

Cars needlessly costly, Aero senior says

Cost of operating today's automobile is unnecessarily high, according to an A&M aerospace engineering senior.

"Car designers almost always ignore aerodynamics and concentrate on style and gimmicks," charges David B. Kanipe of Corpus Christi.

Gimmicks cause added drag and decrease efficiency, he says.

"Then, instead of cleaning up the design and making the car a cleaner craft, the industry resorts to larger engines, more power and

greater cost to make up for poor design," he adds.

Other than high speed racing cars driven in large racing events, automobiles are not designed to slip as easily as possible through the air, he notes.

The culprit is the coefficient of drag, aerodynamicist's term for the amount of resistance to air flow.

For most autos, it ranges from 0.6 to 1.0. As the figure gets closer to 1.0, more power is required to overcome the force.

"For instance, a body that looks like a moving van has a drag coefficient of 0.86," Kanipe explains. "For a convertible, it's about 0.95. The drag coefficient of a Volkswagen is about 0.37, which may seem quite small. One reason for this is because of its relatively clean underside."

He says the coefficient of Cam-A and Grand Prix race cars is

about 0.4 to 0.5. For an airplane wing cross section, it is 0.03.

Automotive streamlining can take one of two routes, the A&M student stated in a class report for Dr. Charles A. Rodenberger.

The car body can be sized so it disturbs air flow less, or designed so the boundary layer—a thin film of air next to the surface that moves very slowly relative to the free stream—remains attached to the surface.

Pressure disturbances created by protrusions such as air scoops and other styling devices can cause the boundary layer to move against the free stream or detach from the surface, creating eddies, turbulence and drag.

An untested design suggested by Kanipe in his report employs a body shape with a long sloping front end reducing the front section of the car and a "chopped off" rear slope of the so-called

"fastback" design. He placed the engine between the driver and rear axle, with the radiator located behind an air inlet that lets air flow uninterrupted over the windshield and top of the car.

"Shoulder scoops behind inward slanting doors draw off the boundary layer that will climb the sides of the car (causing rain-

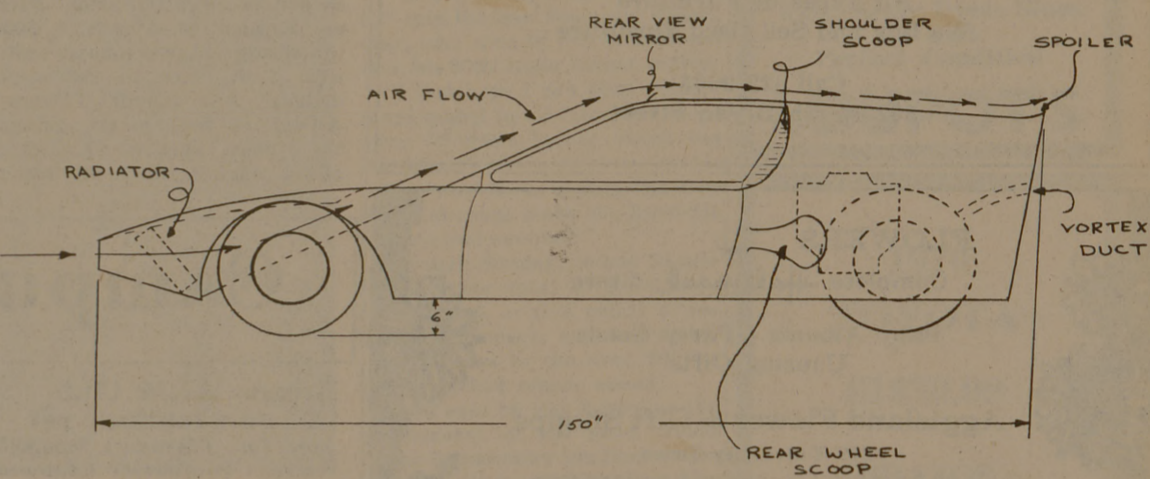
drops to move upward on the side windows of a moving car) and help cool the engine," Kanipe comments. Similar scoops cool the enclosed rear wheels, with the air ducted out at the back to stabilize vortexes that form behind the car.

He selected a 60-inch wheel base for better handling and 13-

inch and 14-inch wheel rims front and rear, enabling a lower profile only 41½ inches tall.

He also wants the underside closed. By making it relatively smooth, drag is further reduced.

Kanipe computed such a machine's drag coefficient to be 0.5288, comparable to that of race cars.



AERODYNAMIC CAR—A sideview sketch of David Kanipe's idea of a more streamlined automobile.

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Degree: Ph.D. in Education
Dissertation: DETERMINING CURRICU-
LA NEEDS AND THE ROLE OF JUN-
IOR COLLEGES IN PREPARING HIGH
SCHOOL TEACHERS OF AGRICUL-
TURE.
Time: May 25, 1970 at 3:00 p. m.
Place: Room 402-A in the Academic Bldg.
George W. Kunze
Dean of the Graduate College

THE GRADUATE COLLEGE
Final Examination for the Doctoral Degree
Name: Hanna, Wayne William
Degree: Ph.D. in Genetics
Dissertation: IDENTIFICATION OF
TRISOMES OF SORGHUM BICOLOR
(L.) MOENCH BY OBSERVING PRO-
GENY OF TRIPLOID X TRANSLOCAT-
TION STOCKS.
Time: May 20, 1970 at 2:00 p. m.
Place: Conference Room in the Agronomy
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Piggy-back planes could solve transport problems

A Texas A&M student from Hong Kong has an idea that could ease a number of air transport problems, such as the frequency of sonic booms and expansion of airports to handle the larger aircraft being built.

Vincent Chan proposes a sort of piggy-back airplane system.

It calls for a mid-air rendezvous of aircraft that would allow a larger, faster craft to stay aloft for long periods of time.

"The system mainly involves two airplanes in the play, a mother plane and twin plane," the aerospace engineering senior explained.

vide express transportation between continental points and do away with airports needing long runways for supersonic planes which land at higher speeds and need a longer distance to come to a complete stop.

"The main plane could stay in the air forever, theoretically, if there were no trouble with equipment nor damage to the aircraft," Chan said. "Such would not be the case, however, After a certain number of flight hours, the parent craft would have to land for overhaul."

Chan, who attended New Methodist College in Hong Kong also suggested in an aerospace engineering course report for Dr. Charles A. Rodenberger other innovations.

One is to extract and insert seated passengers out of and into the twin plane hull on a conveyor belt system. It would prevent confusion of passengers boarding planes and put the actual loading operation under airport technicians' control.

To save wear and tear on the parent plane when it eventually has to land for overhaul, Chan also designed an arresting net barrier system. Extended across a runway, it would cut down on landing distance required, reduce damaging impact inertia and prevent the plane over-running or skidding on the runway.

"These planes are leaving, say, Los Angeles, with a full load of passengers going to Chicago, New York, London, Paris, Berlin, Vienna, Taiwan, etc., and Los Angeles again. When the connected airplanes approach Chicago, the twin plane would separate from the parent ship and head for the airport with passengers bound for Chicago only," Chan described.

Another twin plane with passengers going to New York or any other destination on the mother craft's route leaves about 10 minutes before the parent plane passes Chicago.

He said that considerable savings could be realized in operating the piggyback concept, through keeping the larger, more costly to operate mother plane in the thin upper atmosphere where its engines operate more efficiently, and removing the necessity for airport expansion to handle big planes.

"This plane—carrying fuel, a new crew and other accessories—would rendezvous with the mother plane at a lower altitude and slower speed," he continued.

"Once docking is secure, the tail part of the twin plane and the front of the mother plane would open, allowing passengers aboard the bigger aircraft bound for the next destination to transfer into the twin plane. Similarly, passengers from Chicago bound for points further along the route would move into the parent ship.

Gen. A. R. Luedcke, acting president of the university, will preside. Former Students President Jim Sewell of Dallas will make brief remarks and present the association's awards.

"Separation and rendezvous will repeat itself at each destination," Chan said.

The program also will include recognition of six retiring faculty members with university service totaling 131 years.

Identity of the recipients will not be revealed until the reading of the individual certificates at the program.

The proposed system would pro-

Seven of the Former Students awards will be presented for teaching, three for research and one each for individual student relationships and extension work.

Gen. A. R. Luedcke, acting president of the university, will preside. Former Students President Jim Sewell of Dallas will make brief remarks and present the association's awards.

Faculty members to receive \$1,000

Fifteen faculty-staff members will receive \$1,000 awards at the university's annual Faculty Recognition and Awards Program at 3:30 p.m. Thursday in G. Rollie White Coliseum.

The program also will include recognition of six retiring faculty members with university service totaling 131 years.

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