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DGF/BMS/46D

1st August, 1962

Dear Mr. Anderson,

I write in answer to your letter of 19th July, enclosing a letter from R.H. Star of Sydney, referring to two items in Campbell-Johnsons' synopses.

Dealing first with the item referring to the work of Dr. Roe at the Chester Beatty, I feel sure that the item in the DAILY MIRROR for 19th June undoubtedly refers to a letter to NATURE (Volume 194, 1089) published on 16th June. I enclose duplicate copies of a photostat of this article in case you wish to send one to Mr. Star. This is an extension of the work of Roe, Salamann and Cohen (published in Brit. J. Cancer 1959, 13, 623) in which the co-carcinogenic activity of the phenolic fraction of cigarette smoke was investigated. Roe now shows that unadulterated smoke condensate is more carcinogenic than a pure solution containing fifty times as much benzpyrene as is present in the condensate and that when he re-enforces the benzpyrene content of smoke condensate by fifty times, the carcinogenic activity is greater than that of unadulterated condensate. The mixture is more carcinogenic than an arithmetic summation of the effects of the two components separately. It is true that he is working with small groups of mice but the results as they stand support the hypothesis that smoke condensate contains co-carcinogenic substances.

As far as I am aware, Roe is not developing a special filter for phenols and I understand from T.M.S.C. that the remainder of the article, which refers to this, was a bit of journalistic license on the part of the DAILY MIRROR, who took the opportunity to link Roe's work with the Lorillard press release. He had possibly referred to Wynder's work on the telephone to the DAILY MIRROR writer. When the article was published, he immediately got in touch with T.M.S.C. to disclaim responsibility for the statement which he found embarrassing.

The other item quoted, synopsis 7297, is based on misinterpretation of the abstract of the paper, which was presented at the Annual Meeting of the American Association for Cancer Research at Atlantic City. The abstract was circulated as an attachment to CURRENT DIGEST for April 1962, which is produced by T.I.R.C.

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The abstract reads as follows:-

"From intramuscular transplants of mouse lung tissue and methylcholanthrene, epidermoid carcinomas arose in 6 of 30 mice (20%) on an adequate diet supplemented by injections of vitamin A, in 3 of 33 mice (9%) on the same diet without supplementary vitamin A, and in only one of 25 mice (4) on a diet deficient of vitamin A. The mice were Balb/C males.

These findings suggest an hypothesis that increased intakes of vitamin A by human populations in recent decades may play a role in the increased incidence of epidermoid carcinomas of the lungs through promotion of carcinogenesis by polycyclic hydrocarbons such as occur in cigarette smoke

It is thus apparent that the tumour which was produced was not stimulated by a chemical extracted from cigarette smoke, because methylcholanthrene has never been found in cigarette smoke.

The paper by Mdhiock, which you mention, is a new bit of information to me, but I find now that he is not the only person who has claimed to have produced lung tumours by exposure to cigarette smoke. Essenberg has also claimed a similar observation. (SCIENCE 1952, 116, 561). The tumours found in both cases, however, are said to be adeno-carcinomata and not bronchogenic carcinomata. They are, therefore, of a different cellular type. To the best of my knowledge, bronchogenic carcinomata have been produced by inhalation only by Wiseley, Kotin, Fowler and Trivedi (Proc. Am. Soc. Cancer Res. 1962, 3, 278) by exposing mice to artificial smog, following repeated infection with strains of mice influenza virus. Arthur Vorwaldt (of Michigan ?) has also produced tumours by administering beryllium dust to animals.

Other methods of producing lung tumours with condensate have been described by Blacklock, whom you mention, but who had to administer killed tubercule bacilli at the same time.

Prof. Norton Nelson, in New York, insufflated the lungs of mice with benzpyrene dust and demonstrated, by fluorescence microscopy, that it had reached the bronchi. But he never found a lung tumour.

Lastly, there are the nitrosamines, some of which when

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administered orally, produced lung tumours in rats.

It may be worth remarking that the theory that the increase in lung cancer is due to better nutrition, is hard to square with other statements that lung cancer is found more frequently in the poorer classes than among the well-to-do, even where there is a similarity in cigarette consumption.

I hope that this information is helpful in replying to Star.

Yours sincerely,



D. G. FELTON

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