minal either at Savannah, Ga. or Charleston, S. C., or both. At this point, it would tie in with the intracoastal waterway, over which barges, either wooden or steel, would carry the oil to refineries in the Baltimore and Philadelphia areas.

Tank cars.—Again the crude oil delivered to either one of these terminals may be moved by tank car up to the refineries on the north Atlantic coast. Inasmuch as the tank-car haul would be but about one-half the distance required for the present movement between the southwestern fields and the east coast, only one-half the number of tank cars for the equivalent capacity of this line would be required for this movement. This would take some of the burden from the heavily loaded railways and release tank cars for other service. Altogether there are three channels for the movement of the oil from the terminal—barges over the Intracoastal Waterway, tank cars, and "shuttle" tankers along the coast.

Independent common carriers.—The Tapco crude-oil pipe line is proposed as a transportation utility only, to operate as a common carrier under the jurisdiction of the Interstate Commerce Commission. It will be an independent line and not under the control of the great major oil companies. In fact, it would be the first wholly independent carrier of its type. As such it would have a most wholesome and heartening influence throughout the oil country, particularly the independent oil producers, who produce the greater proportion of oil.

Cost and time.—The Tapco line is estimated to cost not over $25,000,000 and require approximately 86,000 tons of steel pipe. Being a relatively short line, traversing good terrain, it can be built and made available for service in the minimum length of time.

In normal times the Tapco line can still render an economical service. It is estimated that it can compete with the combined cost of moving oil from these inland areas through pipe lines to the Texas Gulf coast and tankers around to the Atlantic coast. As an auxiliary power source, it would be of benefit to the rapidly developing industrial South. It is a natural development, well founded from the standpoint of its economic implications.

Steel.—It is interesting to note that the above-mentioned 24-inch trunk line will require 1.688 tons of steel per barrel daily capacity, while the Tapco line will require but 1,228 tons of steel per barrel daily capacity. This means that the large line will require 37.4 percent more steel per barrel capacity than the Tapco line. This is a saving well worthy of consideration, aside from the principles of the conservation of capital, time, strategy, utility, and permanence. A half a dozen pipe mills can quickly turn out the pipe required for the Tapco line.

Asbestos-cement pipe.—We have recently come in touch with a new type of pipe, requiring but half of the steel per unit length as would be required for conventional lines. From what we have learned of this new pipe, we believe it well worthy of careful study, for it may have some applications which will contribute in a measure to our wartime economy. This pipe is already being studied by the War Production Board, Office of Defense Transportation, Office of Petroleum Coordinator, the Navy Department, and other governmental agencies. If proven feasible, the use of this pipe would reduce the steel requirements for Tapco to less than 45,000 tons.

This memorandum reflects a critical study of the two projects. It is believed that a few logical, relatively inexpensive operations will render the large line wholly unnecessary at this time. At the same time it is most apparent that the Tapco line can render a vital service during the period of war and thereafter continue as a permanent contribution to our national economy.

Attached hereto is a tabulation of the elements of the two projects. The balance of the economic considerations favors the Tapco line. An interoffice report of the Navy Department states:

'Provided either Office of Production Management or the Oil Coordinator asks for our opinion on this matter, I would personally be in favor of approving the project."

VINCENT G. SHINKLE. [SEAL],
Consulting Petroleum Engineer.