

THIS TEST hammered one thing home to us—don't even try to drive fast, let alone race, unless your car is in top shape. And the only way you can guarantee this is by assuming that nothing has been done. And if the car is a new one, this goes double.

We picked up our 500cc Berkeley from Tony Pompeo's, located on W. 19th Street so close to the water that the unloading booms practically lower the cars right into his shop. The car is the property of John deGarmo, who lent it to us for the test, and it was too new. It wasn't until the second day we had it that we washed the dust from it. We didn't give Tony enough time to prepare it, deciding to take our chances. After all, how much can a new car need?

Well, first it needs a thousand miles of running in, and this we gave it. In the course of the thousand miles we discovered (1) the battery was discharged on the boat and needed recharging (2) the shifting linkage was not adjusted properly. To downshift into third, you had to go into second and then come back, and (3) the clutch will slip under power unless it is adjusted.

A few months ago John deGarmo notified us that Berkeley Cars, Ltd. were about to get both feet into racing by way of factory options. Simply stated, this meant a hop-up kit.

Here are the steps the factory suggests. All mating surfaces in the induction system are to be fitted. This includes aligning the transfer ports of the cylinder and the crankcase, trimming of the base of the cylinder to match the larger entrance to the transfer port, and enlargement and polishing of the transfer port itself to allow earlier entry of a larger volume of gas. The enlargement is done by means of factory-provided templates. The polishing is very awkward to do, a curved file being required, but as the tuning pamphlet says, "patience and care are well repaid in an improved performance."



Berkeley Cars, Ltd. now have both feet in class racing. Properly set up with factory options, the 500cc'er can be a class winner. For the casual strictly-as-a-hobby entrant, it provides the most fun return for dollar investment.

BERKELEY 500

Remember that the Berkeley is powered by a two-stroke engine. As such it has no valves and no cam. Ports, or shaped holes, in the walls of the cylinders scavenge exhaust gases and admit a fresh charge. The timing at which this takes place is a function of the vertical placement of the intake and exhaust ports both in relation to TDC and to each other, and of the length and shape of the piston skirt. Thus, altering the piston skirt or enlarging these holes on the vertical plane is the direct equivalent to putting a hot cam into a four-stroke engine.

Now that the cylinder has been modified, it is necessary to correspondingly modify the piston. An optional Super Sports piston has narrower rings (to postpone flutter) and provision for better lubrication at higher revs. The skirts of the pistons are then filed away to corre-

spond to the newly-shaped ports. As a final machine job, the head is planed a sixteenth to bring the compression ratio up to the capabilities of modern American fuel.

Exhaust tuning is a ticklish proposition with a two-stroke engine. We watched a Berkeley driver once as he made a straight-through exhaust system, which he assumed would give him more power because it removed all back pressure. He couldn't get enough power from the engine to put the car in motion. Never use a four-stroke's tuned exhaust system, as two-stroke engine requirements are entirely different. A two-stroke seems to thrive on a little back pressure. The factory recommends the expansion chamber that extends across the front of the engine on the late '58 models.

Everything is clearly spelled out, so we

had only one difficulty. It seems that nothing but advice had reached this side of the water. We had no templates. We had to confine ourselves to what we could get from 500 very-strictly-stock cc's.

When we road tested the 328 cc Berkeley last February, we stated that another 172 cc would be a welcome addition. It was a surprising addition. Pulling onto the Connecticut Thruway, we took the 500 cc'er up to 50 mph in second, and seventy in third. We were truly surprised by the response, and the "big" Berkeley has no trouble keeping up with the traffic. Cutting off onto route 7, and motoring over the twists and turns to Lime Rock, the smallness of the car was a big asset: the road was proportionately twice as wide. And the lightweight machine, with its gutty engine powering into the front wheels, is a remarkably good road machine. But it is different.

On the track, we adhered to the rules that govern the operation of front-wheel-driven vehicles at speed, with one exception. We kept the foot throttle on the floor, but we did not reach over to tap the brake with the left foot. It was absolutely unnecessary. With one exception—the end of the long straight—no braking was needed.

Tossing the Berkeley into turns, one is aware that the rear end is exceedingly light. Perhaps you will remember the road test of the 328 cc version, when one of our editors picked up the rear end; he did it with the 500 cc model, too. This lightness is not an evil *per se*, however it does require careful handling. You get the feeling that once the rear starts out—and it goes out suddenly—it's going to go out

all the way. But the same lightness that allows it to go out makes it very easy to bring back. We never had any real trouble, but we were prepared for it if it did come along.

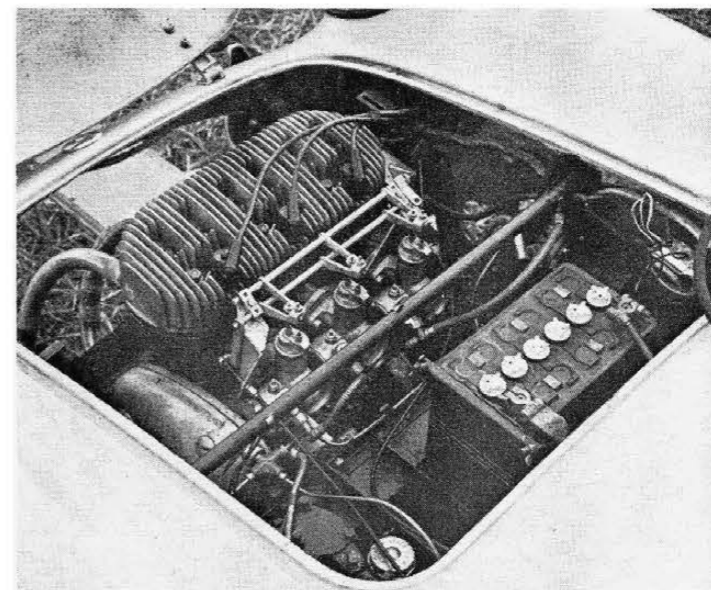
The car is a tracker. The rear wants to follow the front around, and it will do so as long as enough power is going into the front wheels to pull. But a sudden side bite, induced by cutting the wheel sharply into the corner, causes the rear wheels to go out just as suddenly. Getting off the accelerator is a mistake: you have to ease off on the steering lock. Like many front wheel drive cars, its understeering and oversteering characteristics vary with throttle opening.

Lap times: we really don't want to give any. The engine was not loose enough for us to stand on it for extended duration, and its stiffness kept it from winding to its potential. In addition, competition conditions induced a little slippage in the clutch. If we had the time we would have adjusted it; but we didn't. We toured the circuit rapidly, and nearly managed to keep up with bigger machinery that was touring in the same manner. It was apparent, however, that an engine utilizing the factory options will go a lot quicker, both on the straights and through the turns. Properly handled by a driver experienced in the car, the 500 cc Berkeley can be a serious race car.

But just as important is the psychology of racing the Berkeley. It's an ideal machine for the hobbyist racer. Whether you win or lose—and with preparation you can win—you'll have a ball. You'll get a tremendous fun return for your investment.

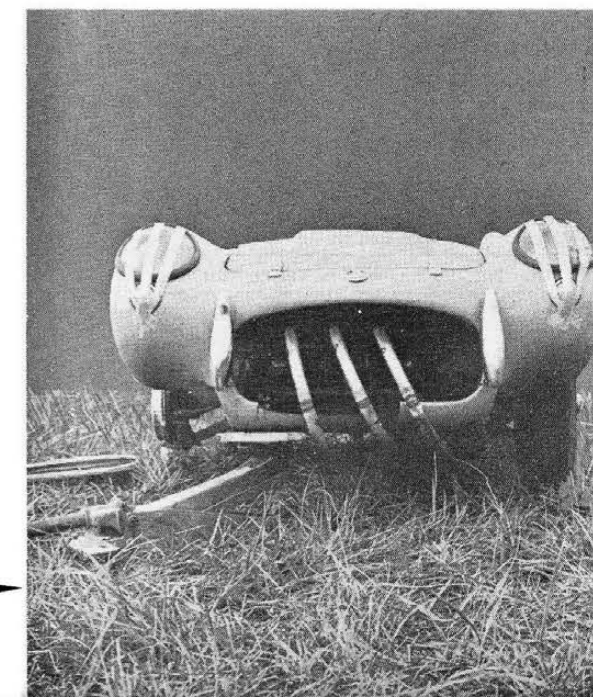
—lfg

As with most front-wheel driven cars, steer characteristics are a function of throttle opening. The Berkeley tracks; however rear can be induced to break away suddenly.



So light that three men can literally pick up and carry the car, the 500cc three-barrel two-stroker has plenty of guts and go. With the hop-up kit, it's a lively competitor that can win.

Tuned exhausts from four-strokes don't do it; two-strokes thrive on a little back pressure. There's always room for experimentation.



DUAL-PURPOSE
SPORTS CARS
FOR 1959