sary compromise. History and common sense inevitably tie the health of society to raw material production. No better example exists than our own case since 1850, Canada in 1940, and Australia since 1960, as a more recent example.

Certainly it is unfortunate that our best decisions too often do not meet the test of mass popularity, and here of course, is the root to much our present ecological conflict. Policy of our Interior Department can have profound effect on these matters, however, Interior is not part of Congress and should not operate on a Gallup Poll basis. Culmination of today's gravest mineral land problems are exemplified in our present oil shale situation. These are largely the result of mutual non-feasance, short sightedness, and past expediencies of both government and industry. Surely by now this nation has the technical knowledge, leadership, and foresight to forge broad, firm, and equitable policies for the urgent needs of long-range development and the orderly and increased production of our vital domestic mineral resources. Perhaps, the occurrance of other minerals besides oil will be the catalyst to help get adequate policy shaped and shale-oil development started.

RESPONSIBILITY OF GOVERNMENT AND INDUSTRY

To some, the ideal industry is totally invisable, odorless, soundless, with no waste product, and one hundred percent conservation of material involved. As yet, this is neither feasible nor practical. On the other hand, aside from simple self-preservation, we are morally committed to increasing living standards, fighting poverty, reducing our financial deficit, defending our nation and continually taking care of the general welfare of more and more people. Obviously, this requires constantly increasing domestic production of everything. Really, we have very little choice except to do the job as wisely as possible and without needless waste and destruction.

Fortunately, ancillary factors for the establishment of a viable major now basic industry are favorable in the Piceance Basin. These include unusual compatability with modern concepts of population and industrial dispersion, multiple use conflict, conservation, anti-pollution, wildlife preservation, and reclamation. Important agricultural potential, including timber, is minimum or nil, as would also be the effect on existing wildlife, and no exceptional scenic wonder is remotely involved. The natural basin configuration, with proper added safeguards, such as small dams, and other minor features, will control any potential groundwater or stream pollution. Much of the water used would be recycled. Any potential air pollution certainly can also be effectively controlled.

Some worry is expressed regarding wind-fall profits. If private enterprise competition is encouraged, then profit will only be proportional to maximum conservation and production efficiency, with market control and the real benefit going to the ultimate consumer, the public. Naturally the effect on foreign economy and imports must be considered, but so should all the other rapidly changing international factors. We can no longer act entirely on a unilateral basis in any field.

Much has been said, considerable funds expended, and major new tests are planned, for better ways and means to recover oil from the shale. The main considerations of mining and refining methods and costs have been studied and valuable work in this continues. However, by the addition of soda ash and aluminum into the picture, a new situation exists. If only maximum total recovery of all potential products is considered, then clearly, open cut mining is most desirable, but is it feasible? To answer this question, let's first look at the things involved besides oil.

NACOLITE AND DAWSONITE CONSIDERATIONS

The principle sodium minerals, near the basin center, begin to appear above 1800 feet below the surface and extend intermittently to below 2600 feet. The richest zone of these, though not continuous, is about 500 feet thick and lies between 1850 feet and 2375 feet below the surface. This zone, as well as the much thicker oil shale zone above, in and below it, all becomes shallower and thinner toward the basin margin. For discussion simplicity and correlation with previous reports, we can assume a maximum overburden thickness of approximately 1000 feet on top of 2000 feet of mixed pay zone, with proportionately less thickness for each as one approaches the basin edge.