

Student studies gas turbine as engine for lunar rover

A power unit that could furnish efficient mechanical energy and water as a by-product has been investigated by an A&M student for use on the moon. Frankie D. Allen of Amarillo studied the gas turbine as a possible engine for a lunar rover. A turbine operates by direct-

ing a stream of hot gases against the blading of a turbine rotor. It offers the advantages of an internal combustion engine without the complicated mechanics of piston-type reciprocating motion. Allen said that present moon power requirements are satisfied by fuel cells and nuclear power,

both having advantages for the particular jobs to which they are applied. With man making repeated moon landings and approaching the point of longer lunar stay-times, Allen said, new fields of technology need to be opened to supply his needs, among them

motive power over the lunar surface and usable water. "By using hydrogen as the fuel and an oxygen oxidizer, the turbine would produce a gallon of water per hour for living purpose use," Allen, a senior aerospace engineering major, said. His figures are based on a 15

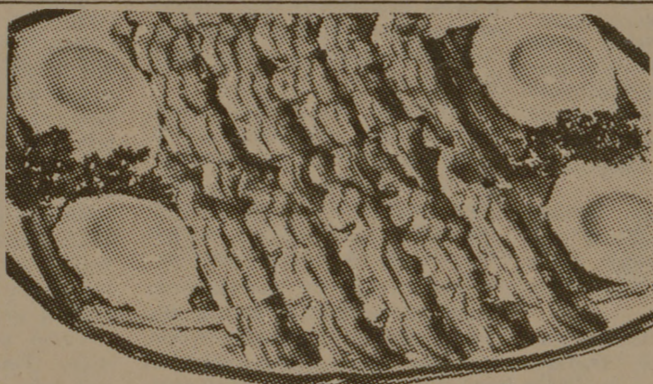
horsepower gas turbine engine, which he calculated would be sufficient to drive a 600-pound rover (100 pounds moon weight) over traversable lunar terrain. Allen noted in a report on his study to Dr. Charles A. Rodenberger that the hydrogen-oxygen

combination has several advantages, including water production, high specific fuel consumption and liquefying action of both fuel and oxidizer for easy transportation. The axial flow turbine, employed primarily in aircraft en-

gines, is most widely used present. Turbine efficiency increases with higher operating temperatures. Current metals technology limits extreme temperatures. Allen employs a porous turbine blade through which coolant can be pumped.

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