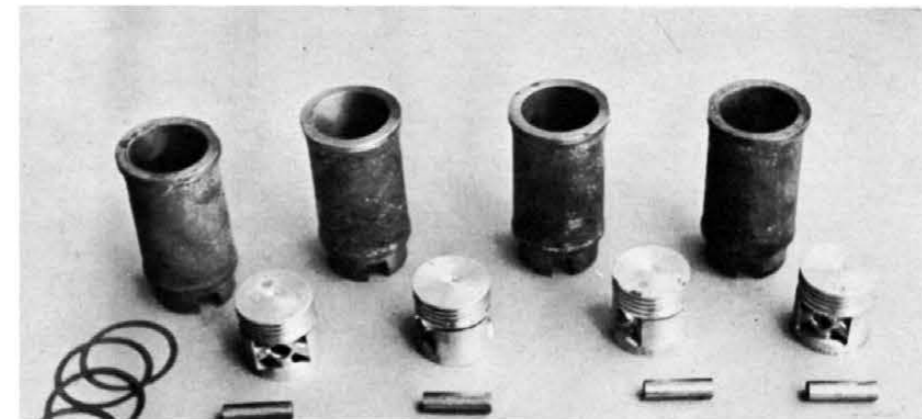
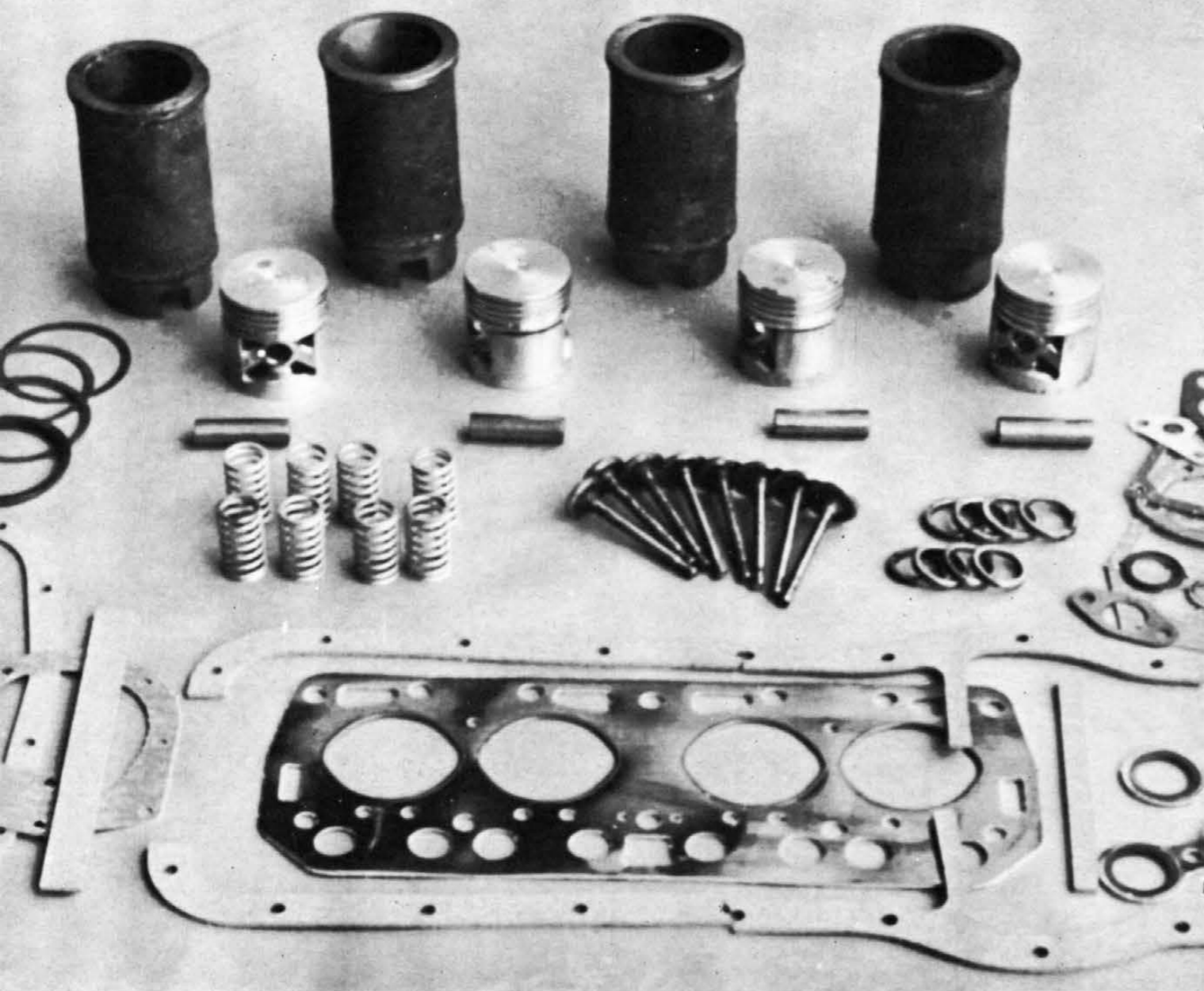


more

GO

for Renault



Wet liners (top row) are sealed at bottom by O-ring gaskets pictured at left. Center Row: pistons. Bottom Row: wrist pins.

By ALEX WALORDY

A LITTLE car that has been almost totally overlooked in this country is the French Renault. Models from '49 to '51 are easily available at from one to two hundred dollars and new parts are also quite plentiful.

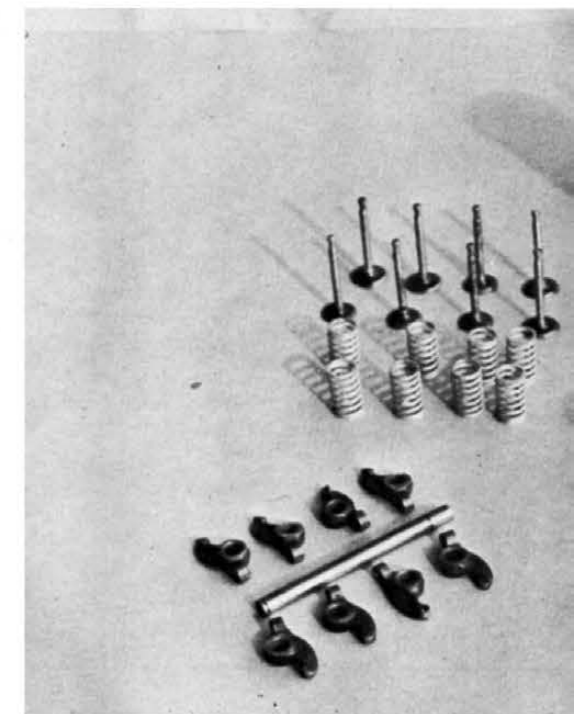
With the same size engine as the Crosley, and a practically indestructible combination of transmission and differential, swing axles, and knee action front, the Renault provides all the elements for a successful, live little number. It will never equal the acceleration of an "88" Olds, but it will corner with the best of them, fit into parking spots you never thought possible, and generally give a good account of itself. And all of this on a 45 cu. inch engine. Besides, competition in this class is not quite as fierce as in the 1500cc group.

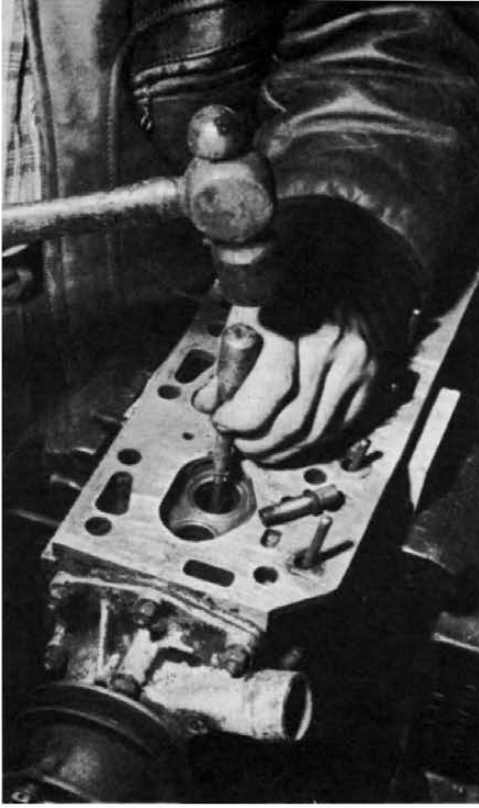
The Renault is widely used in Europe both in stock and factory modified form. Equipped with a "prototype" shell, the modified 1063 ran at Le Mans. In hopped up trim as much as 48 hp at 6500 rpm has been obtained from the stock engine which normally percolates at 21 hp and 4100 rpm. This certainly compares favorably with the Crosley. Considering a weight of 1200 lbs for the car and excellent road handling ability, it can be made into a very desirable little runabout.

The Renault has the advantage of a removable wet sleeve engine. This means that the sleeve, piston, wrist pin and rings are available as a matched assembly from the factory for less than you would pay for just rings and pins for your trusty Ford. Because we did not want to exceed the 750cc Class, boring and stroking were strictly out. This then left plenty of time to work on the head and manifold.

To do the work properly you will need a few items. A Renault shop manual is very desirable and will save a lot of fumbling. A machine shop will be of incalculable help,

Valves, valve springs and part of rocker arm assembly. Unless valves, valve springs, and rockers are new, they should be replaced in order of removal.

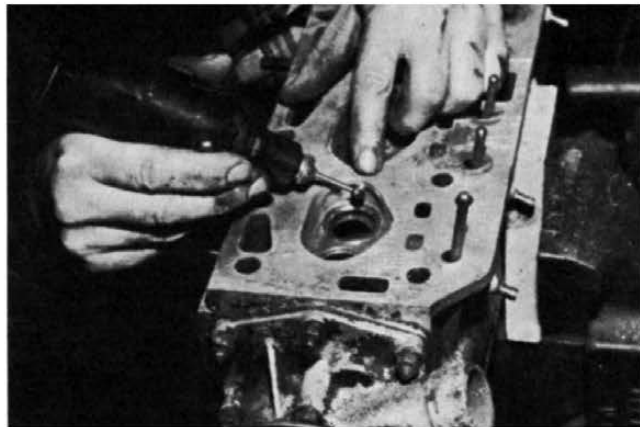




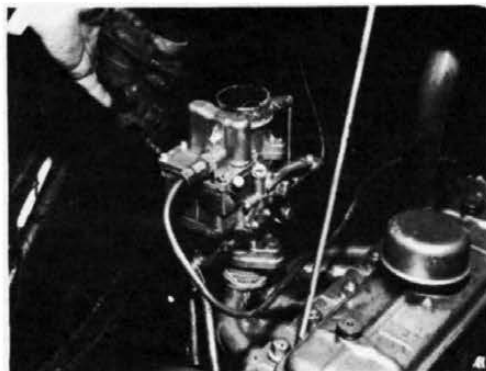
Knocking out valve guides with punch and hammer. This leaves room for cleaning, grinding and polishing ports.



Using a small burr to clean intake ports, mechanic is careful not to dig through the thin walls.



Rounding out combustion chambers with a burring tool. Here the mechanic is cautious not to damage valve seats.



Factory recommended Solex is replaced by a 431 RS Carter. Larger venturi opening helps breathing.

and a few metric wrenches will undoubtedly be an aid, especially in the small sizes listed below:

Sockets—12mm (For the L.C. connecting rods) between 7/16" & 1/2"

Sockets—14mm (For the head bolts, and mains) between 1/2" & 9/16"

and

Open end box wrenches 8, 9, 10, 11, 12, 14 mms.

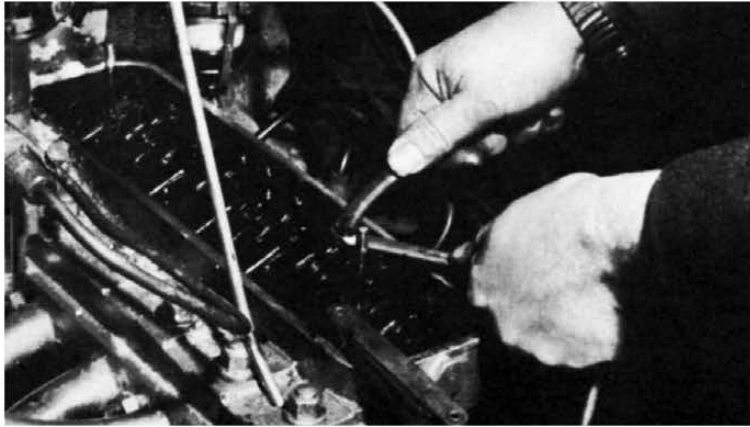
The choice is to buy them, make them, or strip all the bolt heads. All you need for making them are the American size ranges one size below, a good file, and a little patience. We made the wrenches but bought the sockets (Snap-On). American wrenches in 1/32 sizes will fit precisely and cost considerably less than the metric equivalents.

The Renault has a well designed aluminum head that leaves room for substantial detailed development. To start with, pull out the valves and springs. Remove the water pump and the plate opposite it, and clean the head thoroughly.

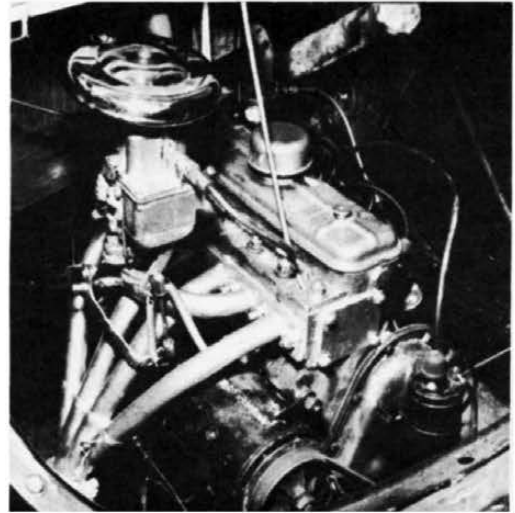
Next turn out on a lathe, a punch which will fit snugly into the valve guide and a guide inserter by drilling a 5/8

rod with a drill slightly larger than the rocker side of the guide. Do not use a guide remover as an inserter as you risk burring the guide. Remove the guides and run a hone through all the ports, but do not remove too much metal. It is very easy to strike water. Next, get a small burr and continue the clean-up work; round out the contours near the valve guide and at the angle near the valve ports. Try for contour improvement, but retain the original shape and stay away from the water wells. Follow through with sanding disk and emery cloth. Perfection pays off. One thirty-second to one sixteenth of an inch is the most metal that should be removed from any one spot.

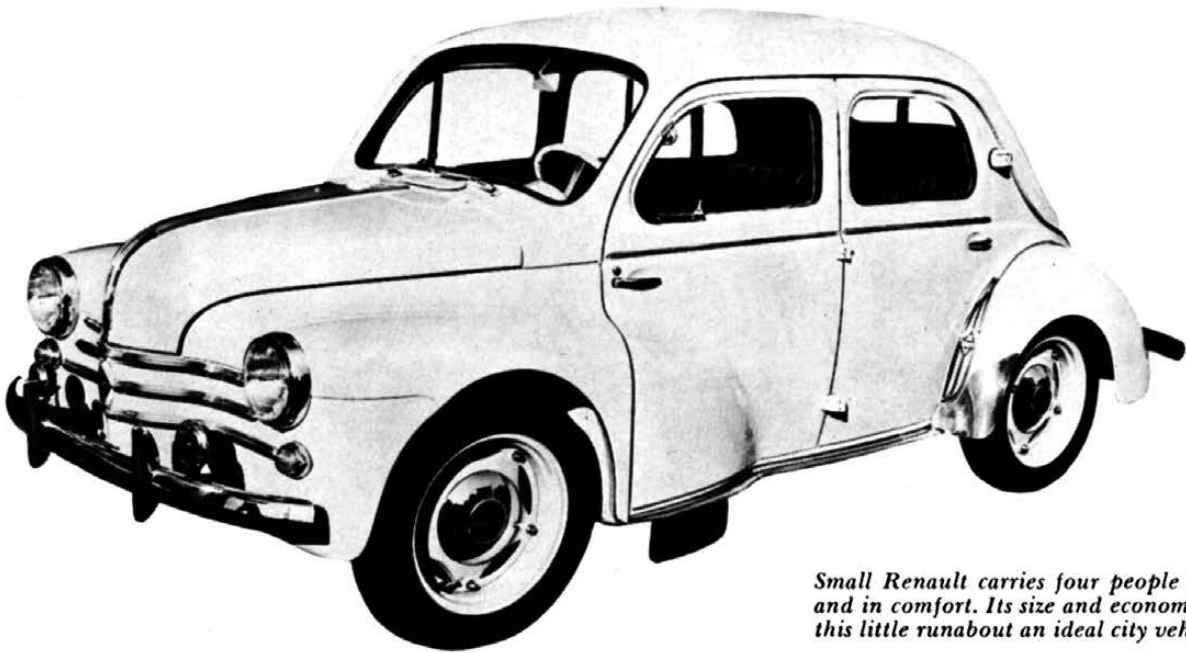
Now let us look over the combustion chambers proper. The casting has channels in it next to the valves to smooth out the gas flow. The intersections of the cut surfaces and the rest of the head should be rounded off with at least a 1/8 radius. The two casting ridges next to the plug should also



Adjusting tappets to .010 straight through. Old wrench with filed out slot fits the adjusting screws. For competition, set .006 hot.



Engine after slight modifications have taken place. Note new manifold, and larger carburetor.



Small Renault carries four people with ease and in comfort. Its size and economy make this little runabout an ideal city vehicle.

be removed. A good polishing job will complete the task.

The next operation is shaving the head. It is advisable, however, to first remove rocker arms in preparation for the head milling. The proper amount is .025 on cars later than '49 and .040 on '49s and earlier. The best way is to use a fly-cutter or a miller unless a regular aluminum wheel is available. Do not send it to an automotive machine shop as you would a cast iron head. The combustion chamber volumes are small and a few thousandths out of the way will make a lot of difference. Also a coarse iron stone will rip aluminum to shreds and clog the stone.

One way to set up the job is to lay the head flat on a miller table and take a few thousandths cut to true up the section where the rocker arm cover fits. Then having a true reference plane turn the head upside down and cut the

head itself. Try to use a cutter that will do the full width of the head in one sweep.

Now you can install your new guides. Careful! They come in various over-sizes. Turn them down to size first, then install them in the head. Do not bore out the head. We hope you won't be penny-wise and pound-foolish by saving on new valves and springs. The stock installation calls for one shim under each valve spring. We used three shims to good advantage. This is strongly advised when rpm's will be boosted from 4100 to 5500.

We can now reassemble the head and pay some attention to the rocker arms. The factory recommends a \$20.00 puller to remove the rocker arm shafts but a good drift punch gently handled will get them in and out like butter. You will

(Continued on page 64)

Renault

(Continued from page 45)

save a lot of work by taking the parts off and laying them out in sequence. Try the other way and find out why.

A replacement manifold is available from Renault and is actually the optional '55 manifold. It is perfectly satisfactory and could be easily modified to a two-carburetor set up but we haven't reached this stage yet.

The new manifold requires two extra studs in the head. The studs that come in the kit have metric threads so you are better off using 5/16" into the head. The muffler installation presents no particular problem. On our own job we used a Hollywood muffler, cut out the holding brackets from the Renault muffler, made brackets from 1/16 strap iron to hold the brackets to the muffler, welded up the pipe to go from the manifold to the muffler, and assembled the works. If you are wondering about the tail pipe, we have a consolation for you. The stock Renault doesn't have one either.

Last but not least, comes the carburetor. The stock one is a small Solex without an accelerating pump and has little to recommend it except a very excellent choke system that consists of a secondary carburetor and no obstructions in

the carburetor throat. It can be used with the replacement manifold with a small adaptor at considerable loss of power. The factory recommendations call for a 32mm Solex, PBIC, a very fine carburetor indeed and it should be for a \$34.00 list price. It can be replaced successfully by a 431 RS Carter carburetor for less than \$12.00 and it fits and works perfectly. It has a universal mounting flange which must be centered before installation. The main jet is adjustable from the outside and it is otherwise a stock W.O. Carter.

A distributor setting of five to eight degrees in advance of factory timing is advisable. The factory tappet clearance (set hot) of .008 and .012 can be modified to an even .010 all the way around. For competition a hot .006 setting will improve the performance. The valves are adjusted more easily by making a little slot in an old wrench to fit the flats of the adjusting screws. This completes the engine work.

We made a few modifications to the suspension, like installing a '55 Renault stabilizer bar and heavy duty airplane type shock absorbers borrowed from a Plymouth.

The Renault factory puts out souping up equipment of their own under the brand name of Autobleu. Their kit, for \$265, includes a reground cam, a modified cylinder head, a manifold slightly larger than the one we used

and the 32 PBIC carburetor. They also offer a larger distributor with a tachometer take-off and a tachometer. The cylinder head they offer has larger valves and ports than the stock head and is sold on an exchange basis. A word to the wise: The intake valve on the old head is exactly the same size as the exhaust valve on the new head. The new head gives remarkable performance considering the fact that the original 7.25:1 compression ratio has been retained. However, the workmanship on the exchange head leaves a lot of room for improvement. The manual spark control we incorporated with the distributor is a great help in starting. Autobleu considers their valve timing top secret.

Top speeds were increased from:
15 miles to 22 miles an hour in 1st.
35 miles to 60 miles an hour in 2nd.
68 miles to 80 plus miles an hour wide open in high.

Not bad for an engine that fits in your vest pocket.

With the old manifold and stock setup the engine puts out 21 hp at 4100 rpm. With the new manifold the power is boosted to 28 hp at 4500 rpm. While with the complete Autobleu kit 35 hp at 5500 rpm is claimed.

With an extractor type tuned exhaust and larger carburetor, a compressor and a strong tailwind — oh well, a fellow can dream, can't he? #

VW

(Continued from page 49)

tates of low weight and compactness, chose a radius-type cam follower. This design is excellent for use with the hollow-flank or constant-acceleration cam which happens to be an Iskenderian specialty. Using the same principles applied in their 404 and Offenhauser grinds, the VW cam lift was increased and the rate of opening and closing accelerated. The popular road grind has a lift of .318-in. at the cam. The opening rate is such that at top dead center the valve is already .060-in. off the seat and is fully open at 90 degrees after TDC, when the piston has reached maximum velocity. This in itself is a tremendous step in overcoming the disadvantages of the VW's small valves and restricted porting.

The inevitable loss of power at low speeds associated with high-performance valve timing has been kept to a minimum here because the stock VW is so "under-cammed" that the low-speed characteristics of the modified

camshaft are almost within the limits of "normal stock" practices. A smooth idle is possible and if anything is lost "at the bottom" the increase in compression ratio effectively offsets it. The drawings show the various grinds compared to stock VW timing. Naturally, increased overlap is exploited as a means of improving breathing efficiency. But to take full advantage of this modification, a well-engineered exhaust system is essential, and that's the third important part of the combination.

Actually, it's the most important single factor and, by itself, it makes a big improvement in performance. It is interesting that even the factory relented on this point after reportedly being against it earlier, and has fitted dual exhausts to its latest models. But most tune-up experts continue to swear by the excellently-engineered Abarth exhaust system for all VW's.

The stock VW intake manifold's extreme length and small diameter exaggerates all the classic ills of carburetion. Pulsation, wall-friction, uncontrollable column inertia are only a few of the maladies that deliver unbalanced volumes and mixtures to the VW's cylinders. Some owners are con-

tent to settle for the limited top speed of the single-carb modified unit, feeling that the extra expense of fitting dual carbs is not worthwhile for only a few mph gain in top speed and very little improvement in acceleration. But the marked reluctance of the engine to rev freely with the single *vergaser* actually takes a lot out of overall performance figures. Higher shifting points reached sooner in second and third gears make this final change very desirable.

It's true that the fitting of two carbs, even with their short manifolds, will not completely cure all the VW's breathing problems, but it does increase the venturi or carburetor throat area. The importance of this at high revs becomes clearer when it is realized that throttle action is simply a method of varying the effective throat area. For the dual-carburetor conversion, two stock Solex 28PCI carbs with stock jets may be used, which involves the fabrication of special manifolds and throttle linkage. A complete kit, containing two Amal-type carbs and all necessary incidentals, is available from Competition Chemicals, Iowa Falls, Iowa, for \$80.

The cost of the complete "VW com-