

## DR. CHARLES AND HIS ELECTRIC RUNABOUT

*A drive in Stinson Aircraft's prototype*

STORY AND PHOTOS BY J. P. MCKINNEY

electric motors mounted parallel to and behind the rear axle replace the flat-4. These motors drive through the VW's differential.

Slide into the driver's seat, release the hand brake (the standard VW lever between the bucket seats on this prototype), unlock the electrical system by turning what appears to be an ignition key, and press the accelerator. Your throttle foot has, by this simple move, started the twin electric motors, and the car moves forward silently. But, as the model we drove is an engineering prototype, and quite dissimilar to the production model in many respects, there is one *if*. You move forward, after the above brief operational sequence, if you have placed the car in gear.

Published reports to date have indicated sluggish acceleration, with a maximum speed of about 58 miles per hour. This is correct, but several factors are responsible: the prototype suffers several drawbacks to performance, including an all-up weight, without passengers, of right on 3000 pounds, electric motors that develop only 2.5 horsepower each at 2700 revolutions per minute, and the standard transmission. With the stock VW steel platform frame and the heavy steel body, these two small motors have their hands full, and there is a tremendous loss of efficiency in working through the VW's mechanical drive train.

The weight of the four batteries, which occupy the entire space behind the front seats in the prototype, has been reported at 400 lb but is now 660. The twin motors have been listed as developing 3.2 horsepower each. Eventually they will do so, at 3300 rpm. The production version will also have a fiberglass body laid up over a modified Ghia steel body which is used as the mold, and an entirely original frame of aluminum. The structural interior of the body will also be of fiberglass plus two steel roll bars, and the individual bucket seats will be of foam rubber with plastic upholstery. The four enormous heavy-duty 12-volt diesel truck batteries will sit down low on the frame, leaving space for a small occasional seat in the rear.

With all of these changes, Stinson executives told us. "The production Charles will have a curb weight of just 1900 pounds including the batteries, our standard heater, and all."

This weight reduction, lopping off a good third over the prototype we drove, should increase the performance considerably. Stinson expects the top speed to be pushed up to

about 70 mph. Acceleration, without the need of gears other than the reduction gears from the motors into the rear axle through "a Stinson-engineered differential," is intended to match that of the average popular small four-passenger imported car selling here under \$2000. This seems reasonable because of the peculiarities of electric motive power. The torque curve will be nearly flat, and acceleration will be more or less constant and immediate. The resulting performance will be the rough equivalent of some 22 hp from an internal combustion engine, or 25% more than in the prototype.

As with every prototype, there has been a lot of re-shuffling of equipment, changes, etc. When we drove the Charles, the front luggage compartment was full of test equipment and an auxiliary 6-volt battery was used for the lights. The engineers explained the presence of this extra battery as a means of allowing them to "check the current flow from the main gang of 48-volt series-wired batteries without detracting from the total charge available to the motors alone."

Production models will have a completely vacant luggage compartment with a capacity far greater than that of the Ghia, for the spare wheel will be bracketed above the motors in the rear engine compartment and no gas tank will intrude.

On the road the prototype had a ponderous feeling, but without the tail-heaviness we expected. The weight of the two small electric motors is less than that of the VW engine they replace, and the mass of the batteries, fairly centrally located, gave the car a well balanced feeling. The ride was what you might expect of a Ghia loaded down with four good-sized men. The steering was and will be like that of the VW: quick, direct, and responsive.

The new suspension system will be much like that of the VW but "with certain changes we have determined to improve handling and ride with our new and lighter construction. We will naturally eliminate the differential as it is now and the transmission." Stock VW parts will not be used; Stinson is tooling for its own production line of running gear components.

It appears that there has been considerable objection—although Stinson denies this—to the altered Ghia styling. The for-appearance-only grille on the prototype is omitted on the production versions. The nose will be nearly rounded off, and the headlights will be integrated into the front design with the parking and turn signal lights set inboard. The hood will be perfectly smooth, as will the rear deck, which will have no need of louvers. The tail fins will be changed, too, and will have a very slight upward sweep. The tail lights are to be changed to duals of Stinson's own design and tooling. The dashboard, not stock VW, will be of fiberglass and original, with the ammeter and voltmeter on either side of the speedometer in front of the driver. The hand brake will remain similar to the VW's. Forward and reverse will be simply controlled by a dash-mounted switch which reverses the current, and the accelerator will be linked to a speed rheostat. When the car stops for a light, the motors are switched off when the foot is lifted from the throttle pedal.

The four 12-volt batteries, series hooked to give 48 volts, will have a three-year life and can be charged from standard 110/120-volt house current by means of a charger that

*This first fiberglass shell for the production Charles Town-About is clearly another slavish copy of the Ghia, but there will be grille at the front and no louvers at the back. Unfortunately it will still have fins, but tail lights will no longer be from Detroit. The Charles still has a long way to go, but it may have some answers for town use.*

comes with the car. A full charge, they say, takes about seven hours at a cost comparable to a half-gallon of regular-grade gasoline, and in the production versions this charge will give upwards of 80 miles of driving. New batteries will cost about \$200.

The first batch of five pilot production models is now in construction. The first three cars will have the electric motors directly on the axle shafts with *no* differential—and here the Stinson executives become a bit uncommunicative. The second two cars of this pre-production pilot batch will have Stinson's own differentials, "with the production-type 3.2-hp electric motors mounted aft of the axles similar to the prototype's motors."

Future plans are in the realm of the exotic. Stinson executives tell us that they have tested about every kind of battery presently available (including some nuclear units) and some especially prototyped for the possible use in the Charles. Exide, for instance, developed a special gang of batteries at a cost of some \$30,000. But, in the words of Dr. Graves, "We are sticking to the average moderately priced battery simply because we prefer to hold the initial consumer cost down to a reasonable level."

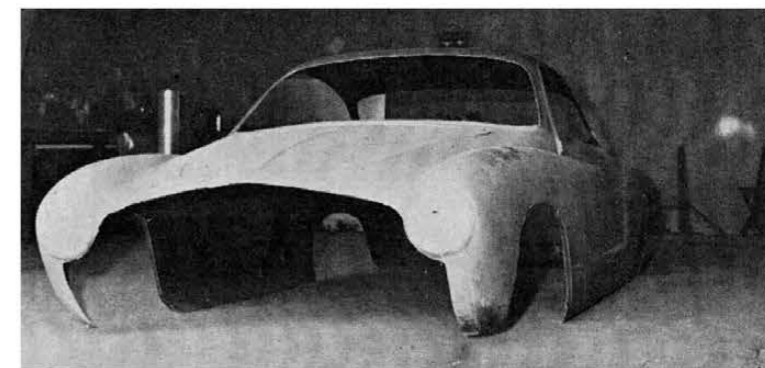
Asked what this price policy means to the eventual consumer, Graves said that it was the aim of Stinson to deliver these cars to the consumer through an established chain of dealers ("just about every type of reputable dealer you can



*Clearly a steel-bodied Karmann-Ghia in spite of the odd bumpers, fins and tail lights, the Charles prototype displays its inner workings. The clipboard of the man at the left points to the charger plug.*

**S**TINSON Aircraft Tool & Engineering Corporation of San Diego, Calif., is not an upstart firm. Deane Van Noy, president, became associated with the company back in the days when Eddie Stinson was one of the big names in aviation. Engineer Van Noy has guided Stinson in recent years to the point where it is one of the top rated subcontractors on defense projects. Van Noy engineered the control system for one of this country's leading long-range bombers currently in production. The firm is also responsible for much of the popularity of electrically driven golf carts and suburban two-seat shopping rigs. This electric passenger car is the outgrowth of the latter activities. Dr. Charles H. Graves, a San Diego dentist, is a physicist and inventor on the side. He is executive vice-president of Stinson, and this new electric car bears his first name.

The prototype of the Charles Town-About is, in almost all respects, a Volkswagen Karmann-Ghia. The rear fenders have been heavily customized with fins, and the triple tail lights are stock De Soto parts; the bumpers are chromed steel tubing wrapped around the sides, and there is a front grille. The stock VW transmission is used, as are all the other conventional VW components except the engine; two



name, Big Three and otherwise") for no more than \$2500.

Van Noy says that "the first 100 cars will be delivered in July to major utility companies throughout the country—every major city in each state is represented. After the utility companies get the cars—and they are as excited as we are over the potential possibilities—the first deliveries of about 200 cars will take place through San Diego dealers. In November of this year Los Angeles will see them in showrooms." Target for the first year in production is 2000 cars.

To be able to drive without adding to the smog problem and for 15 to 18 cents for 80 miles or so a day is economy transportation for certain. Stinson hopes to increase the range to 100 miles. The Charles is not considered an open highway car; rather it is to be touted as a second car for commuters, for the mother with school and shopping needs, and for the city and suburban driver who has had it with huge gas bills, exhaust maintenance, etc.

Our honest appraisal of the Charles is that Stinson definitely has something. Of course, we would like to see more original styling, though they have picked a handsome car to copy. With the lighter production version, performance should be more tolerable (that of the prototype is disappointing, to say the least) and actually comparable to that of cars like the Fiat 600.

Time will tell; we wish them well.