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DISCUSSIONS AT B-A.T. (HAMBURG)

25th May, 1962

As the meeting of the CORESTA Smoke Group (reported in File Note No. 0283) did not take the two days originally allotted to it, I was invited by Dr. Seehofer to visit the laboratories at Bahrenfeld. Dr. Seehofer himself was occupied by a visit from Dr. Wynder and arranged for me to be conducted by Dr. Barkemeyer.

The visit started at the head office in Esplanade with an interview with Mr. Selbmann. I explained my presence at the CORESTA meeting as being in a purely private capacity, and that I was grateful for the opportunity afforded me by Seehofer's suggestion, provided that Mr. Selbmann or Mr. Soring had no objection. Mr. Selbmann asked when I last saw Mr. Anderson and I replied that this was eight days previously and that Mr. Anderson had been going to mention my visit to Mr. Soring the next day.

Mr. Selbmann then produced a copy of a letter from him to Mr. Geldart, outlining the German Company's plans for a fully synthetic cigarette or "syntharette". I noticed that the last paragraph invited a visit to Hamburg from someone at R. & D.E. He asked me if I had heard of the idea before and I replied that I had not and that I had not received any instructions regarding a visit because this was unexpected owing to the shorter than usual CORESTA meeting.

He then produced two draft patents for my inspection and, having enlarged on the idea, invited my comments. Briefly these were:-

1. The idea was not altogether new - VANGUARD in the U.S. had been a non-tobacco cigarette.

2. There was a variety of means of reducing tar content, e.g. filters of high efficiency, porous paper, lighter cigarettes, PCL, etc.

3. Removal of nicotine may remove the urge to smoke, while impregnation of a synthetic material with nicotine opened the door to the possibility of overdosing through non-uniform addition.

4. While it was known that tobacco gave benzpyrene there was at present no uniform opinion that this was the cause (or even a cause) of any possible risk associated with smoking. Any vegetable matter or synthetic cellulose would probably yield

benzpyrene on pyrolysis, but in any case, in the absence of a biological test which was agreed to be of meaning in the human context, it was dangerous to argue from chemical analysis only. It was conceivable that the synthetic cigarette could yield a pyrolysate which, while lower in quantity, possessed enhanced biological potency, but that this could be due to a hitherto undetected and unsuspected class of compounds.

Mr. Selbmann seemed disappointed at these arguments and then showed me Mr. Geldart's reply which included Sir Charles Ellis' comments. These expressed my own thoughts rather more succinctly and I pointed this out to Mr. Selbmann. I began to feel that he suspected I had received prior briefing, but apart from saying that close contact with Sir Charles had obviously led to my unconsciously absorbing his lines of reasoning, I did not allude to my impression.

Mr. Selbmann then produced some sample cigarettes which we smoked. I found them highly flavoured, but not too unpleasantly so; they were very irritating to my palate, however, the smoke possessing an acrid or acidic character.

After some further discussion, I said that I could see no immediate reason why the idea should not be protected by patents if they were obtainable, if only to prevent someone else from using the idea, and that he could raise this with Mr. Geldart on his forthcoming visit, but that my personal view was that the concept could entail greater dangers than those which it was designed to circumvent.

VISIT TO LABORATORIES

Owing to the presence of Williamson (Cigarette Components) during the morning and of a large number of people from the Quester Colloquium during the afternoon, the discussions with Barkemeyer were not as open as I would have liked, and only a very limited field of interest was covered.

Of the items of equipment installed I was particularly interested in the vibrating smoke collection device used by Hamburg for collecting smoke for biological assay. This was demonstrated and functioned efficiently. I suggested that when Burgan of I.T.Co. visited the laboratory in June, he should be shown it in action. Subsequently, I have mentioned the device to him. It was clearly superior to the device employed by Prof. Kroning (Gottingen) which was also shown me.

Hamburg have recently obtained a Perkin-Elmer Fraktometer for gas chromatography which is at present being employed for the determination of glycerols and triacetin to smoke, using polypropylene glycol (Perkin-Elmer Column R) as stationary phase.

We also saw the Metrohm Polarecord for high speed polarography. Barkemeyer intends to apply this to the determination of aldehydes in smoke and of sugars in tobacco. It is also being employed for the

determination of nickel in smoke in connection with the possible hazard of nickel carbonyl. So far Barkemeyer has succeeded in showing the presence of nickel but the quantitative determination had not yet been undertaken.

The new laboratories, as far as a limited inspection allowed, seemed to be well-planned and very suitable for their purpose. The dark room and balance room used non-traditional materials of construction in a very good manner. The space available appeared to be lavish for the number employed.

OTHER TOPICS DISCUSSED

(a) Dr. J. Miller (Hoechst Chemicals)

A representative from Hoechst Chemicals who visited R. & D.E, recently invited me to visit, on some future occasion, their laboratory near Augsburg which is devoted to tobacco chemistry. I, therefore, took the opportunity of enquiring what was known of this. Barkemeyer had recently visited the laboratory which is at Gendorf, near Alt Oetting, Bavaria.

Miller is apparently primarily interested in the fate of glycols used as tobacco humectants, particularly ethylene, propylene and 2:3-butylene glycols and diglycol. His method depends upon extraction from tobacco, acetylation using acetic anhydride/boron trifluoride and gas chromatography of the acetyl esters. Dr. Lipp (Brinkmann) believes the boron-trifluoride catalyst to be unnecessary. For smoke, which is collected on cotton wool plugs, a simple extraction into chloroform and concentration is used before gas chromatography.

Miller has a smoking machine suitable for pipe smoking and has been comparing the results he obtains for pipes and cigarettes. He finds quite different rates of combustion for the two forms of smoking. His pipe-smoking regime is five puffs per minute, each of 50 ml. He is also interested in the amounts of carbon monoxide, carbon dioxide and methane in smoke from pipes and cigars. Barkemeyer thought that the laboratory would be worth a visit, although he did not believe that Miller was investigating possible catalysts for the suppression of benzpyrene formation, as we had been led to believe.

(b) Method for Benzpyrene

Barkemeyer explained that they had discontinued the use of thin-layer chromatography on glass plates as they had found this technique was of insufficient capacity. The modified method, which he described to the CORESTA Smoke Group, employed column chromatography and permitted a benzpyrene estimation to be made in two to three days only. He showed the Beckmann DK-2 recording U.V. Spectrophotometer, with the modifications

they have introduced to enable it to be used as a fluorescence spectrometer. This consists in irradiating a cell, containing the solution, which is placed in the side of an Ulbricht integrating sphere, normally used for reflectance spectroscopy. The integrated fluorescence is then passed through the spectrometer and the intensity read in the usual manner. It struck me as a compromise solution to the problem.