As the time for profitable commercial operations approaches, companies and individuals naturally become interested to stake out claims to develop shale deposits on government land. But it is not at all unlikely that there will be greater advances in the technology of extracting oil from shale in the next five or ten years than occurred in the last half century. This makes it all the more important that the federal government guard against granting rights which might interfere with the orderly and efficient use of these shale resources and the conservation of other resources and values which may be affected by their use. The government must guard against the cannibalization of the mountain-side, the pollution of streams and the imprudent use of their precious waters, which may occur if government subsidizes or encourages commercial operations on public lands in the present stage of relatively primitive shale technology.

For these reasons I think the government should at this time encourage research and development as outlined in the first alternative course in Section IV of the report and should refrain from binding itself to commercial leases until it knows much more about the value of the leases it is offering and the effect of the technological processes to be employed on related resources and values. I should not object to the government giving permits for research on limited areas of the public domain if the applicants could satisfy the Secretary that the projected research would be likely to contribute significantly to the advance of technology in extracting shale from deposits in the area covered by the permit. If the Secretary later found, as a result of such research, commercial operations in the area were feasible and in the public interest, he might be authorized to ask for competitive bids on a commercial lease and to give to the holder of the research permit a preferential right to obtain the lease if its bid was not significantly below that of the highest bidder.

## COMMENTS BY H. BYRON MOCK

I address my remarks directly to the draft of February 1, 1965. With the words of the Report it is difficult to take exception. My objection is that those words fail to state certain key conclusions required by the evidence, but state other conclusions which the Committee could not have independently reached on facts before it.

First, the key question is whether the 1930 Executive Order withdrawals of oil shale and from leasing should be lifted. Nowhere is that question directly discussed. Without a yes or no answer, the Committee Report has no significance. The question is not whether the specifically reserved Naval Reserve Oil Shale lands are to remain set aside, but whether other Federal lands are to be opened-second, because the first question is unanswered, we must ask, can the National need for an oil shale industry (there appears to be no difference of opinion as to the need, only as to the method) be developed on private holdings alone? Third, also because the first question is unanswered and even if the second is answered affirmatively, can private capital be expected to develop an industry on the less rich deposits when it is unknown whether their economic calculation and "lead time" may be destroyed overnight by opening the richer Federal deposits or by developing them as a Government operation?

Fourth, because the first question is unanswered, and the second made unanswerable by the third, the third is unanswerable until this fourth question is answered. Is it contemplated that the Federal Government may operate the oil shale reserve as a Federal operation?

The answer seems clear from the facts considered by the Board. It is in the public interest to develop an oil shale industry. The problem existent indicates that by the time oil shale is supplying a substantial share of the energy needs the phasing in will have had little, if any, effect on other energy industries. While the vastness of the kerogen resources is offff set by the expense of extraction and unknowns in the processes, private capital is prepared to proceed if it is not barred by governmental action. The National interest is best served by immediate commencement; unnecessary obstacles to development are against the public interest.

The goals stated in the February 1 draft are clear and explicit. As is to be expected, the method of accomplishment are the points of difference. If the above questions are answered, methods consistent therewith should be easily determinable. The methods of implementation are not necessarily ones for the Board to recommend. We received no briefing on problems and solutions faced