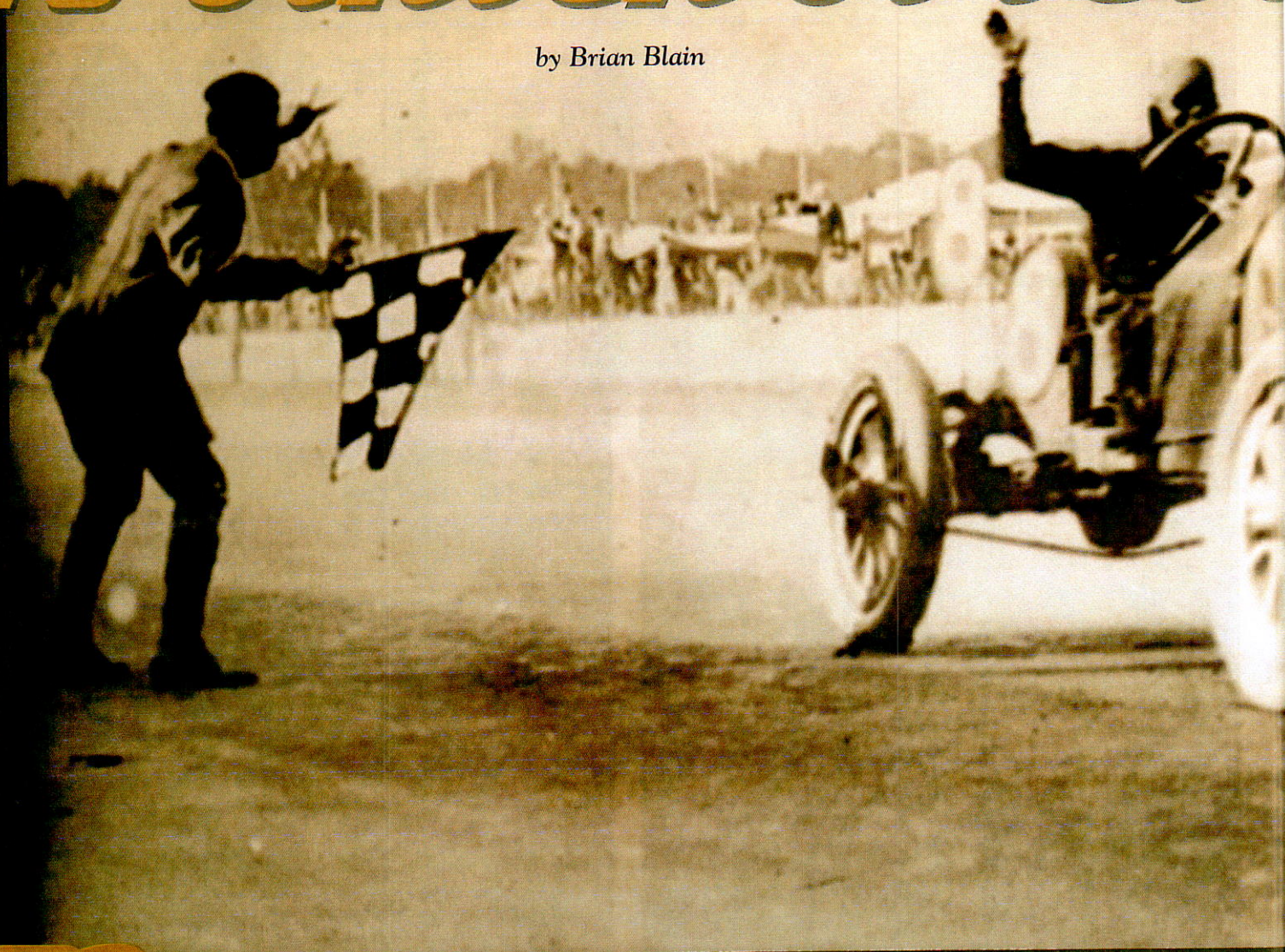


# To Finish First.

by Brian Blain



Each May, I am reminded of one of the most exciting races ever seen at the Indianapolis Motor Speedway. Unfortunately, none of us were around to see it. It was the second running of the 500-mile race in 1912, known as the "International Sweepstakes Race" when Joe "The Kid" Dawson won in a National, at the age of 22, over "Speed King" Ralph DePalma who had led the race for the first 198 laps. As the owner of a couple of National racecars, I have always been a bit offended by the repeated portrayal of Joe Dawson's win in the 1912 race as dumb luck. The facts show otherwise, and illustrate the old adage: to finish first, first you have to finish.

I find myself continually surprised at what our racing forefathers were able to accomplish with the limited resources they had at their disposal. It is hard to imagine some of the technical advances that were found on racecars prior to WWI—

yes the first World War. They included "modern innovations" such as dry sump oiling systems, hemispherical four-valve heads, dual overhead cams, multi-disc clutches, dual-spark ignitions and even superchargers. All of this was accomplished at a time when most automobiles were repaired (and occasionally built) in the local blacksmith shop. It is also humorous to read of some of the "new" innovations advertised in sports car magazines of the '50s and '60s that were not new, just forgotten.

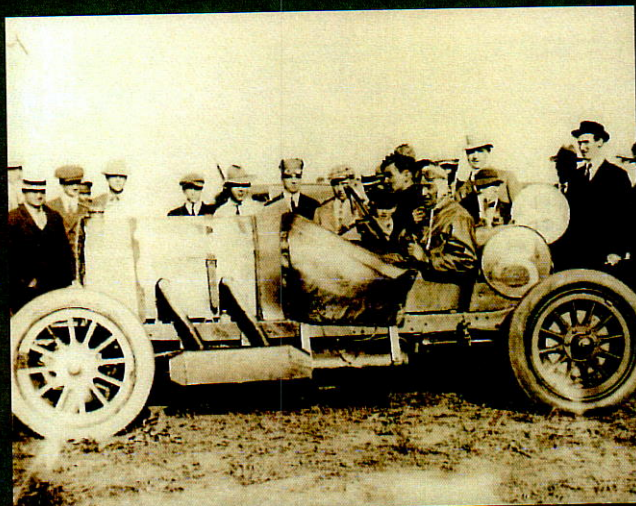
Like the mechanical innovations of the day that we have all but forgotten, I never realized how advanced they were in race preparation and strategy until I came across an article written shortly after the conclusion of the 1912 race. It was in a magazine called *Technical World* and written by Edward Fox, who conducted an in-depth analysis of the racing strategy that was apparently common in the day.



### ***Racing in 1912***

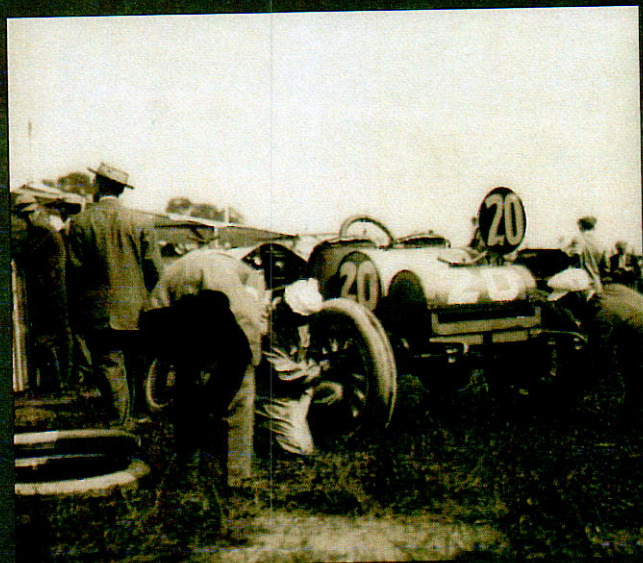
Racing was very different then. Take qualifying as an example. In 1911, your grid position was determined by when you paid your \$500 entry fee, and your race number was assigned based on that position. If you were the first one to sign up for the race, prove that you could reach 75 mph, and make a \$100 deposit, you were on the pole and car #1. None of this Q1, Q2, Q3 stuff. In 1911, the Marmon car company, which would go on to win the race with Ray Harroun at the wheel, signed up 14<sup>th</sup> and then thought it would be a good idea to have the same car number as their newly released car model the 32, so they traded with the car in the 32<sup>nd</sup> position and no one seemed to mind.

Scoring the race was a real big challenge. A couple attempts were made to string a tripwire across the track with an elaborate timing machine, but that ended up wrapped around someone's



(Above) At the conclusion of the race, winner Joe Dawson was covered in oil and dirt, and too tired for a victory dance after six long hours behind the wheel.

(Below) The author's 1911 National being tended to in the grass covered paddock before it ran in the first Indy 500.



(Left) Joe "The Kid" Dawson headed for victory in the 1912 Indianapolis 500-Mile Race in his National.

wheel. The dust and oil on the cars made it almost impossible to see the race numbers after the first hour, so they came up with an ingenious idea to put a round number plate on every car, with different colors for every 10 numbers. As an example, cars number 1 through 9 had black number plates, 10 thru 19 were white, 20 thru 29 red, and so on. So if timing and scoring only saw a 3 but it was on a red number plate, then they knew it had to be car number 23. When we look at the newsreels and black and white photos of the day, we would never have known that the number plates weren't the same color as the car. In fact, many modern restorations are incorrect as a result.

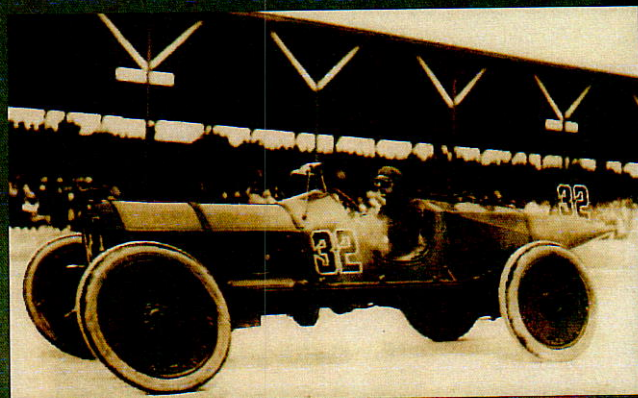
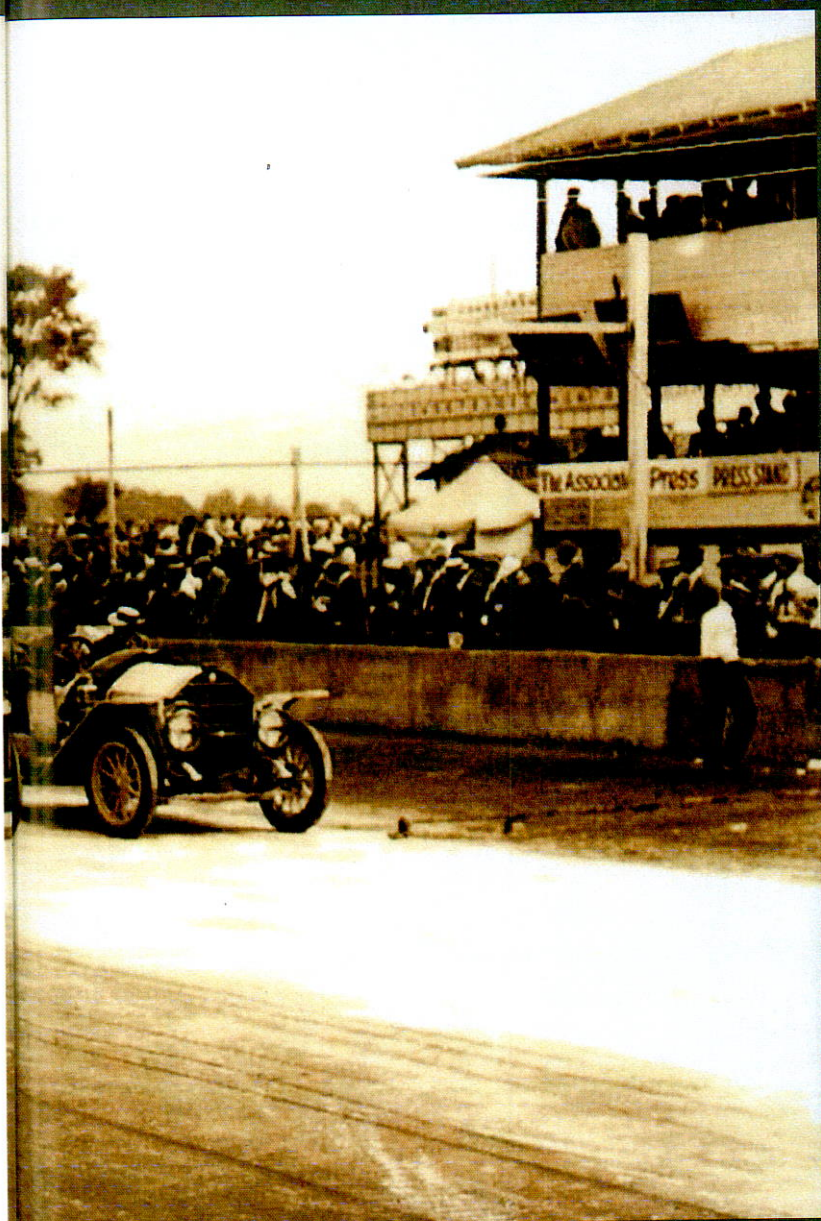
Race flags were also quite different, and would be very confusing to those of us racing today. Red meant "clear course," yellow was "stop immediately," green was "final lap" and white meant "stop for consultation."

driver's arms to reduce cramping and swelling that resulted from wrestling those huge steering wheels for six or seven hours. Stimulants (now considered illegal drugs) were occasionally administered as well.

Repairs were continual, and took place all around the track not just in the pits, commonly referred to as the "repair trench." At Indy in 1912, each repair trench was described as "the size of a room and as deep as a man's shoulders" and was located in front of the grandstand. Pit stops for one tire, fuel and oil could be completed in one minute for a top team, an outstanding achievement for the day. Quick-lift jacks occasionally consisted of a large block of wood and a long lever, usually a 4x4 wood post 10 feet long, that was jockeyed under the axle and leaned on by the heaviest member of the crew. Tires and wheels were two part assemblies back then, tires were mounted on a thin metal rim and inflated, then bolted onto a wooden wheel. Unless the wood wheel was damaged, tire changes consisted of unbolting the rim and tire from the wood wheel. If it was necessary to replace the wheel, it usually meant removing wheel bearings and occasionally the axle as well. Michelin came up with an ingenious quick-

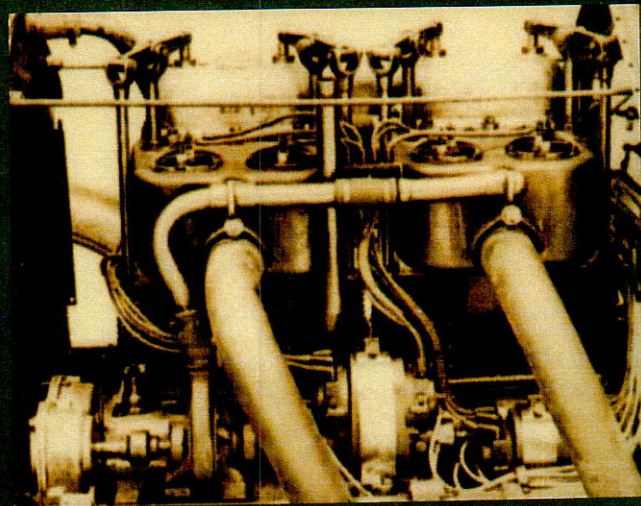
change rim that was held on with one bolt instead of eight, greatly reducing tire change time (no air guns back then). When tires failed completely, too far from the pits, they would be changed beside the track by the driver and mechanic, the reason you occasionally see several tires strapped to the back of cars of that time. Tires would only last 50 miles or so, not due to treadwear as much as the total shredding and failure of the tire.

The Indy 500 was more like the 24 Hours of Le Mans, than the 500-mile race we see today. Riding mechanics carried enough tools on board to fix all but the most serious breakdowns, which required sprinting back to the pits for parts and tools. Not surprisingly, riding mechanics had about the same life expectancy as a door gunner in a Vietnam helicopter. Teams had a series of signals used to communicate with the driver and mechanic, via sign boards, at locations around the track. Some teams had as many as 100 signals, not unlike learning a foreign language. The riding mechanics were known to make a cheat sheet and attach it to the fuel tank behind their seat to help translate the messages for the driver. In one example, the signal from the team was R-F-T, which translated to "right front tire



(Above) The 1911 Indy winner, Ray Harroun, was the only driver to go the 500 miles without a riding mechanic.

(Below) National expected to win with this one-off 589-cu-in engine, modified with overhead rockers and valves, and four plugs per cylinder. It was installed in David Bruce-Brown's car, but lasted only 70 miles after being sabotaged.



(Left) The starting grid for the 1911 Indy 500. All it took to get on the pole was to be the first to sign up for the race.

Team colors were also very popular. Stutz was known as the White Squadron and National was advertised as the Blue Squadron. Keep in mind that the Indianapolis auto industry, which included manufacturers such as Stutz, Duesenberg, Pope, Overland and Marmon, along with National, were the ones responsible for the construction of the speedway, largely to provide a test track for the growing Indiana auto industry. At the time, Indiana was the hub of automobile manufacturing, in large part due to the existence of an established carriage and bicycle industry. By the 1920s, more than 75 auto manufacturers called Indiana their home, yet most were gone by the 1930s. The four founders of the speedway included Carl Fischer of the Prest-O-Lite company, James Allison his partner and later of engine manufacturing fame, Arthur Newby of the National Car Co., and Frank Wheeler who manufactured Wheeler-Schebler carburetors. Another motivation for the first 500-mile race was national pride. With a 500-mile race, the U.S. could claim a grand race that rivaled those in Europe and favored U.S. manufacturers by limiting engine displacement, weight and other criteria that had previously favored the big European cars of the time.

### *Indy Racing in 1912*

To put things in perspective, we need to remember that the Indy 500 in 1912 was a six-and-a-half-hour race, in cars with wood buggy wheels and tires made of the same biodegradable rubber we now use to wrap our newspapers. Engines had no oil rings on the pistons and no rubber seals for the crankshaft, so oil consumption was unbelievable by modern standards. Engines used so much oil, that every pit stop included refilling the 10-gallon oil tank, which was continually pumped into the crankcase by the riding "mechanician"—as mechanics were called back then—and usually empty before the next stop. The mechanician was also responsible for hand-pumping air into the fuel tank to pressure-feed fuel into the carburetor, all this while hanging on for dear life and spotting for overtaking cars. All that oil, in addition to the castor oil that was added to the fuel to lubricate the valves, resulted in a dirty, sticky cloud that coated everything on the track, especially the driver and mechanician. Some teams even had physicians who would provide first aid and flush the eyes of drivers during pit stops, and even a masseur to work on the

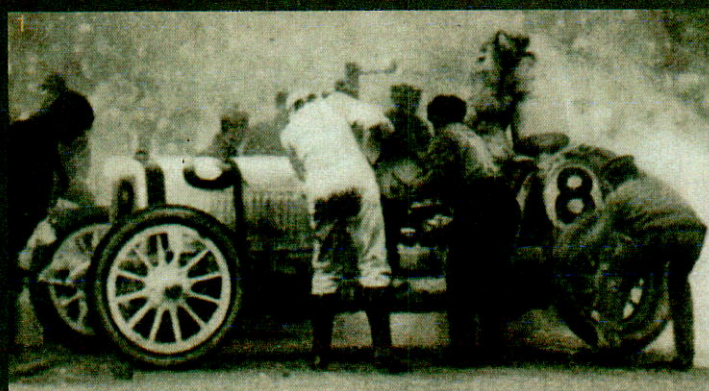
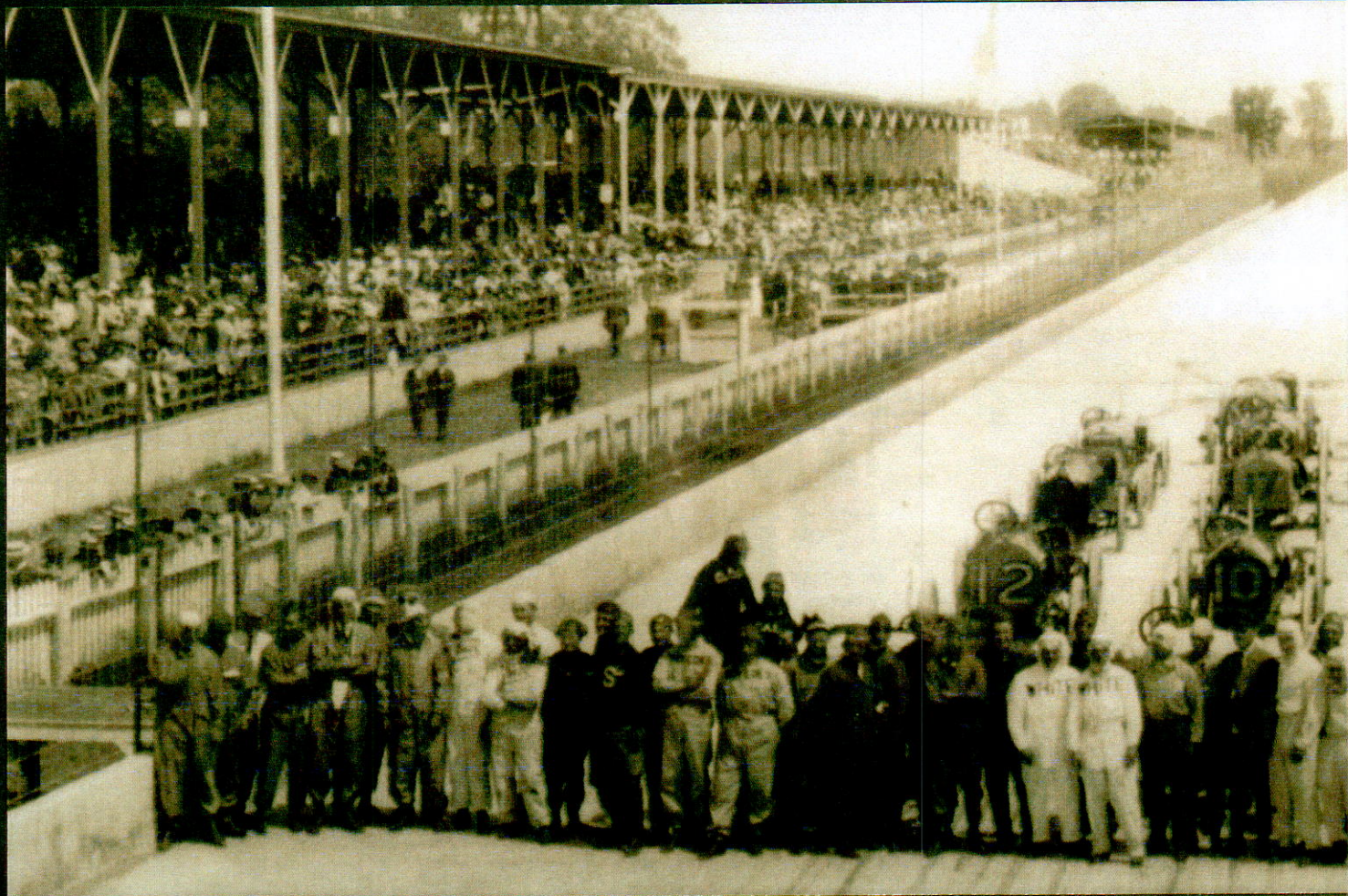


needs to be replaced immediately.”

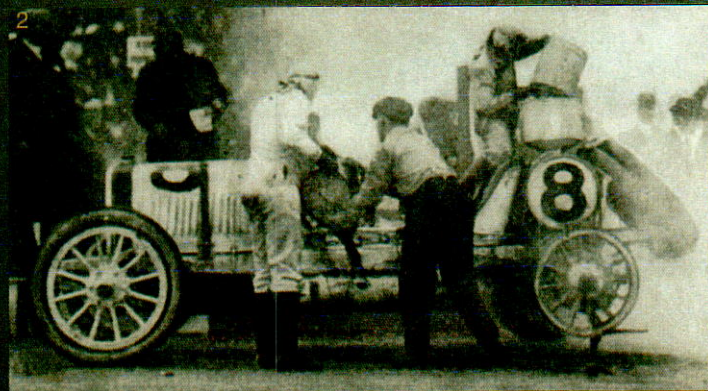
Engine failures were very common, and race strategy included carefully monitoring the sound of your competitor's engine, and pacing your own car so you could complete the distance. In some cases, teams were known to run cars continually for thousands of miles prior to a race at increasing speeds until they determined what the maximum speed they could maintain to finish 500 miles with the engine still intact. National had determined that the engines could not complete the 500 miles if revved over 2,000 rpm, so drivers were limited to sustained speeds of no more than 90 mph. Some corners were taken at 85 mph.

### *The National Car Co.*

In 1912, the National team was one of the favorites. In addition to the home court advantage (the National factory was in Indianapolis) it had been chalking up wins all across the U.S. In fact, by 1912 National had won more races, hillclimbs and motordromes than any other American-built car. Nationals, advertised as the “King of the Speedway, Monarch of the Road,” had won races and endurance runs all across the U.S. since it converted from electric vehicles to gas in 1904. Their first car was an electric vehicle built in 1900 propelled with a 2-½ hp motor



Ralph Mulford's tire is being removed from a jacked-up wheel. Driver Mulford, his mechanic and a pitman are filling the tanks.



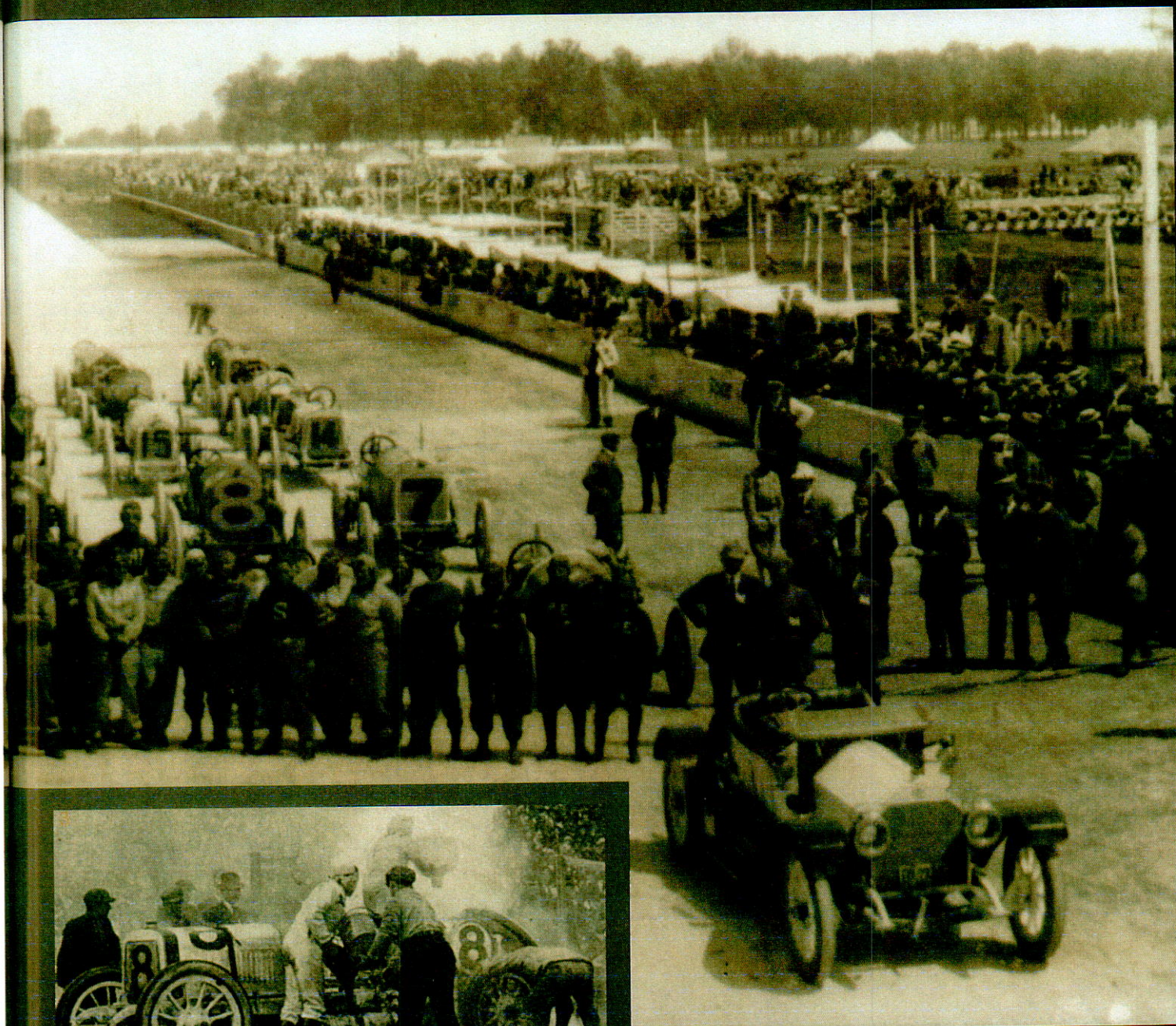
Here's the bare rim, with the tanks still being filled, yet Mulford's tire change and refueling all took place within one minute.

and solid rubber wheels. With five speeds it was capable of 15 mph. It had a range of 45 miles on a charge, and was soon replaced in 1903 by a newer model capable of short sprints with 9 hp and a 100-mile range. With the limited range, and anemic performance, when compared to internal combustion engines, National started producing gas-powered cars in 1904, while still producing electric vehicles for a short time. By 1906, they offered both a 4- and 6-cylinder model, the 6-cylinder car advertised as the first ever made in the U.S.

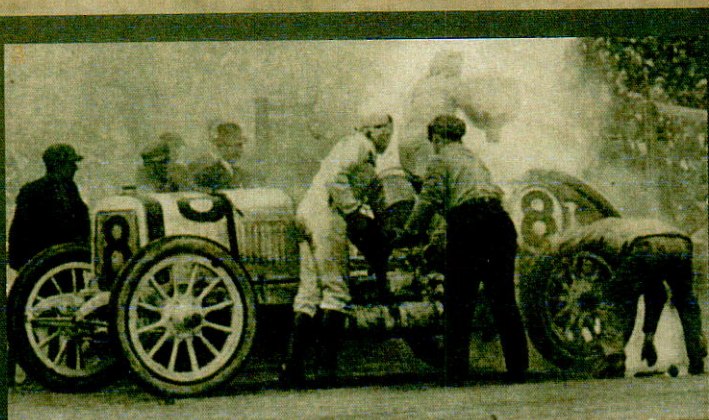
National immediately began using the newly constructed Indianapolis Motor Speedway for testing. They set a world record

covering 100 miles in 1 hour, 53 minutes. It also ran 1,000 miles in just under 22 hours. With reliability an important component of the new (and usually unreliable) automobile industry of the time, National sent their 6-cylinder car on an endurance run to complete 10,000 miles with no adjustments to the car. They actually completed 14,000 miles, a feat that no other manufacturer could match.

National was one of the few American companies to build its own engines, in contrast to most manufacturers who were basically building "kit" cars with vendors supplying almost the entire drivetrain. This eventually resulted in their unchallenged claim as the "World's Fastest Stock Car," made possible by



(Above) The 1911 starting grid illustrates the grid position as determined by the order in which entries were received for the race. All it took to be on the pole was to be first to make your \$100 deposit.

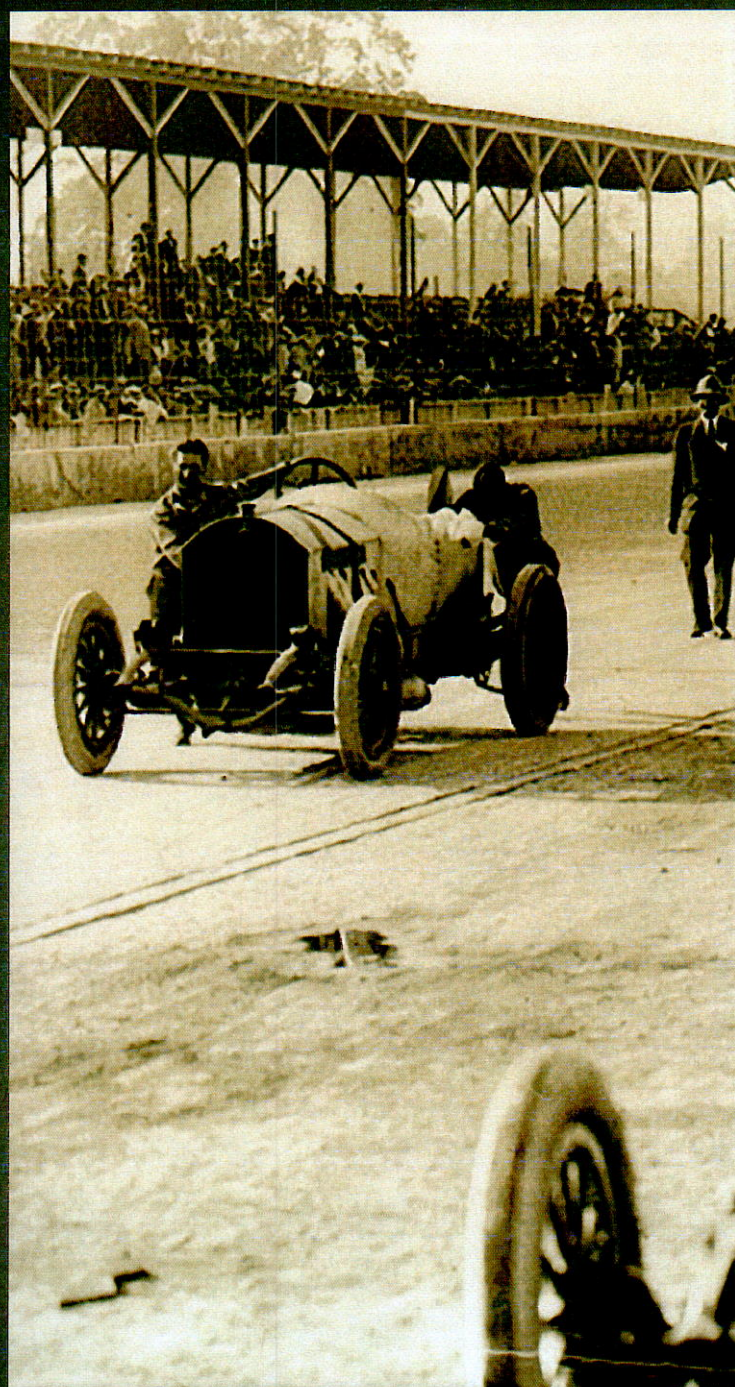


The pitman has put the inflated tire in place and is reaching for the wrench with which to tighten it. The mechanic has finished his task and is handing down the big funnel. Mulford is emptying his can.

1	Frank P. Fox	500
2	Harry H. H.	500
3	Joseph J. J.	500
4	Louis L. L.	500
5	Edward E. E.	500
6	Spencer S. S.	500
7	W. H. Turner	500
8	J. S. Dawson	500
9	Ray H. H.	500
10	W. H. H.	500
11	Arthur A. A.	500
12	Chas. C. C.	500
13	Eddie E. E.	500
14	Harry H. H.	500
15	Chas. C. C.	500
16	Howard H. H.	500
17	Frank F. F.	500
18	Art Adams	500
19	Frank F. F.	500
20	Harry H. H.	500
21	Jack J. J.	500
22	Barnes B. B.	500
23	David D. D.	500
24	Harold H. H.	500
25	Lee L. L.	500
26	Edgar E. E.	500
27	Ralph R. R.	500
28	Teddy T. T.	500
29	W. H. H.	500
30	J. F. F.	500
31	Herb H. H.	500
32	Hughes H. H.	500
33	Chas. C. C.	500
34	R. E. E.	500
35	Calvin C. C.	500
36	W. H. H.	500
37	Arthur A. A.	500

(Above) The entry list for the inaugural Indianapolis 500 in 1911.

(Right) Ralph DePalma and his mechanic Rupert Jeffkins attempted in vain to win by pushing their broken Mercedes across the finish line in the closing laps. They would have been disqualified even had they been successful. That's Dawson's winning National on the right.



building proprietary engines that produced more power than any of the competition. They continually tweaked their race engines, experimenting with overhead valves as early as 1910.

## National at Indy 1912

National had one experimental engine in the 1912 race, a 4-cylinder, T-head engine with overhead valves and 589-cu.in. displacement. T-head engines were very common for the time, with the "T" describing the location of the valves on each side of the cylinder. This engine had won events all across the country in 1911 and was well proven. Only one was built, with four spark plugs per cylinder and huge 3-1/4 inch valves. It was expected to run away from the pack, and was rapidly moving up through the field with David Bruce-Brown at the wheel when the engine failed from lack of oil. It was later found to have been sabotaged,

after completing only 70 miles (a rag had been used to plug the oil line from the tank to the engine). No mention of it was ever heard from the National factory—a good sport didn't discuss such things back then. The other two engines were stock T-head engines that had been stroked to a displacement of 490-cu.in. That works out to 2000-cc per cylinder (or one MGB engine), to this day the largest engine that has ever won the Indy 500.

The Blue Squadron consisted of three cars in 1912, but as the race progressed, only Dawson was within striking distance of DePalma, who appeared to have run away from the pack. In reality, Dawson was following team orders to make the car last for 500 miles.

The National team was much more sophisticated than most of the other teams that year. It had spent considerable time testing at the track, actually timing the cars through segments of the circuit, and shortening the stock chassis until the optimum



(Above) Number plate on the National Charles Merz drove in 1911.

(Below) The National factory building as it looked a century later.



wheelbase was determined. During the race, three men in a "signal tent" on the back straight with telephones, hard wired back to the "repair trench" would report their observations and using temporarily painted sign boards, would communicate with the drivers between pit stops.

As the race progressed, there was much speculation about whether DePalma or Dawson could maintain their pace for the remaining laps. They were both 10 minutes ahead of the 3rd-place car. Dawson pushed the big National harder than the team wanted, to keep from falling behind even more, but just as Dawson began his final big push, the National team noticed that DePalma's Mercedes engine had developed a faint knock that grew louder and louder with each lap. Dawson pushed ever harder, not knowing that the leader was in trouble. With the very real possibility that Dawson might blow up his engine trying to catch the ailing

DePalma, the team phoned to the spotters on the back straight with instructions to slow down Dawson. They hastily made a sign that said "S-75," which Dawson understood to mean "slow to 75 mph." Dawson later recalled how he could scarcely believe his eyes, gaining on the leader, as the end of the race rapidly approached, wondering why he wasn't allowed to push to the end.

The result was as the National team had hoped, DePalma blew his engine and The Kid drove his National to victory. DePalma had failed to drive at a pace that would survive the 500-mile race, and Dawson probably would have suffered a similar fate if he had not benefitted from a sophisticated team effort. Unfortunately, the history books found more favor with the vain attempt by DePalma to push his car to a win, and to this day, the image of DePalma pushing his car across the finish line is one of the most recognizable photos in Indy 500 history.