

Fischer-Tropsch Synthesis

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I believe that a consideration of the ways in which Fischer-Tropsch products might be used would be useful and some economic studies justifiable. If we are to convert coal into liquid fuels, it seems almost certain that a large volume will be by the coal hydrogenation route to produce synthetic crude. This crude will vary markedly in composition from those found naturally. It will be highly aromatic and contain a large polynucleararomatic fraction. Further hydrogenation of these will yield mainly light parafins and aromatics with relatively short sidechains. Missing will be a parafinic fraction between C_6 and C_{16} , for example. This fraction is desirable for the production of motor fuels with satisfactory motor octane numbers.

On the other hand, we have a large need for high BTU gas. One of the limiting factors in earlier economic considerations of the Fischer-Tropsch synthesis was the large amount of the total carbon which goes into the production of methane. A few years ago, this was charged as an economic loss. This could now be moved to the profit side of the ledger. Why then, should one try to produce a methanation process when a Fischer-Tropsch process could be used to supply the need for the long-chain parafins as blending components in the syn-crude produced from coal?

Dr. R. B. Anderson, McMaster University, notes the critical susceptibility of iron group metals to sulfur poisoning. Removal of this sulfur from the syn-gas produced from coal represents a large economic constraint on the Fischer-Tropsch process. It seems to me that if more tolerant catalysts are to be found, the likely place to look is among the metals of Groups 7 and 8 of the second and third transition periods, not in the iron group. Some of these metals, e.g., Pd, are used industrially in hydrogenation processes in the presence of sulfur compounds.

Finally, multicentered basic research programs touching on these and related research should be given priority support. I am sure that you will agree that this is of vital importance. Solutions to the energy crisis are more likely to arise from the application of the best minds in widely diversified research than from a concerted effort in an institution which reflects day-to-day constraints imposed by internal politics.