



knock reactions to occur. The positive spark ignition feature eliminates any need for a fuel cetane number or the high compression ratio associated with the diesel engine. Also, it is evident that load control can be achieved by control of fuel quantity only, without the use of inlet-air throttling. TCCS engines thereby exhibit the good fuel economy of lean-mixture engines."

Although the original work on the TCCS engine was done for the U.S. Army, the project is now dormant because the Army has decided to depend entirely on diesel engines for field duty. However, with the current energy crisis, the engine is arousing renewed interest and both General Motors and Ricardo & Co in England are working on it.

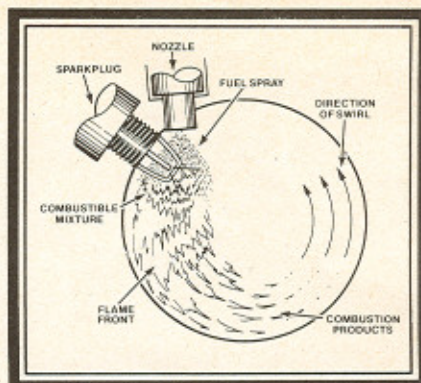
The reason for the renewal of interest is that what we are now primarily concerned with is how many miles we can get from a barrel of crude oil, rather than how many miles we can get to a gallon of gasoline, although the latter is, of course,

important to the motorist.

Oil refining is an extremely complicated business, but basically what you get out of one end of a refinery depends on what kind of crude you put in at the other end and how you arrange the plumbing in the middle. To be simplistic about it, if you built the least sophisticated refinery, what you would get primarily would be wide-boiling-range fuel with no particular octane or cetane number. It is only when you start getting picky and want specific octane or cetane numbers that the whole thing gets complicated and somewhat wasteful. In other words, by creating a demand for wide-boiling-range fuel, you would permit the refining industry to convert crude into fuel that can be made in the greatest volume with the lowest possible energy loss in the refining process.

Going back to the question of how many miles we can get out of a barrel of crude, Texaco has come up with some interesting figures on relative vehicle miles on fuels derived from one barrel of crude oil. According to Texaco, a car using unleaded gasoline will go 325 miles per barrel compared to 345 miles for a car using leaded. The same car equipped with a diesel will go 355 miles, but with a TCCS engine it will go 405 miles.

As Texaco sees it, use of wide-boiling-range fuel would be the ultimate goal for the entire nation; the TCCS or equivalent engines could burn currently available fuel during an interim period at fuel economies comparable to those of the diesel engine. As more such engines became available, the production and distribution of the wide-boiling-range fuel



DRAWING BY BILL DOBSON

In TCCS engine, flame front forms at spark-plug and swirls around combustion chamber.

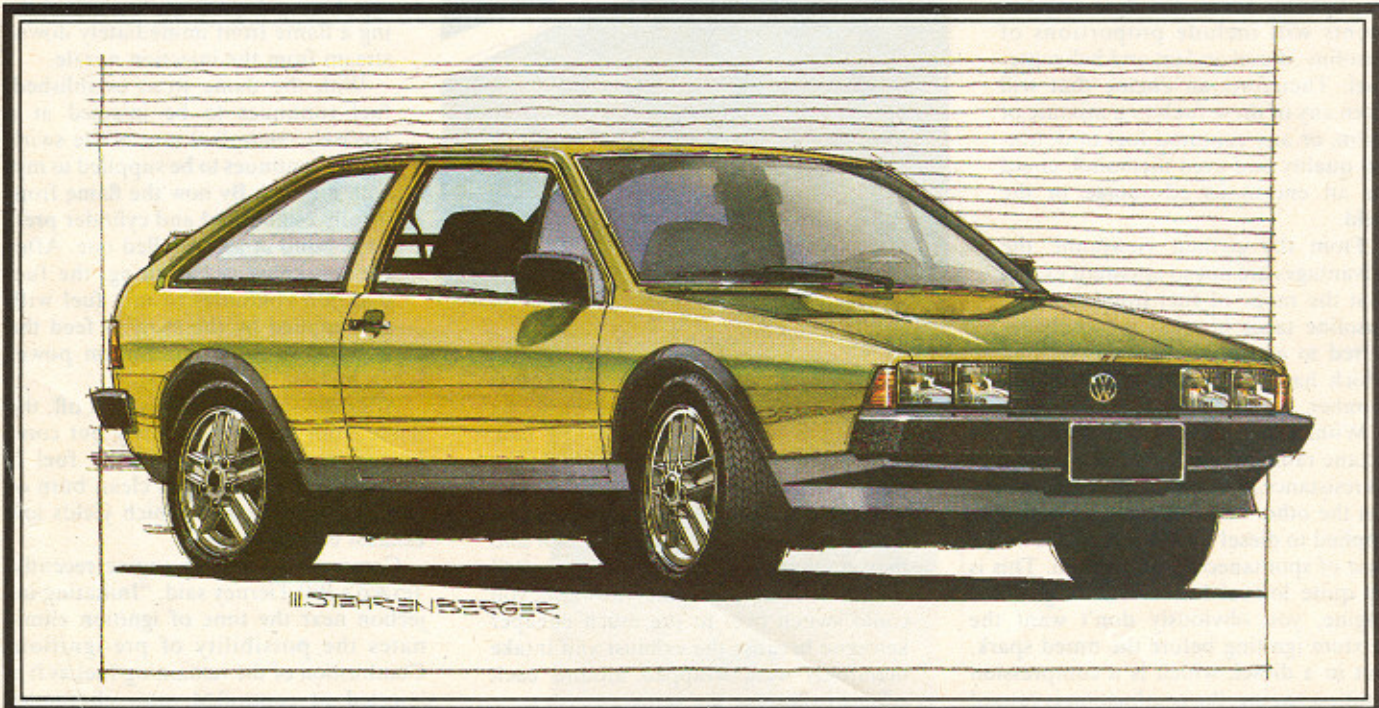
could be initiated with the benefit of reduced crude oil requirements for refineries. The combined effort of both the high fuel economy of the TCCS engine and the refinery efficiencies associated with the manufacture of its fuel could reduce the nation's dependence on imported crude oil.

Obviously, there is no one single answer to the energy shortage, but the development and manufacture of engines that have the capability of burning wide-boiling-range fuel seems to be one way to go.

Grand Prix Fuel

WITH EVERYONE trying to conserve fuel as much as possible, racing has become an easy target for the busybodies who don't approve of racing anyway, and don't realize that the amount of fuel used on the track is infinitesimal compared to the amount used in the cars driven by the spectators to get to the event.

ILLUSTRATION BY MARK STEHRENBARGER



Volkswagen's Scirocco is scheduled for a revamp in 1981. There will reportedly be an all-new Giorgetto Giugiaro-designed body showing some resemblance to the Alfa Romeo Sprint. The version shown with the front air dam and rear spoiler is a high-performance model powered by a turbocharged 140-hp 4-cylinder engine. Word is that the wheelbase and mechanicals are to be little changed from the present car.