

tain inadequacies in the employment of the fines produced during processing operations, present technology seems adequate to current and foreseeable needs. However, precise knowledge of the technology is lacking and, if gained, might disclose ways in which the industry might enjoy an unusual growth rate.

While domestic processing of perlite to local requirements is fairly well distributed, the source of raw material is restricted to a few western states. Transportation costs are a factor in limiting the cost of the commodity in its conventional bulk-type, low-cost applications. Some inquiry into new applications where the special properties of the processed product might enjoy an advantage over other substances might tend to broaden the utilization pattern and the size of the industry.

PETROLEUM

Opinion and estimates of the ultimate world and domestic petroleum resources vary widely and are of less significance than the manner in which commercial reserves are established or the technologic and economic factors that attach to exploration, production, and use of petroleum and its products. Certainly domestic resources remain large and ample for projected demands for many years. The significance of this resource potential rests upon such issues as the presence or absence of incentives to explore for and develop new reserves and for the investment required to economically develop and produce from domestic sources while abundant low-cost supplies are present on the world market. Presently domestic exploration (drilling) has declined and established reserves are lower than traditionally maintained to support future domestic production. Improving the incentives for exploration, including cost-cutting technologic advancement, demands serious concern.

Because of the significance of petroleum to the whole economy, Government policies and actions influence, and in a sense determine, the domestic supply-demand relationship. Typical of these are the nature of import controls, maintenance of price and wage structures, provisions in the tax structure, regulatory provisions, leasing policies, and the like. The announced national objectives subscribe to the maintenance of adequate supplies of low-cost energy, diverse in form and geographic source but "drawn largely from domestic sources," etc. The factual base for the type of action necessary to achieve this objective is not adequate. Specifically, better knowledge of the extent, distribution, and character of potential resources and the problems that attach to exploiting them are essential to effective Governmental action and national policy.

Only about a third of the developed petroleum reserves is recovered in current practices.

Environmental and pollution problems attach to all sectors of the industry as well as to the employment of the products of petroleum. The problem of solving these without significant added cost to the producer or consumer presents a growing challenge.

Potential substitutes derived from other hydrocarbon energy forms (liquid fuels and chemicals from coal, gas, shale, etc.) are seen as supplements rather than competitors of petroleum. Their advent should tend to minimize overall petroleum costs by deferring needs to exploit specific high cost products until, in turn, technology and time permit effective future employment of such marginal resources.

Major oil companies in recent years have adopted the concept of "total" energy. Some oil companies have purchased or merged with coal companies and others have uranium interests. Some are involved in research on gasification and liquefaction of coal and others are studying the mining and retorting of oil shale. The extent to which this trend aids or inhibits the public interest deserves constant attention.

PHOSPHORUS

Domestically, sources are in four geographic groupings. The nature of mineralization and consequently extraction and processing techniques are different in each instance. Within several decades the two most productive areas (Florida and Tennessee) will be largely depleted and demands upon other sites, notably the western sources, will be large. The western sources have certain inherent disadvantages that cloud economic as well as technologic speculation. These include location, transportation, grade, depth, and a variety of other factors. Currently only selected high-grade zones can be mined. Technologic advances that promise to reduce both extraction and processing costs would have immediate as well as long-term benefits.