secretion at a higher concentration. If one sulfonate is attached to one naphthalene nucleus, the other sulfonate to the other, as

* Supported by a grant from the Penrose Fund of the American Philosophical Society and by a grant from the Ella Sachs Plotz Foundation. Dyestuffs were supplied by E. I. du Pont de Nemours & Company, by I. G. Farben Aktiengesellschaft, and by National Aniline and Chemical Company.