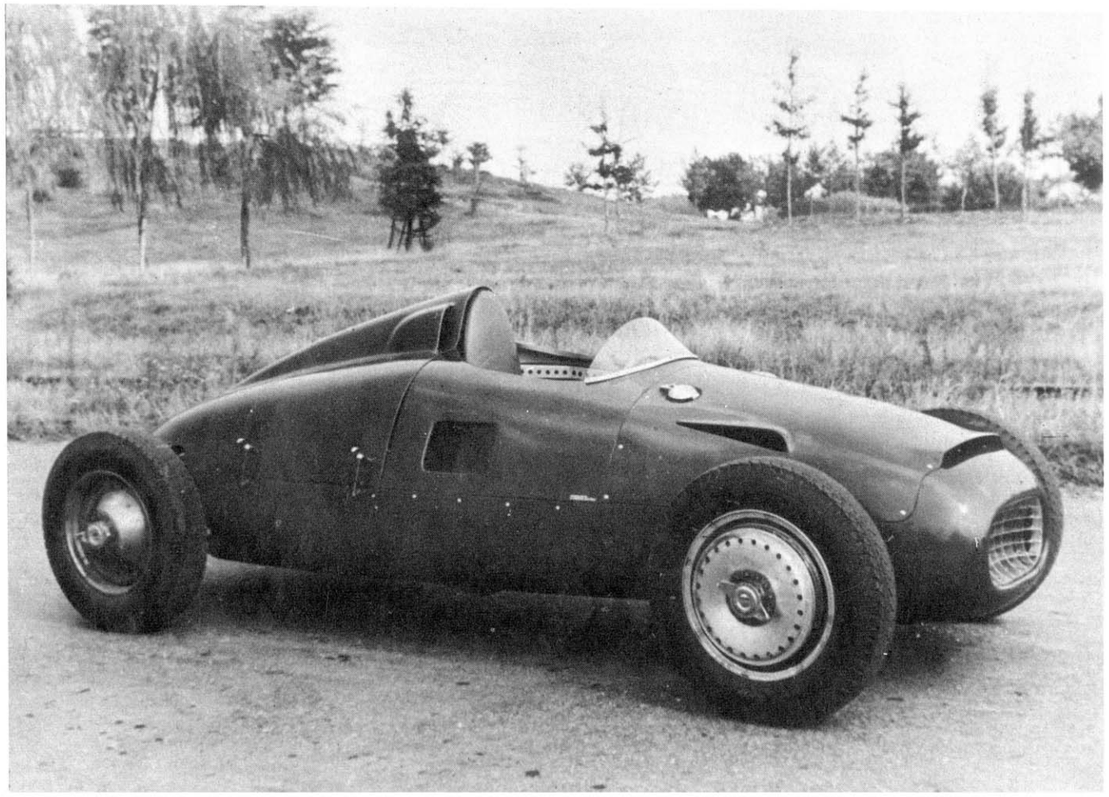


There are seven air ducts built into this 70 pound body of the Nardi-Lancia Grand Prix model.

Pan-Am Winning

Winning races means more to European auto factories and the Italian Lancia Works is no exception.

THE roar of all the Lancia winners in the last Carrera PanAmericana hasn't yet muffled the high glee coming out of the Lancia Works of Torino, Italy.

Almost a stranger on the American automotive scene and a non-performer in the Grand Prix classics since the close of World War II, Lancia is on the move.

Behind the conservative facade of the Lancia Works in Torino there is a lively mind at work, geared to the demands of speed-impressed Italians, and the Mexican results this year mean the Italians may have to make room for foreign orders.

Lancia is aware of this. The result is the production of one engine in the 2,000 CC class which turns out—after modifications—to be just one of three brothers: The B15, the B21 or the B22.

Almost identical outside, they range in horsepower output from 65 to 90, with RPM ranges of 4000; 4500 and 5000, in that order.

Just around the block in Torino, the master, Signor Nardi, comes up with a 103 HP version, fed through six Amal-type carburetors. Across town, at the Abarth place, is the third series of the very same powerplant (the 90 HP version). It undergoes special treatment to come up with 115 HP at 5800 RPM. If this isn't enough, go on out to Italmeccanica, where modifications and a supercharger go on to produce 115 HP at 5600 RPM, or just enough to give it 110 MPH.

To mince no words and make it easy, let's look at the major differences of the various Lancia-made engine types:

The bore and stroke of the three engines are identical, 2.808 by 3.178 inches. The piston displacement is 1,991 CC (121.451 cubic inches); the engine weight, 330.5 pounds.

Thus it appears that the B21 engine of 70 horsepower yields more, due to higher compression, with the same camshaft and carburetor set-up as the basic B15 65 HP plant. The conclusions from the above list further show that the B22 engine of 90 HP gains the 20 HP by use of a hotter cam, resulting higher RPM, the use of wider-diameter venturi, but still with the 70 HP engine's 7.8:1 compression

Depending on timing, the ignition advance for the B15 basic engine eight degrees in advance. For the B21 it is 10 and the B22 it is 14 degrees fast. Valve operation is the same on all three engines, with the exception that the strongest type, the 90-horsepower B22, has a higher exhaust lift.

Translated into actual driving all this means:

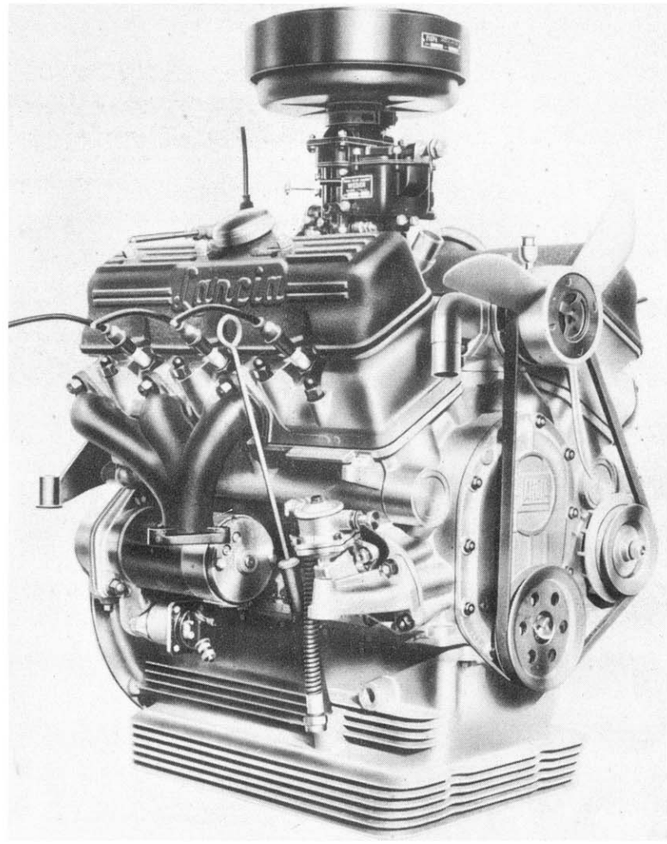
The B15's top speed in first is 25; in second, 38.5; third, 56.5; and fourth, 83. In maximal climb, same gear shift order it is 29, 17, 11.5 and 7.

The B21—top speed, 26, 41, 60 and 87.5; maximal climb, 32, 21, 11.5 and 7.

The B22—top speed, 30, 46, 68, 100; maximal climb, 32, 21, 11.5 and 6.

Mileage, in U.S. gallons per mile runs like this: The B15, 24 miles to the gallon; the B21, about 24; and the B22, about 22.5.

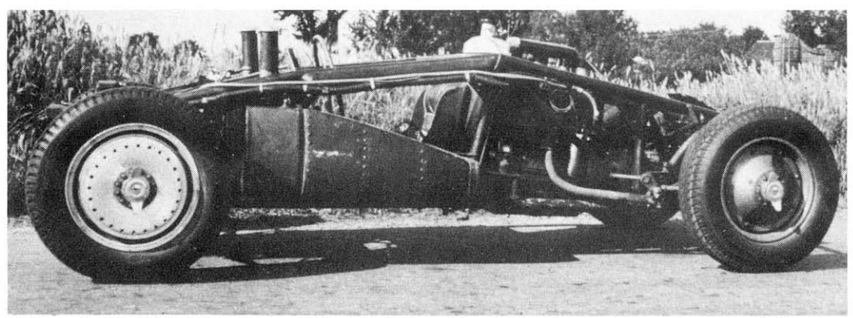
Dissatisfied with the 2,000 CC engines



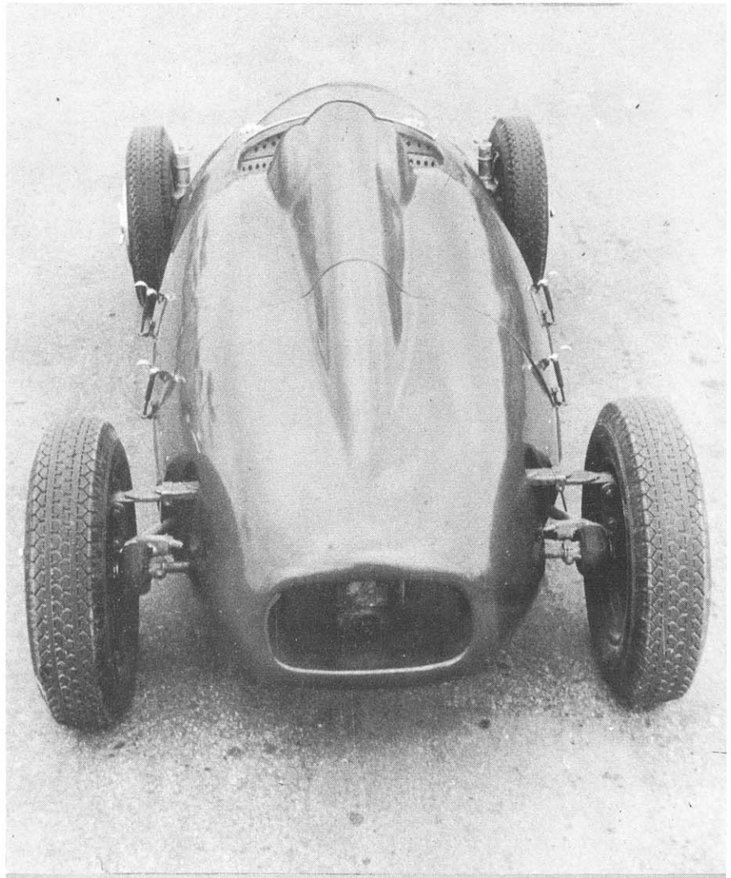
B21 engine with dual-throat carburetor.

LANCIA

By F. H. BAER
CAR LIFE FEATURE WRITER

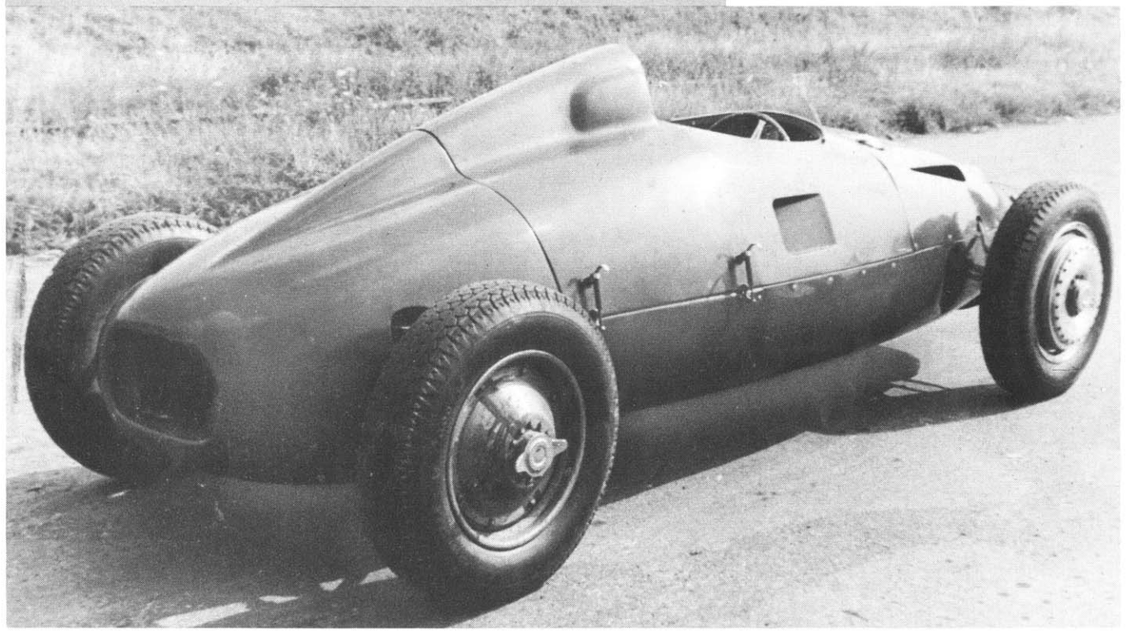


Side view of frame shows unorthodox construction. Driver enters from top.



Aerodynamic form is rated by European experts as most efficient

Nardi-Lancia Grand Prix car has an easily accesible engine compartment.



yield of under 100 horsepower, the Italians seek Signor Nardi's stabilimente. There the engine is lifted out and the car put aside for three days during which the modifications are made at a cost of about $180.

Nardi takes, for example, the B21 engine with its 70 HP at 4500 RPM. Step one is doing away with the intake manifold and set in six Italian-made Dell'Orte (Amal type) carburetors with three floating chambers for the six barrels. Then the engine goes on the bench for testing for minimum yield.

It shows the B21, with a compression ration of 8.3:1 and the modest-lobed camshaft and the six carburetors has exceeded the yield of the B22 with 20 horsepower more than the original.

The second step is a compression ratio change which steps it up to 103 HP at 5000 RPM. Against this welcome addition of power the creation of engine knocks during acceleration or when the powerplant labors.

Profits from the use of the Amal-type carburetor are easily seen, but the maintenance and servicing of it produces more headaches than horsepower. Synchronizing is the great mechanical chore and only shops with special vacuum-based synchronizers are able to do a good job.

Signor Abarth uses a different tactic to exceed the 100 MHP mark and uses a way closer to the American method of souping. He starts with a combustion chamber treatment, enlarges the porthole for the exhaust valve to fit a larger diameter valve. Later he puts in a stronger valve spring: goes over the main and connecting rod bearings, throws out the factory pistons, crankshaft, intake manifold and carburetors.

All this does not make the Lancia people mad. He has their exclusive permission. Abarth then starts putting the powerplant back together with his own products. The crankshaft is cut out of one steel billet, has new centrifugal force balancing units, wider bearing journals and is generally stiffer than stock items. The standard connecting rods are attached to the crank, new positions with dome-shaped face and four chromed rings are fitted. Then come new valves and springs.

On the bench, it has to yield 115 HP, or down it comes.

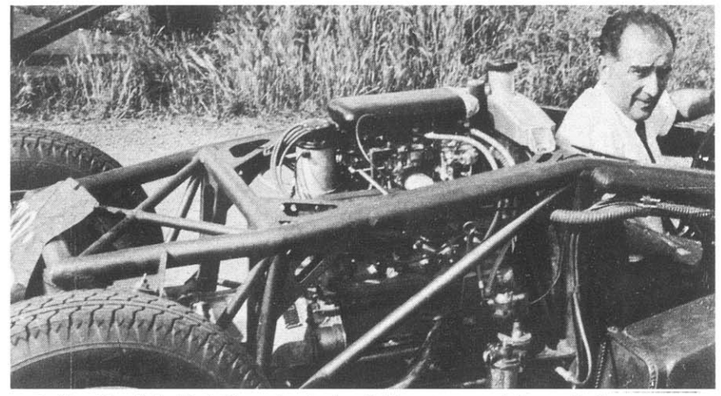
The charge? About $600.

The third 'brother' in the Lancia family comes from Italmeccanica, who do it the simple way with quick-change superchargers. They turn out 13 different types, designed for every powerplant from 30 to 500 cubic inch piston displacement. (That 500 is for aircraft!)

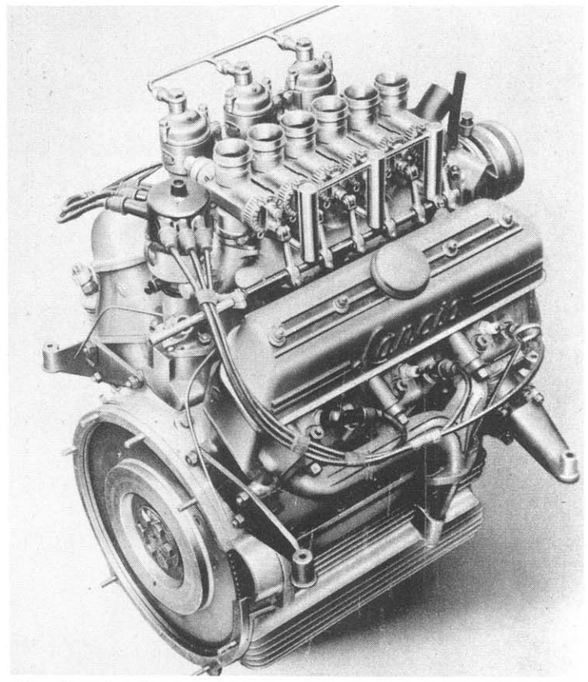
The I. T. 2,000 type is made for the Lancia Aurelia. For $245 you can buy a complete kit, supercharger and fittings and get 108 HP at 5700 RPM. Blown engines normally turn up higher, but the Italmeccanica people are economy minded. They choose a lower pressure for the supercharger and an especially tested RPM ratio between the crankshaft and the supercharger's two lobe axles. This ratio, they won't talk about.

The wizard Nardi took one of the Lancia basic design engines and put it through a second step late in 1952. He came up with a compression ratio of 12:1 by using three Weber 40 downdraft carburetors on a special manifold, special crankshaft larger valves, hot cam and magneto ignition.

It was a Grand Prix production, but despite its estimated 145 MPH speed, it never raced. Few people outside Lancia and Nardi, ever have seen it. ☆☆



Enrico Nardi behind the wheel of a 2-liter powered Formula 2 race car.



Nardi radically changes the fuel feed system to get 103 hp

Statistical data on the three Lancia models.

	B15	B21	B22
HP rating at corresponding RPM	65	70	90
Maximum RPM	4000	4500	5000
	4800	4800	5000
Maximum torque lbs/ft at RPM	87.04	94.03	101.5
	2500 to	2500 to	3500 to
	3000	3000	4000
Corresp. HP at Maximum torque	45	50	7.8:1
Carburetor type	Solex	Solex	Weber
	dual throat	dual throat	dual throat
Venturi diameter	30	30	40
Camshaft lobes, intake	16/67	16/67	31/81
Camshaft lobes, exhaust	60/23	60/23	67/25
Compression ratio	7:1		7.8:1