Floyd Clymer's 1961 INDIANAPOLIS

500 MILE RACE

USAC

YEARBOOK

PUBLISHED BY
FLOYD CLYMER
LOS ANGELES

DETAILED ACCOUNTS OF THE RACE

TECHNICAL SECTION, PHOTOS, CHARTS & DRAWINGS

$2.00

TONY BETTENHAUSEN

There is little or no doubt among racing experts that Tony Bettenhausen proved himself as one of the sport's all-time great drivers. National driving champion in 1951, he went on to capture that coveted title again in 1958, seven years after many had believed him to be past his prime.

He realized one of his greatest ambitions by completing the full 500 miles without relief for the first time when he placed fourth in 1958. This, plus his average speed of 132.855 mph made him a member of the exclusive Champion 100-Mile-An-Hour Club, an honor that had eluded him for twelve years.

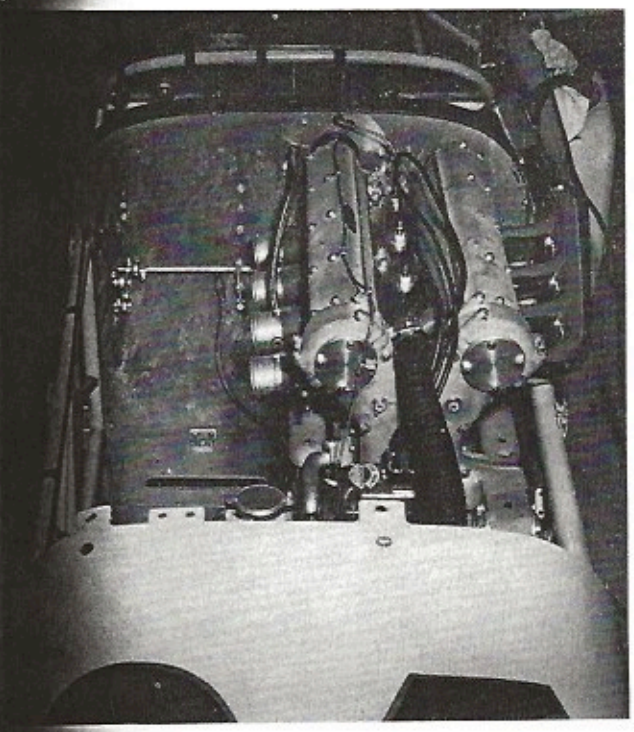
He competed in fourteen 500-mile races, driving a total of 4,750 competitive miles. A 500 campaigner since 1946, he was one of the few drivers still active with post war racing experience behind him. He had been racing since 1938, beginning with midgets in the Chicago area.

Twice retired from racing, his love for the sport brought him back again. He announced his retirement from all but 500 competition after winning the championship in 1951 but got back into regular action in 1953 when he won his eighteenth championship race victory. He had more than his share of hard knocks in his 23-year career. One of the most serious came during a 1954 midget race at Chicago when he lost the use of his brakes, rode over the wheel of another car and flipped into the retaining wall. He was hospitalized for many weeks. In the 1956 500, he received a broken shoulder blade when his Belanger Special spun into the southwest retaining wall.

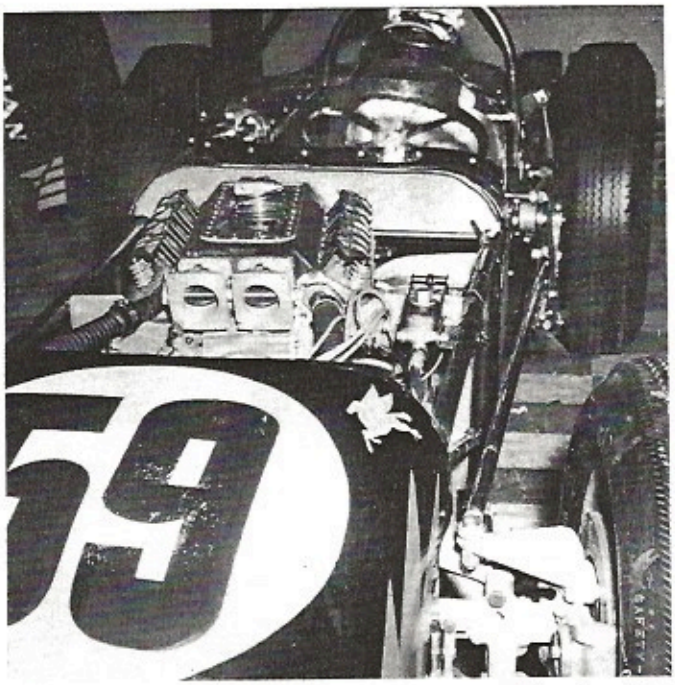
In 1959, Tony was assigned to the Ansted entry at the Speedway but he had the misfortune of being involved in a practice lap accident the morning of the first day of qualifications. He then took over the Hoover Motor Express Special and finished fourth. After the Speedway he drove five different cars on the Championship circuit to rank second in the final standings.

In 1960 "The Flying Dutchman" qualified the Dowgard Spl. on the second day of qualifications at an average speed of 145.214 miles per hour to gain the 18th starting position. After running well up among the leaders for the first 250 miles Tony was sidelined with a broken connecting rod on the 125th lap.

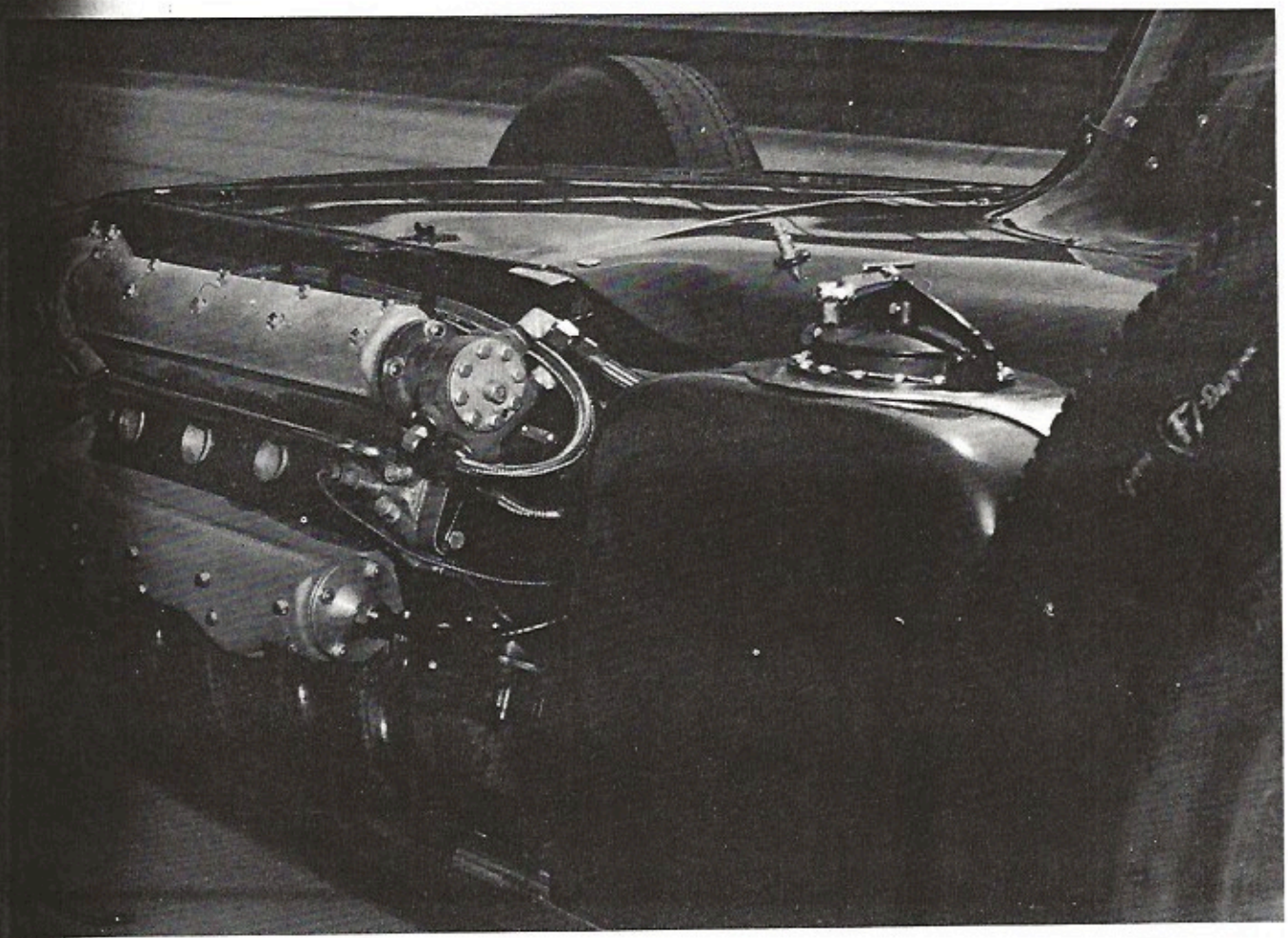
Tony, who was 44 years old, was fatally injured in an accident during practice for the 1961 race while testing a car for another driver. He is survived by his wife, Valerie, and four children, Gary, Merle, Suzanne and Tony Lee. His memory will be cherished by a multitude of friends and associates as a stout-hearted competitor and a driver worthy of being ranked with the finest.



...rtical and set to the left in Ray Crawford's car.



The Robert Peterson Chevrolet powered entry with unique fuel injection set up. Chevy had 4" bore 2.5" stroke.



...west craze at the track — hanging the engine out through the frame on left side. Engine must be covered when running. ...Eddie Johnson's car.

METAMORPHOSIS IN METAL 1941-56

50

274 CU. IN. 1941-56
...OR 183 CU. IN. SUPERCHARGED

Shaw might have repeated again in 1941, but on the 152nd lap, he hit the wall, and a four-cylinder Offy scooted thru to victory.

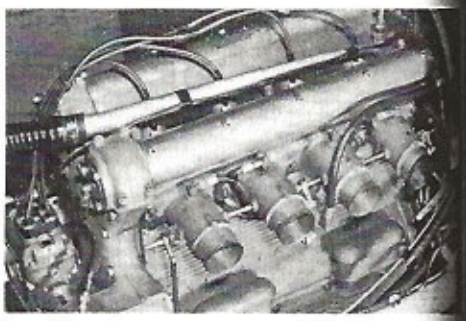
For four years during World War II racing was mothballed; then in 1946, a DOHC, supercharged Thorne Engineering Special corralled enough horsepower in its six cylinders to hold off the Offys . . . but only for a year. In '46, the Offenhauser factory was purchased by Lou Meyer and Dale Drake. Though the basic design was unchanged, more horses gradually began to appear.

Gasoline, despite its far superior mileage, started to give way to methanol (wood alcohol). It was practically alcoholics unanimous by 1948. Alcohol could limit engine knock and had twice the density of gasoline, giving a sizable increase in the weight of the fuel charge. Fuel injection added another punch in acceleration and assured uniform mixture distribution.

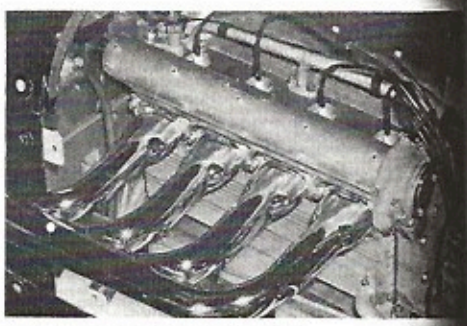
In 1954, the entire starting field was Meyer-Drake . . . only compression ratios, gearing, fuel blends, and chassis design providing the differences. Some compression ratios crept from 13 to 1 to as high as 17½ to 1, and then another form of adrenalin was injected into the Meyer-Drake bloodline. It was Nitro-methane added to alcohol, providing roughly a 10% power boost for every 15% added. "Nitro" carries a searing surge of oxygen into the cylinders and enables the engine to burn more fuel faster . . . thus, increasing its capacity to do more work in less time. Nitro's oxygen-thirst will burn whatever fuels it can consume, plus whatever else is handy—spark plugs, valves, pistons—if not furnished enough fuel, so fantastic is its burning speed. The racing fraternity has learned to respect it like a liquid form of radioactivity . . . it is only used in modest proportions, frequently shunned except for qualification. While capable of cremating an engine, if uncontrolled, it can also decimate miles per gallon . . . alcohol with an injector pressure of 25-27 PSI at 5000 RPM can provide 3 to 4 miles per gallon—"Nitro" can cut that in half!

From the end of World War II to 1956, speed had increased from 114 MPH to hover near the ragged edge of 130. Once again, the contest board put its foot down, lest the boys put theirs down—all the way.

★ 1941 Offenhauser (4)	115 mph
World War II	
★ 1946 Thorne Special (6)	114 mph
★ 1947 Myer-Drake (4)	116 mph
★ 1948 Myer-Drake (4)	119 mph
★ 1949 Myer-Drake (4)	121 mph
★ 1950 Myer-Drake (4)	124 mph
★ 1951 Myer-Drake (4)	126 mph
★ 1952 Myer-Drake (4)	128 mph
★ 1953 Myer-Drake (4)	130 mph
★ 1954 Myer-Drake (4)	128 mph
★ 1955 Myer-Drake (4)	128 mph



A modern Offenhauser racing engine. View is from int side—showing fuel injection system.
Aircraft type magneto is driven off front of engine.



Exhaust side of same engine. Notice extremely effic and highly chromed exhaust headers blending into gle exhaust stack.

THE INVINCIBLE "4-BANGER" 1957-60

50

256 CU. IN. 1957-60
...OR 170 CU. IN. SUPERCHARGED

With displacement stamped down to 256, the loss of 18 inches meant 20 horses slain suddenly in every Meyer-Drake stable. But with a "mild" compression ratio of 13½ to 1, you could still push 340 horses out of a Meyer-Drake at 5500. Going richer with fuel injection would keep the horses from kicking out the pistons at 16 to 1. In 1957, the displacement drop netted not a *decrease* in speed, but an *increase* of fully 5 MPH faster than the 274 limit of only a year ago.

1957 also introduced the first lay-down engine or "sidewinder." The Meyer-Drake was perched only 18° off horizontal. While this would provide no more horsepower, it did provide a lower center of gravity, relief of strain on outside tires, more efficient streamlining and better driver visibility . . . this feature of the sidewinder is still argued. (In 1960, 21 engines ran upright, 12 flat.)

In 1959, a new type of cam contour reeled out over 400 horsepower at 6500 RPM. The '50's alone had seen speed increase from 124 MPH to 138 MPH.

There are many paths to power and Indy has trod all of them—they are worn smooth and most of the ruts are out. But back in 1914 when Peugeot blueprinted the triple play of inclined valves, overhead camshafts and pent-type combustion chambers, the die was cast on speed. Miller took the mold and turned it into an 8-cylinder fury. He fired it with the supercharger to temper its innards and then lopped off four cylinders. Offenhauser polished it to perfection, and Meyer-Drake endowed it with power-giving accessories.

With the right track, it is invincible. For 500 miles at 166 MPH in Europe at Monza, it centrifuged Jaguars, Maseratis, and Ferraris right off the track. Perhaps even more speed can be centrifuged out of it—for the racing engineer is never spun dry of ideas . . . whatever the RPM.

★ 1957 Myer-Drake (4)	135 mph
★ 1958 Myer-Drake (4)	133 mph
★ 1959 Myer-Drake (4)	135 mph
★ 1960 Myer-Drake (4)	138 mph

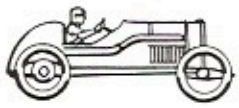
THE EVOLUTION OF THE RACING SPARK PLUG

If Charles Darwin were alive today, he might have been tempted to trace the evolution of the racing spark plug—for it truly exemplifies the "Survival of the Fittest."

The racing plug began in 1895 when the first race was run in France (speed 15 MPH). By 1900, it was powering winners at 45 MPH. In 1904 cars were passing the century mark at French race tracks! In 1916, Peugeot and Mercedes were dueling on American tracks in "100 Milers" *at speeds a shade over 100 MPH.* But early racing was plagued with plug failure – plug performance reads like an obituary of lost races:

"THE AUTOMOBILE"—1915

"Failure of spark plugs to stand up to the demand upon them was the reason for the withdrawal of Rickenbacker's Maxwell, and examination of the plugs which gave trouble almost as soon as they were put in, suggested that they were suffering from overheating. The most usual sort of failure consisted of a clean break across the insulation just within the steel plug body, which would naturally be the hottest part. It is worthy of comment that this consumption of spark plugs was the principal trouble in England and France last year, but it was overcome before the races in most instances. Better cooling arrangement seems the easy answer and that is none too easy."

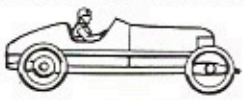


"THE GRAND PRIX CAR"—Laurence Pomeroy—1915

"Twelve days after Indianapolis, the Mercedes versus Peugeot battle was re-enacted on the Chicago board track in the 300 Mile Chicago Derby. For nearly three hours, the two cars ran bonnet-to-bonnet, but with only four miles to go, a plug failed on the Mercedes when De Palma had a very short lead. He was forced to go into the pits, and as an obvious consequence, the Peugeot (again driven by Resta) won at 98.6 MPH."

"INSIDE VIEWS," A. H. Packer— Clymer's "500" Scrapbook.

"Minor troubles in many cases caused a serious loss of time at the pits and in other cases put the cars out of the running. Fouled plugs were among the first troubles to cause the cars to come limping in for assistance."



Champion came to Indy in 1915, only a few years after the birth of the company. It was a brash intrusion as European cars dominated racing and preferred imported racing plugs—after all, European plug makers *had the experience of 20 years of racing.* But Champion stuck it out, thru 1916-19 when imports wound a "fantastic" 2600 RPM with an "excruciating" 4 or 5 to 1 compression ratio.

Champion made its debut in Victory Lane in 1921, rolled in again in 1924. By 1926 when displacement was lowered to a steaming 91 cubic inches, superchargers poured purgatory on pistons, engines turned 7,000 RPM, Champion was making it a yearly habit. It has entered that Lane 29 times since 1921.

Technical Innovations, Winners Cars

Winners	
1911 Harroun	74.59
1912 Dawson	78.72
1913 Goux	75.931
1914 Thomas	82.47
1915 De Palma	89.84
1916 (300) Resta	84.00
WORLD WAR I	
1919 Wilcox	88.05
1920 Chevrolet	88.62
1921 Milton	89.62
1922 Murphy	94.48
1923 Milton	90.95
1924 Corum-Boyes	98.23
1925 De Paolo	101.13
1926 (400 Rain) Lockart	95.904
1927 Souders	97.545
1928 Meyer	99.482
1929 Keech	97.585
1930 Arnold	100.448
1931 Schneider	96.629
1932 Frame	104.114
1933 Meyer	104.162
1934 Cummings	104.863
1935 Petillo	106.240
1936 Meyer	109.069
1937 Shaw	113.580
1938 Roberts	117.200
1939 Shaw	115.035
1940 Shaw	114.277
1941 Davis-Rose	115.117
WORLD WAR II	
1946 Holcomb	114.820
1947 Holt	116.338
1948 Rose	119.814
1949 Holland	121.327
1950 (345 Rain) Parsons	124.002
1951 Holland	126.244
1952 Agajanian	128.922
1953 Kulwicki	128.740
1954 Kulwicki	130.840
1955 Bryant	128.209
1956 Foyt	128.490
1957 Foyt	135.601
1958 Foyt	133.791
1959 Foyt	135.857
1960 Rutherford	138.767

Overhead-Inclined Valves; Multiple Intake-Exhaust Valves; Dual Overhead Camshafts; Hemispherical and Pent "V" Combustion Chambers; Dual Ignition; Gas, Benzol and Kerosene; Multiple Carburetion

RPM 2400-2600—C.R. 4 to 5:1

Lightweight Aluminum Engines; Enclosed Camshafts

Hi-Boost Centrifugal Superchargers; Intake Manifold Intercoolers; Gas

RPM 6000-8000—C.R. 5 to 6:1

Detroit Modified Stock Engines; Gas, Benzol, Anilol

RPM 5000-7000—C.R. 6 to 9:1

Rootes-Type Positive Displacement Superchargers; Alcohol Blends

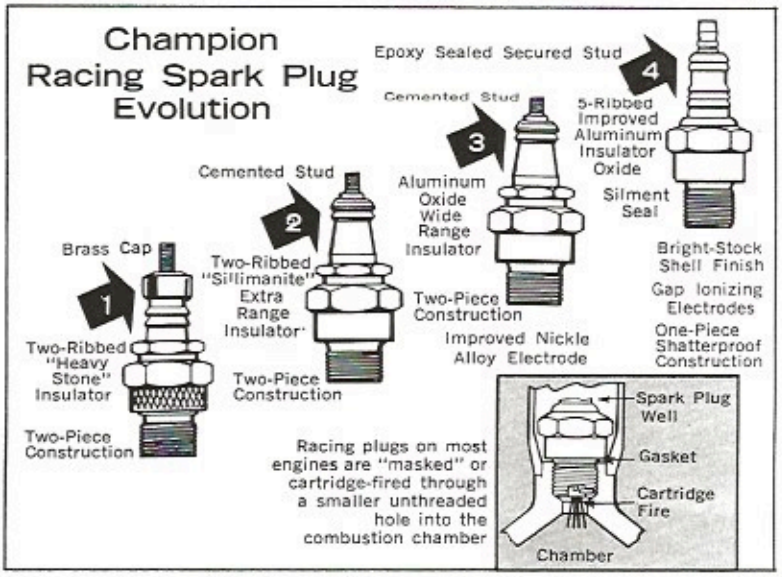
RPM 5500-6500—C.R.

New Cam Contours; "Tuned" Exhaust Manifolds; Gas, Methanol; Fuel Injection; Oxygen-Bearing Fuel Additives; Chrome Piston Rings; Anti-Friction Oils; Improved Alloys; Magnafluxing-Zyglo; Aircraft Type Magnetos; "Laydown" Engines

RPM 5500-6800—C.R. 12 to 18:1

...500 miles ...run 41 ...the elapsed ...duced by ...and 38 minutes.

Champion Racing Spark Plug Evolution



Spark plug heat range is not universal. Manifolding, spark advance, gear ratio, fuels and mixtures and compression ratio dictate heat range.

Records prove no Champion plug failure in any Indianapolis "500" Race since World War II.

HIGH PRESSURE FUELING SYSTEM IS TRIED AT SPEEDWAY

Aircraft Type Pressure Unit Makes Bow

The Schulz Fueling Equipment Special will make its bid at Indianapolis this year featuring a totally new concept in racing car refueling. Utilizing modern techniques of aircraft refueling, the system offers a fast, positive means of connecting the refueling hose, combined with automatic shutoff of fuel when the tank is full. Here's how the system operates.....

Two control valves, joined by a single interconnecting line, comprise the entire system and are mounted inside the racing car's fuel tank in a manner similar to that shown in figure 1.

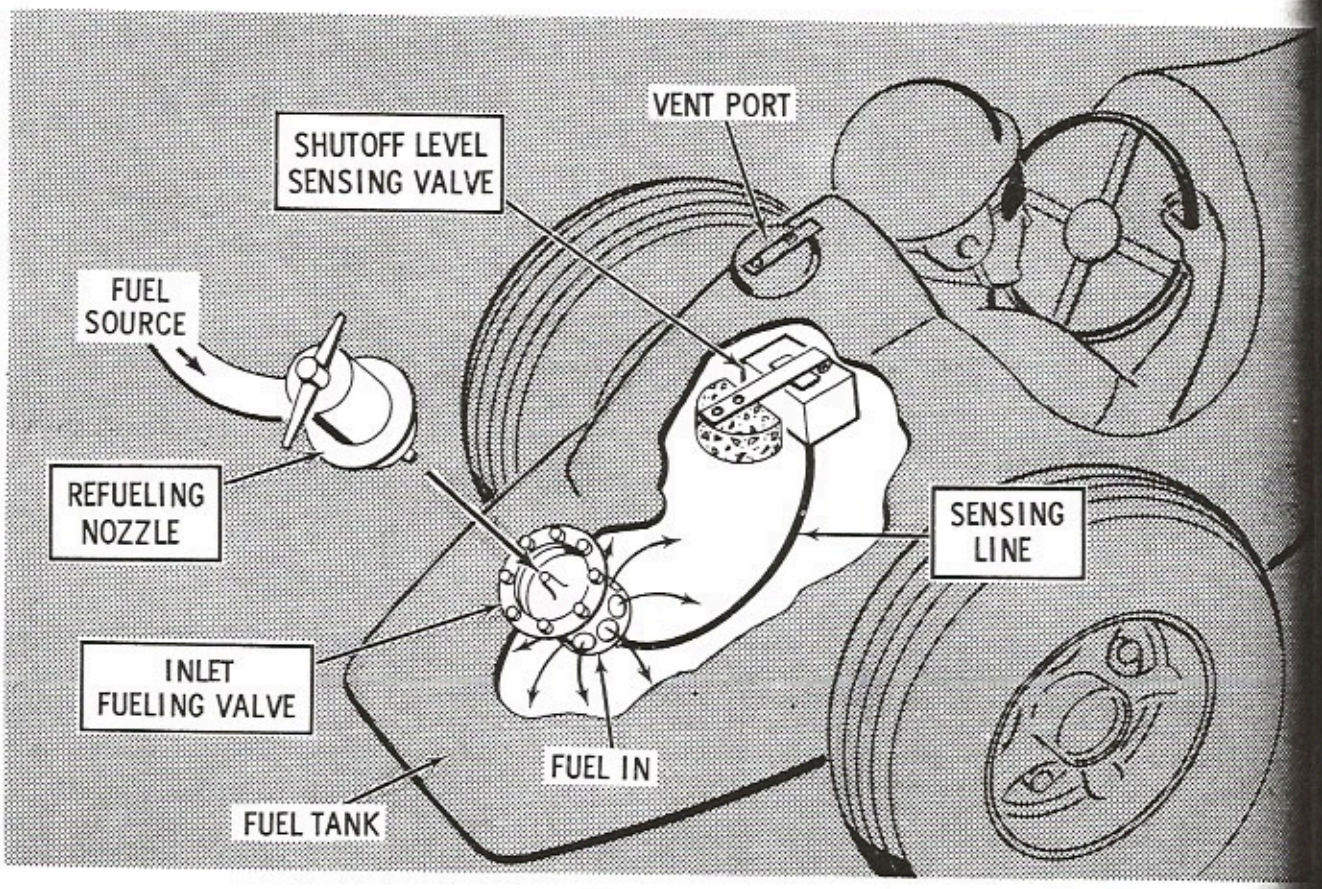


Figure 1. Fueling System Installation.

The external Fueling Nozzle is attached to the end of the refueling hose and is designed to mate with the Inlet Fueling Valve installed in the car's fuel tank. The nozzle is easily engaged, yet provides positive protection against accidental nozzle disengagement. When the nozzle is connected, the Inlet Fueling Valve opens, admitting fuel to the tank. Fuel rapidly fills the tank until the cork float of the Shutoff Level Sensing Valve rises, causing a signal to be sent to the Inlet Fueling Valve through the Sensing line to automatically shut off the incoming fuel. The fueling nozzle then may be immediately disconnected from the fueling valve without spillage and the resultant fire hazard. Because the refueling components comprise a fully automatic closed system, exceptionally high fuel flow rates (up to 400 gallons per minute) may be used without the danger of overfilling the tank, thereby substantially reducing the total time required for refueling operations during pit stops.

OFFICIAL ENTRY LIST — 1961

CAR NO.	DRIVER	CAR NAME	ENTRANT	NO. CYL.	BORE	STROKE	PISTON DISP.
1	A. J. Foyt	Bowes Seal Fast Special	Bignotti-Bowes Racing Assoc.	4	4.28125	4.375	251.9
2	Rodger Ward	Dell Webb's Sun City Arizona Spl.	Leader Cards, Inc.	4	4.28125	4.375	251.9
3	Don Branson	Hoover Motor Express Special	Hoover Motor Express	4	4.28125	4.375	251.9
4	Jim Rathmann	Simoniz Special	Ken Paul, Inc.	4	4.28125	4.375	251.9
5	Tony Bettenhausen	Auto-Lite Special	Lindsey Hopkins	4	4.301	4.375	254
6	Gene Force	Bell Lines Trucking Special	Sclavi, Inc.	4	4.28125	4.375	251.9
7	Shorty Templeman	Bill Forbes Racing Team Special	William P. Forbes	4	4.28125	4.375	251.9
8	Len Sutton	S.-R. Racing Enterprise Special	Pete Salemi & Nick S. Rini	4	4.21875	4.500	251.6
9	Lloyd Ruby	Kelso Auto Dynamics Special	Kelso Auto Dynamics	4	4.28125	4.375	251.9
10	Paul Goldsmith		Racing Associates	4	4.28125	4.375	251.9
12	Eddie Sachs	Dean Van Lines Special	Dean Van Lines: Racing Division	4	4.28125	4.375	251.9
14	Bud Tingelstad	Dean Van Lines Special	Dean Van Lines: Racing Division	4	4.28125	4.375	251.9
15	Wayne Weiler	Hopkins Special	Lindsey Hopkins	4	4.28125	4.375	251.9
16	Bobby Grim	Thompson Industries Special	Ansted-Thompson Racing, Inc.	4	4.28125	4.375	251.9
17	Jack Brabham	Cooper-Climax Special	Cooper Car Company, Ltd.	4	3.78	3.74	167.6 †
18	Chuck Stevenson	Metal-Cal Special	C. & H. Supply Company	4	4.28125	4.375	251.9
19	Jack Rounds	Konstant Hot Special	Bruce Homeyer	4	4.291	4.375	253
21	Elmer George	Bryant Heating & Cooling Special	Your Bryant Dealer	4	4.21875	4.500	251.6
22	Roger McCluskey		Racing Associates	4	4.28125	4.375	251.9
23	Al "Cotton" Farmer	Bardahl Special	Fred Gerhardt	4	4.21875	4.500	251.6
24	Paul Russo	Stearly Motor Freight Special	Douglas Stearly	4	4.28125	4.375	251.9
25	Duane Carter	Shaler Rislone Special	Bignotti-Bowes Racing Assoc.	4	4.28125	4.375	251.9
26			Edgar R. Elder	4	4.21875	4.500	251.6
27	Don Freeland	Chapman Special	H. A. Chapman	4	4.28125	4.375	251.9
28	Gene Hartley	John Chalik Special	John Chalik	4	4.28125	4.375	251.9
29	Jim McWithey		Hart Fullerton	4	4.21875	4.500	251.6
31		Hoover Motor Express Special	Hoover Motor Express	4	4.28125	4.375	251.9
32	Bob Christie	North Electric Special	William Tucker, Inc.	4	4.28125	4.375	251.9
33	Eddie Johnson	Jim Robbins Special	Jim Robbins Company	4	4.28125	4.375	251.9
34	Bill Cheesbourg		Federal Automotive Associates	4	4.1862	4.625	254.6
35	Dempsey Wilson	Lysle Greenman Special	Lysle Greenman	4	4.28125	4.375	251.9
36	Dick Rathmann	Jim Robbins Special	Jim Robbins Company	4	4.28125	4.375	251.9
37	Chuck Hulse		Vatis Enterprises, Inc.	4	4.21875	4.500	251.6
41	Johnny Boyd	Leader Card 500 Roadster	Leader Cards, Inc.	4	4.28125	4.375	251.9
43	Al Keller	Ray Brady Special	Ray T. Brady	4	4.21875	4.500	251.6
44	Bob Veith	Schmidt Special	Peter J. Schmidt	4	4.21875	4.500	251.6
45	Jack Turner	Bardahy Special	Fred Gerhardt	4	4.28125	4.375	251.9
47	Dan Jones	Joe Hunt Magneto Special	Joseph B. Hunt	4	4.21875	4.500	251.6
52	Troy Ruttman	John Zink Trackburner Special	John S. Zink	4	4.28125	4.375	251.9 †
53		Cooper Car Company, Ltd.	Cooper Car Company, Ltd.	4	3.78	3.74	167.6 †
54		Dean Van Lines: Racing Special	Dean Van Lines: Racing Division	4	4.21875	4.500	251.6
55	Jimmy Daywalt	Schulz Fueling Equipment Special	C. O. Prather	4	4.15625	4.625	250.9
59			Robert Peterson	8	4.000	2.540	255
61	Ronnie Duman		Leonard A. Roy	4	4.21875	4.500	251.6
62	Chuck Arnold	Denver Chicago Trucking Co. Spl.	Myron E. Osborn	4	4.21875	4.500	251.6
67		Rathman Xterminator Special	Ken Paul, Inc.	4	4.28125	4.375	251.9
68		Agajanian's Willard Battery Spl.	J. C. Agajanian	4	4.21875	4.500	251.6
69	Russ Congdon	Eelco Kustom Shift Special	Robt. Sorenson-Wm. W. Childers	4	4.21875	4.500	251.6
73	A. J. Shepherd	Travelon Trailer Special	Ernie L. Ruiz	4	4.28125	4.375	251.9
74		Bill Forbes Racing Team Special	William P. Forbes	4	4.28125	4.375	251.9
75		Paxton Prod. Supercharged V-8 Spl.	Paxton Products	8	3.1875	2.625	168 *
77	Leon Clum	Dayton Steel Foundry Special	Geo. Walther, Jr.	4	4.250	4.500	255
78		John Zink Trackburner Special	John Zink Company	4	4.28125	4.375	251.9
79	Johnnie Coy	Hall-Mar Special	Karl Hall	4	4.250	4.500	255.3
82	Mike Magill	San Diego Steel Products Spl.	Charles M. Chenowth	8	3.680	3.000	255.3
83			Floyd Trevis-Gilbert E. Morcroft	4	4.28125	4.375	251.9
84	Jack Ensley		Ansted-Thompson Racing, Inc.	4	4.28125	4.375	251.9
85	Don Davis		Federal Automotive Associates	4	4.1862	4.625	254.6
86		Meyer Speedway Special	Racing Associates	4	4.28125	4.375	251.9
87	Harry Beck	M. P. C. Special	Harry Beck	4	4.28125	4.375	251.9
88	Bob Wente	Drewrys Specail	Ashley Wright	4	4.28125	4.375	251.9
89	Chuck Rodee	Dunn Engineering Special	H. Dunn	4	4.15625	4.625	250.9
91	Vern Harriman	Honeymoon Express Special	Honeymoon Express, Inc.	4	4.15625	4.625	250.9
92		Concannon Car Co. Flying Special	Joseph L. Concannon	4	4.21875	4.500	251.6
94	Ray Crawford	McCullough Special	Ray Crawford	4	4.28125	4.375	251.9
95	Bill Randall	Safety Auto Glass Special	Perkins-Griesemer-Nichols	4	4.15625	4.625	250.9
97	Donald Schisler	Jerry Alderman Ford Sales Special	Indiana Engine Exchange, Inc.	4	4.15625	4.625	250.9
98	Parnelli Jones	Agajanian Willard Battery Spl.	J. C. Agajanian	4	4.28125	4.375	251.9
99	Jim Hurtubise	Demler Special	Norm. Demler, Inc.	4	4.3125	4.375	255.6

JIM HURTUBISE

Home Town: Lennox, Calif.
Age: 28
Birthdate: December 5, 1933
Height: 5 feet 9 inches
Weight: 162
Marital Status: Married (Jane)
Children: Karen, age 3, Patricia, age 2

Jim Hurtubise drove his first national championship race at Indianapolis (Hoosier Hundred) in 1959. He secured the driving assignment vacated by John Thomson when Thomson was injured in a sprint car race.

Jim's rookie year at the Speedway was nothing short of sensational. During practice he was running very fast, but the railbirds were skeptical as to how he would perform in his qualifying run. He ended their skepticism on the final qualifying day when he set new one- and four-lap records of 149.601 and 149.056 miles per hour respectively. The fastest of these two laps was only .16 seconds from the magic 150 miles per hour lap.

He also did exceptionally well in the race itself. Jim had been as high as 5th position and was running in 8th place at 185 laps when a broken connecting rod ended his chances for the day. As a result of his performance at the Speedway, Jim was awarded the Stark and Wetzel "Rookie of the Year" trophy.

He had a good year on the national championship circuit as well. His best day was when he won the 100-mile race at Langhorne, Pa. Jim was one of the three drivers to qualify for every national championship event in 1960—the other two were A. J. Foyt and Don Branson.

He was also very active in the sprint cars, both in the Midwest and East. Jim won two races and finished 3rd in the Eastern point standings, and he won one race and finished 5th in the Midwest point standings. He was also 18th in points in the national midget division.

Jim is scheduled to drive the Demler Special in this year's "500." It is the same car driven to 2nd place in 1958 by the late George Amick, and to 5th place in 1959 and 3rd in 1960 by Paul Goldsmith. Experts are predicting great things for Jim in 1961.

EDDIE JOHNSON

Home Town: Cuyahoga Falls, O.
Age: 42
Birthdate: February 10, 1919
Height: 5 feet, 5½ inches
Weight: 155 pounds
Marital Status: Married (Shirley)
Children: Suzzanne, age 10; Eddie, Jr., age 8

In 1952, his rookie year, he was flagged after 193 laps and awarded 16th position. In 1955, he was flagged after 196 laps and given 13th place. In 1956 it was the same old story. He completed 195 laps before being flagged and awarded 15th place. Adding to that, Eddie missed the race twice in succession by being the last driver bumped from a starting berth. In both 1953 and '54 he was the first alternate standing by in case one of the 33 starters failed to get underway.

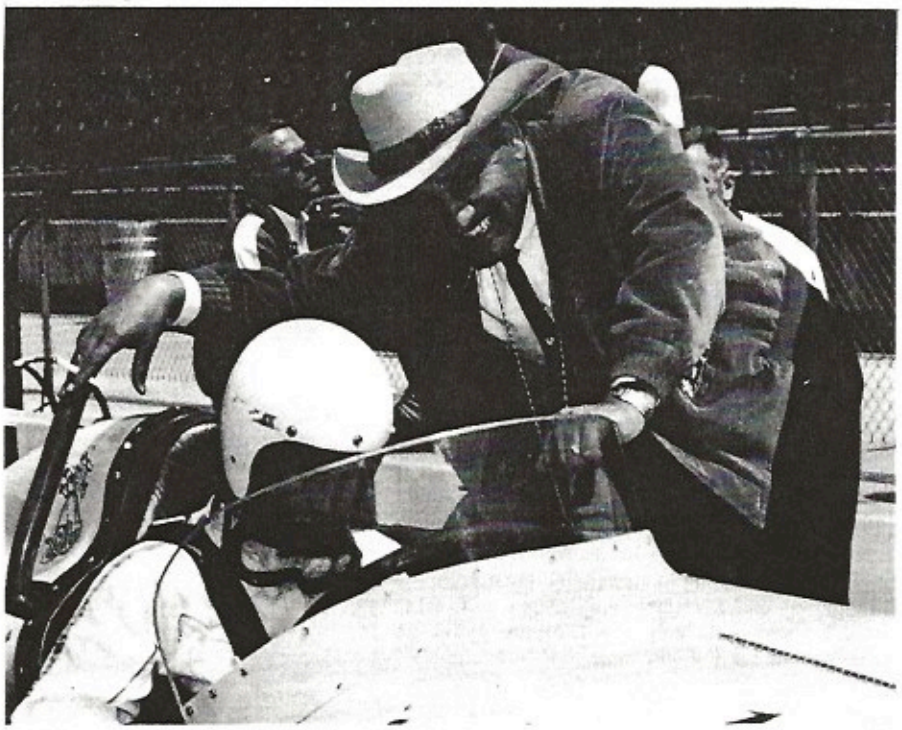
He got into the 1953 and '54 events, however, as a relief driver and gave a good account of himself. In the '53 Classic he took over Jim Rathmann's Travelon Trailer Special on the 113th lap and guided it home to seventh place. In 1954 he drove relief for Rodger Ward for 67 laps.

Qualifying the Chapman Special in 1957 at an average speed of 140.171 mph, he worked his way up to tenth position when a faulty wheel bearing forced him out of the race after 93 laps. Finally, in 1958, Eddie came through by driving his Bryant Heating Special to ninth place, completing the full 500 miles at an average speed of 130.156 mph. There wasn't a happier driver in Gasoline Alley. His finish, of course, qualified him for membership in the exclusive Champion 100-Mile-An-Hour Club.

In 1959, Eddie made his sixth starting field in the Bryant Heating and Cooling Special when he qualified at an average speed of 144.000 miles per hour. After starting in eighth position he ran very well throughout the 200 laps to finish in eighth place.

Eddie made his 7th start in the "500" his best. He qualified his Jim Robbins Special, nicknamed by the racing fraternity as "Johnson's Jet," at an average speed of 145.003 miles per hour which was 10th fastest in the field of 33.

Meet J. C. AGAJANIAN



J.C. Agajanian is happy over Parnelli Jones successful driver's test.

A "little white lie" launched the auto racing career of one of the sports best known car owners and promoters.

And around the Indianapolis Speedway this fellow is certainly the most easily recognized. His trademark is a 10-gallon Stetson, which may hide a bald head, but doesn't begin to cover up the biggest heart in the sport.

The gentleman, of course, is 48-year-old J. C. Agajanian, the sartorially splendid West Coast sportsman who invested money earned raising hogs and collecting garbage ("the hogs had to eat, didn't they?") into the hazardous business, financially as well, of auto racing.

"Aggie," as he's called by his friends in the business – and his enemies are harder to locate than a hotel room on race day at Indianapolis – has been successful in two phases of the business – racing cars as an owner and promoting.

He's had one winner in the big one – young Troy Ruttman drove Agajanian's popular "98" to victory in 1952. It was Aggie's fifth try at the big one, not so many years after he made his first trip to the speedway "as a spectator" in 1946.

Since that time the greats of auto racing have driven for him.

The list is a veritable "who's who of auto racing." It includes:

Johnny Mantz, Walt Faulkner, Ruttman, Tony Bettenhausen, Chuck Stevenson, Duane Carter, Johnnie Parson, Chuck Daigh, Lloyd Ruby, Bill Vukovich and his latest, Parnelli Jones.

The 1961 race, however, was a costly one for the San Pedro, Calif. businessman. It wasn't merely because his car failed to win – a one-in-a-million bit of bad racing luck destroyed his chances for victory in the race – but a few days before the running of the 500 he lost one of his dearest friends, Tony Bettenhausen. The death of Bettenhausen in a pre-race spin around the track saddened every corner of "Gasoline Alley." It's doubtful, though, that anyone felt the crushing loss more than "Aggie."

"Whenever I needed help for a race I was promoting," said Aggie, "all I had to do was call Tony. He'd catch the next plane west. And he always came to race. Once he got in that car he never cheated a soul. How big or small the event was didn't matter. The people had paid to see him drive and he always gave them everything he had."

But, like most highways (the Speedway excepted), that's a two-way street.

The drivers found Aggie a friend. And the fans did, too. "You're as good as your reputation," said one of the drivers. "And J.C.'s is the best."

At one of Agajanian's races, shortly after Johnnie Parsons had won the 500, Aggie advertised heavily for a week that the "Indianapolis champion" would race for him. The night before the race, after late editions had gone to press, Johnnie called Aggie from the east and said it was impossible for him to make it. Bad weather had grounded his plane.

So, Aggie bought radio time and reported the event would go on without the champion as advertised. Then he posted signs at every ticket window informing the fans before they bought their tickets that Parsons wouldn't be on the program.

"I like to think that's why I've had success as a promoter," he said "I'd have done that anyway, though. It's only shortsighted promoters who try to fool the public. Besides, I love racing too much and want to be a part of it for a long time to come."

But all that is ahead of the story of J. C. Agajanian.

"I used to go to the races at old Legion Ascot Speedway in Alhambra in the early 30s," recalled Aggie. "I raced Lester Spangler with my hot rod. Lester, who was killed in 1933 at Indianapolis, helped me a

lot then.

"But the thing I really wanted to do was get into a race at old Ascot. I didn't have any experience, though, and wasn't able to get a ride. No one would even consider putting me in a car until I had some.

"That was when I decided to buy a car myself," continued J. C.

"I found a car in Bell, California. It was a sprint car which Hal Cole used to drive," he explained. "Well, that was when I told a 'little white lie'. I told our family banker that my father was out of town but we needed $1,500 (the price of the car). He gave it to me. I was living at home at the time although I was 20," he went on. "You know how Armenian families are . . . very close together.

"Anyway, I brought the car to our home in the Palos Verdes hills and put it in the center stall of the garage – Dad's spot. And that's where I was, polishing it like mad, when Dad came home."

Papa Agajanian wasn't sympathetic to young J. C.'s driving plans.

"He told me in no uncertain terms that if I didn't forget the whole idea 'to pack up and get out . . . and change my name.' No Agajanian was going to be a race driver," he remembered his father saying.

"Well, I was driving a new Chevy convertible and things were pretty good at home," J. C. said. "I had spending money and, frankly, I didn't want to leave home. Besides, kids in those days weren't nearly so independent as they are now," reflected Aggie.

So young J. C. promised his father that he would never race. And he kept his word.

While "Aggie" didn't drive his new car, his father did relent and let him keep it and even said, "as long as you'll keep your word not to drive I'll help if you need any money to buy parts for the car."

"My father did admit later, though, that he thought the whole thing would wear off in 6 months or a year, and I'd pay more attention to the hog and garbage business," said Agajanian. "He even offered to make me a partner in the business. "But it didn't wear off."

Agajanian began his promoting days as far back as 1937, not long after forming an association with the sprint cars in '36. He put on races at old Southern Ascot, a half-mile track in South Los Angeles.

Since then he's been a successful promoter at points throughout his own state, California, as well as several others as far away as Daytona Beach. Presently, he stages two of the most important events on the big car championship circuit – Sacramento and Phoenix.

Of all of his promotions, oddly enough, Aggie seems proudest of one of his newest ventures – weekly motorcycle shows in Los Angeles.

"I was warned that the fans and some of the riders, too, were a wild bunch," said Aggie. "Well, I've discovered the riders are a fine bunch of boys and we've seen that the crowds are the type that any man could safely sit among with his family. The black-leather jacket, long-haired heavy drinking and foul-mouthed elements have been eliminated at our races. And I don't mind boasting of the fact. We have the most successful weekly sports promotion on the west coast now. Only a few hundred fans were showing up before I took over four years ago.

At Indianapolis, though, he's mainly J. C. Agajanian, the car-owner. He brought his 16th and 17th cars to the Speedway in 1961 for his 13th annual crack at the biggest prize in auto racing.

And it appeared for several miles that Aggie and his sensational young rookie driver, Parnelli Jones from Torrance, Calif., might steal the whole bundle. But a freak accident – a one-in-a-million–kayoed No. 98.

Parnelli, leading the race at the time, was struck over the eye by a flying bolt. Dazed, with blood flowing into his eye, Parnelli was unable to adjust the mixture of fuel and the engine was flooded, washing the cylinders until a piston broke.

After a lengthy pit stop which wiped out any hope of victory, Aggie consented to Parnelli's request to drive to the finish "for experience."

The young Torrance driver already had showed the veterans some heady, if not fancy, wheeling.

Runnerup Eddie Sachs said after the race: "I learned more from this rookie on how to take the turns and pass cars than in all the years I've been at the Speedway. This will help me in the future."

Parnelli simply remarked, "I knew I could drive down farther into the turns. So I did."

Jones was no headstrong youngster. At 27, he had waited until he thought he was ready to drive at Indianapolis, passing up several opportunities.

Agajanian's first look at the Speedway came in' 1946 – and he harbored no thought then of becoming an Indianapolis car owner.

He merely had gone back for the trip with George and Hal Robson, his sprint car mechanics.

Once there, Aggie's way to the pit area was blocked, but Art Sparks, the race car builder countered by telling officials, "You can't deny this man credentials, he's a prospective car owner!"

Thus, the seed was planted.

And in 1947 Aggie actually launched plans of his own to build a car.

His first driver was veteran Johnny Mantz, who finished 13th in the first outing of an Agajanian Special at Indianapolis.

Agajanian's 1949 entry was a memorable one. It was the last car to drive the entire 500-mile distance without a pit stop!

Aggie's mechanic, the late Clay Smith, devised a special mixture of fuel which would allow Mantz to run the distance without a stop at 119 mph, the winning average of the previous year. Smith's mixture was perfect – and his timing, too. Mantz average 119 mph and went the route all right – but the winning average soared that year and Mantz finished seventh.

In 1950 Walt Faulkner took the controls and won the pole position in the Agajanian Special.

It was in 1952 that Agajanian and his sensational young California driver, 22-year-old Ruttman, hit the jackpot.

"Aggie" will be back in 1962, probably with a brand new car, hoping to recapture the glory of that moment 10 years in the winner's circle. Like all owners, though, he's discovered the cost of competition runs high.

"My first car back in 1948 cost me about $18,000," he explained. "And my latest ran $30,000."

And what do the initials "J.C." stand for?

Joshua James . . . which raises another question.

Here is the answer – in print for the first time – from "J.C." himself.

"As a kid in grammar school I was always called Jacie," explained Agajanian. "It had no connection with my initials . . . which of course, aren't J.C. But something embarrassing happened at school.

"It was my first day of high school," Aggie recalled. "The teacher wanted the girls to line up on one side of the room and the boys on the other as she called our names. Well, she called out "Jacie" and said 'line up with the girls.' My friends just about broke in half laughing. That was too much.

"I changed my name on the spot to the initials J.C."

And that's the story of J. C. Agajanian.

TIRE TRADITION

FIRESTONE AND THE 500

Fifty years ago a dapper young engineer with a craving for speed entered the first Indianapolis race.

When Ray Harroun sped across the finish line at the first Indianapolis 500-Mile Race in 1911 driving his Firestone-equipped Marmon "Wasp," he initiated what was to become an Indianapolis "500" tradition.

Harvey S. Firestone, founder of The Firestone Tire & Rubber Company, was among the first to recognize the famed two-and-a-half-mile racing oval as a speed and endurance proving ground for automotive products. Mr. Firestone enjoyed the furious competition exemplified by man and machine against the terrific odds of time versus distance. In years that followed, he became a well-known figure at the Indianapolis speed classic and always arranged his heavy business schedule to include the "Hub City" sweepstakes.

The new Firestone Speedway tire.

Other tire manufacturers at that time were quick to recognize the advantages of race findings and the subsequent product recognition accorded the winner. Not only domestic tires but the products of foreign manufacturers were in evidence.

Included in the glory was the risk of failure. Here again the element of blue-chip competition appealed to Mr. Firestone.

The soft macadam racing surface of the Indianapolis track was ripped up following a 1909 race, and its tremendous length was paved with bricks. The first 500-mile race was scheduled for Memorial Day, 1911. There were only 650,000 automobiles in the United States at that time.

Excitement mounted as the big day approached. Henry Ford staged a spectacular 150-car cavalcade from Detroit to attend the race. Sixty-thousand fans filled the stands and boxes at the speedway. Harroun took the lead at 400 miles and crossed the finish line at an average speed of 74.59 miles per hour.

The following year no Firestone tires were used, as the drivers showed a preference for a European tire. Nor did any of the drivers in the 1913 race choose Firestone's in the advance charts, although many other makes were named. Jules Goux was undecided. During speed trials, driving his heavy blue French Peugeot, Goux split several tires making the turns at high speed. He finally selected Firestone's and was the eventual winner.

In a patriotic note, the Chicago Tribune put it this way: "The placing of American-made tires on the French car takes from the foreign-built machine the exclusive glory of a foreign car winning the race and gives to American brains and labor a big share of the credit, for tires were a real important factor in the big international event."

From 1914 through 1919 other tire companies sought and found the winner's circle. The race was not held in 1917 or 1918 because of the war.

The 1919 race, won by Howard

Wilcox, was the last time a competitive tire was on the winning car.

Following the 1919 race, the drivers began to show overwhelming preference for Firestone tires as the race speeds steadily increased.

The high-speed tire test program initiated by Mr. Firestone in 1911, despite some disappointments in victory lane, began paying off.

Gum-Dipping, an exclusive Firestone manufacturing process by which the cotton cords were dipped in liquid rubber which penetrated every cord and coated every fiber with rubber, was perfected by Firestone engineers in 1923. The new process gave added protection in the vital cord body of the tire against the common cause of failure — internal friction and heat.

The result was a gain in both tire body strength and flexibility. Acceptance became a certainty with Tommy Milton's 90.95 winning average speed in the 1923 Indianapolis race.

The next step had already been taken. Since 1921, Firestone's development department had been experimenting with larger tire cross sections, made possible by the increased cord strength in the tire body. The result was the first low-pressure tire, the "balloon" tire. It was almost twice the size of "high pressure" tires. It meant complete change-over for car owners and manufacturers and they were skeptical.

Indianapolis provided the clincher when in 1925 Peter De Paolo went 500 miles on the "fat" balloons at an average speed of 101.13 miles per hour, the first driver to break the century mark. The balloon principle, like so many speedway developments, is still an important factor in today's tires.

Following the 1935 race won by Kelly Petillo Mr. Firestone, in summing up his company's interest in racing, said: "We are particularly proud that the drivers who enter the race place their confidence in Firestone tires. We are deeply conscious of our responsibility to them."

His last great thrill of accomplishment at Indianapolis was in the 1937 race when Wilbur Shaw won the first of his three championships. Shaw, president and general manager of the speedway from 1945 until his death in an airplane accident in 1954, was lavish in his praise of Firestone tires and he paid Mr. Firestone a lasting tribute: "The fact that I had no tire trouble enabled me to set a new record of 113.580 miles per hour. Tires that stand up under such terrific punishment deserve a great deal of credit, and the man who builds them deserves the thanks of every driver who had his car Firestone-equipped in this 500-mile race."

On February 6, 1938, Harvey S. Firestone passed away, but the winning tradition he established and the challenge he met year after year at the Indianapolis track has lived on in the company he founded.

Floyd Roberts in 1938 continued the trend toward higher speed tires when he went the full route at Indianapolis at an average speed of 117.2 miles per hour.

An innovation in the 1938 tire was the use of tread stock on the two outside plies to give the tire more strength. This and other changes in the Firestone Champion racing tire were important factors in the development of high-speed tires for World War II aircraft.

Just prior to the war, Firestone Steel Products Company developed a wide rim wheel that reduced the unsprung weight of race cars by sixty pounds. This weight reduction increased the speed potential of cars.

America's motorists were introduced to the rim in 1940 after thousands of successful test miles had been run both in the Memorial Day race and on a special test program.

The rim provided two important safety features, increased traction and greater stability in turns.

In 1941, rubber companies decided to put their products on the line in a special test on the nation's first superhighway, the Pennsylvania Turnpike.

A series of tire tests was conducted, all in excess of 100 miles per hour. The company's speedway research paid off when at the conclusion of the tests it was revealed that the Firestone product was the only tire to complete the series of tests satisfactorily.

At the outbreak of World War II, industrial mobilization was a critical problem. To speed the production of high-speed fighter plane tires, Firestone's race tire formula was turned over to the government. Race construction was then ordered for all aircraft tires.

Synthetic rubber became a by-product of the war. To offset adverse publicity which circulated when the new rubber first came on the market, Firestone, with the cooperation of the Federal Government and the American Automobile Association, conducted a series of high-speed tests on the Indianapolis track.

The track, closed for the duration, was circled 200 times by Wilbur Shaw at an average speed of more than 100 miles per hour. The 5 mile durability run proved the q ity of synthetic rubber and pa the way for the dozens of synthe which are used in today's tires.

Synthetic rubber, much impro during the course of the war, was used in racing tires in 1946 the first post-war Memorial Day 5 mile race.

With the coming of the jet a Firestone again used its racing kn how for the development of ult high-speed tires for supersonic craft. The result was tires which withstand landings up to 250 m per hour.

Nylon was adapted to Indianap tires in 1954 when Firestone veloped its heat-treating proc Nylon is pre-stretched to elimin the possibility of the cord "growi or stretching after it has been b into the tire. No time was lost passing along the race data, and t nylon and rayon "growth" proble were solved for passenger car, tru aircraft and other tires.

Jim Rathmann established the a time record for the 500-mile ra last year. He took the checkered fl after 3:36:11.36 for an average spe of 138.767 miles per hour.

Each year at Indianapolis t qualification speeds increase. Ji Hurtubise shocked the railbirds la year with his new one-lap reco speed of 149.601 miles per hour a his ten-mile average of 149.056 mil per hour, also a new record.

Raymond C. Firestone, presid of The Firestone Tire & Rubbe Company, shares the same enthusi asm for racing as did his father an has been an avid supporter of th Indianapolis race track as a tire pro ing ground. "We are proud to be service to racing and its many drive whose safety is our basic concern just as we are proud to contribute t the well-being of all motorists."

For "its many contributions to th progress and safety of automobil racing . . ." in the past fifty years the Indianapolis Motor Speedway paid tribute to The Firestone Tire & Rubber Company on the occasion o Firestone's Golden Anniversary o automobile racing in 1959.

The award, in the form of a me morial plaque, was presented to Ray mond C. Firestone, over a nation wide television network by Anton Mulman, Jr., president of the Indian apolis Motor Speedway. In making the presentation, Mr. Hulman said, "No other company has made greater contributions to automotive safety, both on the speedway and on the highway, than The Firestone Tire & Rubber Company."

TIRE TRAD

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TRADITION

estone tires were on the winning r at the first Indianapolis 500-ile Race in 1911 won by Ray arroun with an average speed 74.59 miles per hour.

d tires were developed and tested the speedway for the first time 1919.

-Dipping was perfected for the 23 race won by Tommy Milton. his process gave added protec-on to the cord body against the ommon cause of tire failure — in-rnal friction and heat.

balloon tire was successfully in-oduced by racing by Peter De aolo in 1925. This revolutionary re contributed greatly to the first 0-mile classic run at an average peed of more than 100 miles per our.

Bergere, in 1941, drove the full 0 miles without a pit stop. His verage speed was 113.5 miles per our. This was the longest con-inuous high-speed run ever made one set of tires up to that time. estone's race tire formula and con-ruction principles developed at dianapolis were adopted by the my and Navy in their specifica-tions for all aircraft tires in World War II.

Firestone developed a wide rim wheel in 1939 that reduced the weight of race cars by 60 pounds. The rim provided two safety features, increased traction and greater stability in turns. The rim was introduced to the public in 1940 after thousands of test miles in the Memorial Day race.

Nylon was adapted to Indianapolis tires in 1954 when Firestone developed its heat-treating process that pre-stretched the cord to eliminate "growth" at high speeds. This "cord-streching" process was later applied to passenger car, truck, aircraft and other tires.

Jim Hurtubise established the present 10-mile qualification record in 1960. His four-lap average speed was 149.056 miles per hour. He also established a new one-lap record of 149.601 miles per hour.

Jim Rathmann established the present record for the 500-mile distance in 1960 when he crossed the finish line in 3:36:11.36. His average speed was 138.767 miles per hour.

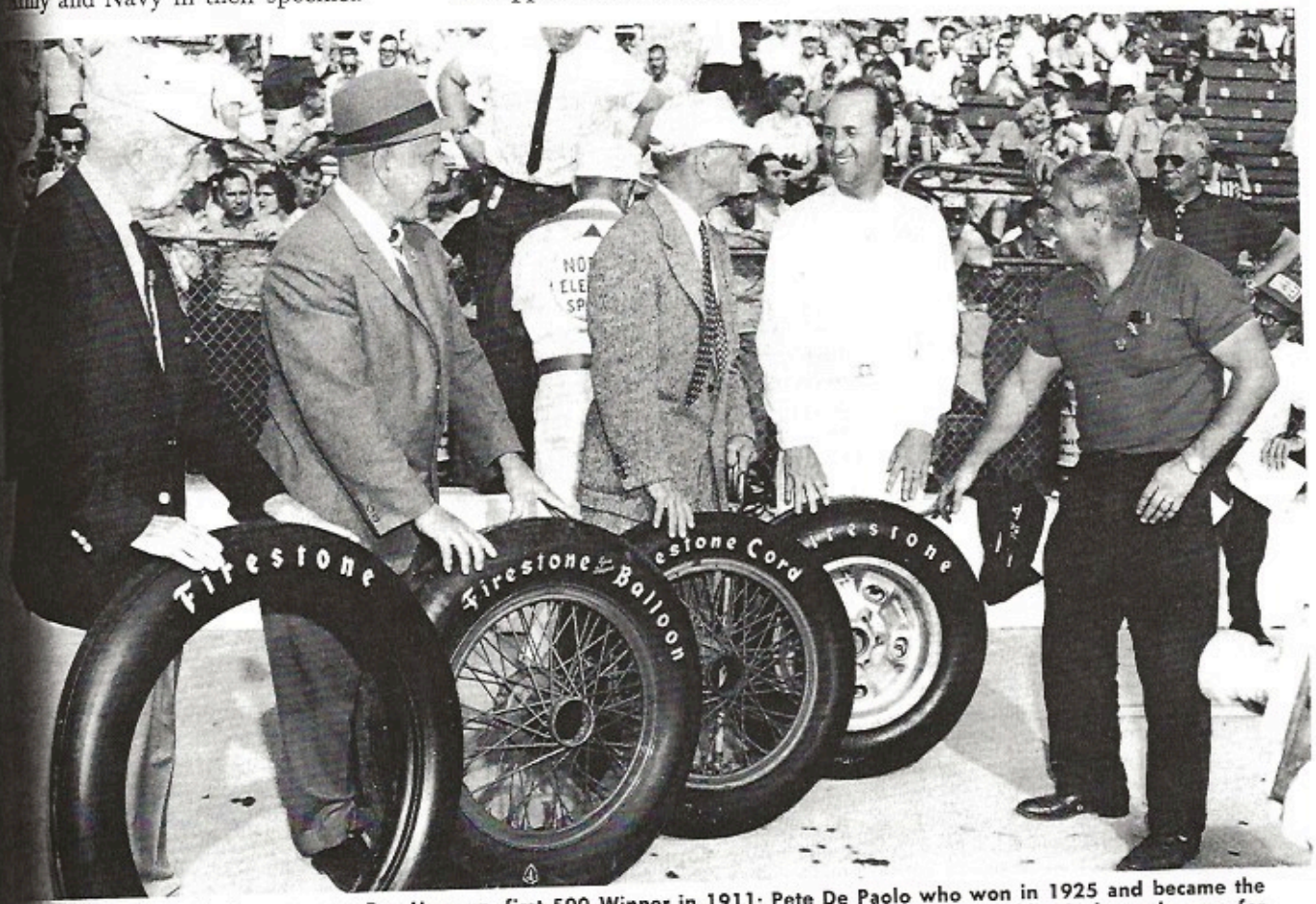
All Firestone race tires used at Indianapolis are purchased by the car owners. The only exception to this applies to the tires of the first and second-place cars; these are re-purchased from the owners by Firestone for laboratory tests and public display.

Race prize money of $15,000 contributed by The Firestone Tire & Rubber Company is awarded to winners of the first five places as follows: $7,500, first; $3,750, second; $1,900, third, and $925 for fourth and fifth places.

The Firestone "500" tubeless passenger car tire, which combines blowout protection, freedom from punctures and increased safety at high speed, is built with the outstanding features of racing tires — nylon cord body, high-abrasive and cooler-running tread and body rubber compounds.

Tire testing and development carried on by the Firestone company have contributed heavily to improvement in racing constructions and compounds used in the manufacture of other Firestone racing tires. They include the Bonneville tire for high-speed running on the Salt Flats of Utah, stock car racing tires, sports car tires and many others.

The 500-mile Memorial Day classic in 1960 marked the 37th consecutive year that Firestone tires have been on the winning car.



Comparing tires through the years are Ray Harroun, first 500 Winner in 1911; Pete De Paolo who won in 1925 and became the first driver to average more than 10 mph for the race; Earl Cooper, former National Champion and Eddie Sachs, pole man for 1961.

MEN AND MACHINES

By Gene P. Stonecipher
Service Engineer

Gene Stonecipher, Service Engineer and Jack Bryan, General Service Manager, Perfect Circle Corp, examine valve seals on Meyer Drake engine.

Almost in the shadows of the Indianapolis Motor Speedway is the home plant of Perfect Circle Corporation. PC was one of the early pioneers in building auto engines. Thus, it was only natural for the Company to become interested in one of the first automobile proving grounds in the United States – the Speedway.

In 1895, Perfect Circle got its start as a manufacturer of railway pedal cars – bicycle frames with four flanged wheels for use on railways. They were used by railroad track inspectors, linemen, lamp tenders, and others.

True to the American spirit of always working for something better, the founders improved the cycle with a single-cylinder gasoline engine which they had developed. In a few years, larger versions of the engine were being produced for use as stationary power plants. These Teetor engines were later used in many early passenger cars—Auburn, Pilot, American Underslung, McFarlan, Wescott, Staver-Chicago, Empire, Lexington, and others.

During this era, the Speedway was being built. Although it was a race track, the underlying purpose was to test and promote early American cars. Unbelievable as it seems, it is true that, at one time, 96 different makes of automobiles were being manufactured in the state of Indiana! At that time, Indianapolis was the capitol of the automotive world.

It was common practice in those days for engine manufacturers to purchase parts from outside sources and assemble them into an engine. But almost every part used in Teetor engines was machined in the Hagerstown plant.

The piston ring department received special attention from the start because the importance of piston rings to overall engine performance was soon recognized.

In 1918, the founders decided to sell the engine business and concentrate on designing and manufacturing piston rings. The Company grew and its name and reputation became outstanding enough that car factory engineers were calling on Perfect Circle to help them with their piston ring and related problems.

According to the meager records of those long ago days, racing mechanics brought their problems to PC as early as 1922. From these requests, the Company's interest in racing naturally grew to the extent that it has participated continuously in the Indianapolis 500-mile race since 1924.

Because of the interest in racing engines by many Perfect Circle people, mechanics brought in not only their piston ring problems, but also related problems, such as piston design. While PC has never manufactured pistons, its engineers were able to improve the design of early racing pistons. Today, PC works closely with manufacturers of not only racing pistons but also all types of pistons for internal combustion engines.

Contrary to the beliefs of many, there are no so-called "special" piston rings for race engines. No newly designed ring is ever used first on the race track. A new set of piston rings will not always solve the problem of excessive oil consumption, either in racing engines or other engines.

Piston rings used in racing engines are strictly stock rings that anybody may purchase through authorized automotive supply houses. When piston ring sets are being made up at the factory, nobody knows whether these rings will be used in a racing engine or sold for installation in a normal auto engine.

Newly designed rings are used in racing engines only after they have been thoroughly tested and proven. This requires hundreds of hours of dynamometer testing. It also requires millions of miles of testing in PC's own test fleet, as well as truck, bus, and taxi cab fleets. Break-down in the parts in racing engines have caused serious accidents, sometimes resulting in fatalities. An untested part in a racing engine is not to be trusted.

There are numerous causes for excessive oil consumption, of which poor piston rings is only one. To help correct these other causes, PC has developed Valve Seals, Tapered Shim Bearing Adjusters, Plastigage and the Nurlizer. All are commonly used in racing today and all have proved their merit in high speed competition.

To aid mechanics at the Indianapolis track, PC has an office at the Speedway near the garage area. During May, the office is open seven days a week and a resident engineer is available 24 hours a day. This may be one reason why 27 of the last 34 Indianapolis 500 victory flags have been taken by drivers in Perfect Circle equipped cars.

Because we at PC believe automobile racing to be America's cleanest sport, we accept a role in the classic events – with full realization of our responsibilities and a pledge to do our best towards fulfilling them because we believe in the men of the racing fraternity and their machines.

ed off.

MAY 21

the field full and a long line
et to start the "bumping" the
drama was unfolding. Days
are the reason many sea-
observers would rather miss
inal race that this last day of
ing.

man was first in line and
his first lap was 143.6 he
up speed and finally averaged
to bump Bob Cleberg.
Carter had one bad lap and
the 144s and was flagged in.

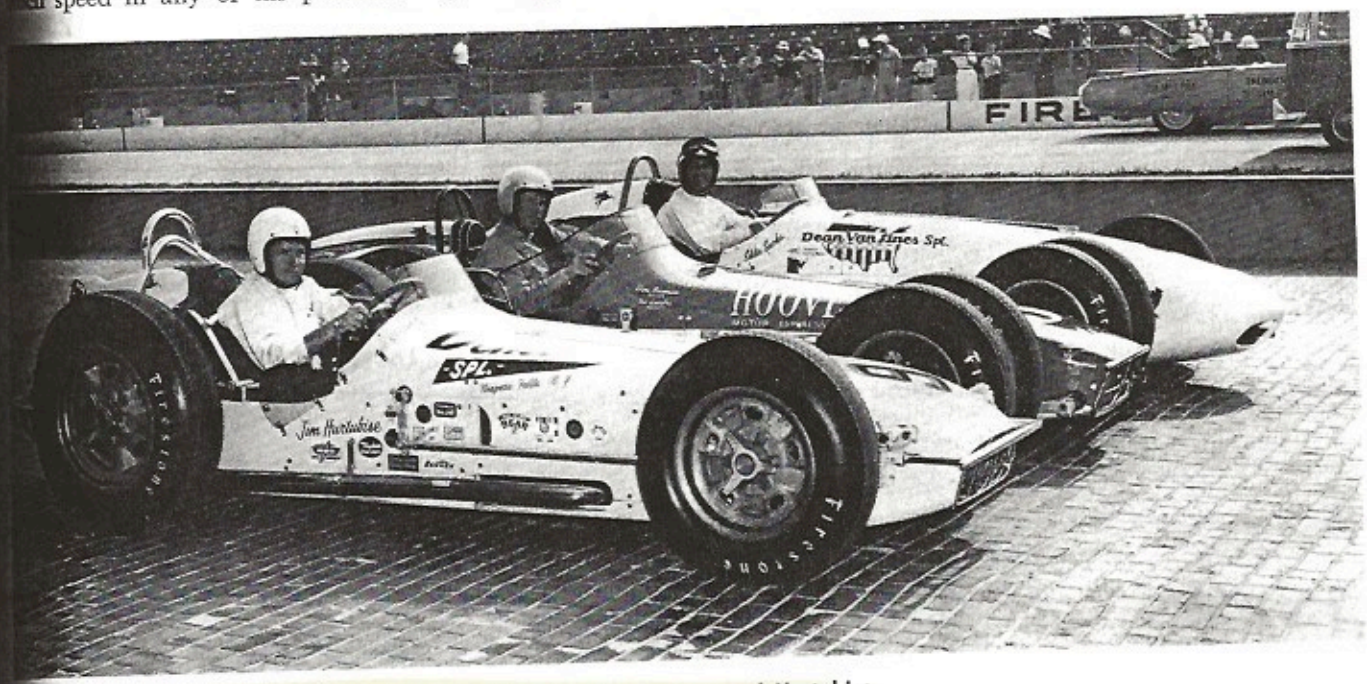
failed and Freeland was run-
well enough to make it but
trouble on the last lap. His
nance was duplicated by
Arnold who was averaging
than 144 when his timing
failed on the last lap . . . a real
breaker for Chuck and his crew
experienced so much bad luck
to work all the harder and come
when many others would have
Rookie Bill Randall, a lanky
ner was next out in the ancient
Auto Glass No. 95 but he lost
ing into the home stretch and
the wall badly bending the car
escaping with a shaking up.
the track was cleared Veith
out in the Bardahl 23 but his
laps didn't average enough to
Russo. Disgusted, Bob, when
for his immediate plans over
P.A. said "Think I'll go home
help my wife have a baby".
Not too many people were inter-
when Norm Hall pushed to
line in the old Federal Engineer-
No. 34. Norm hadn't shown too
speed in any of his practice laps and the car had been vacated by Davis early in May. His first lap was a very surprising 145.161 and the other three were over 144 so his average of 144.555 easily bumped Russo.

After Hall's successful run there were a succession of attempts, none coming close. Weyant lead the parade followed by Duman, Clum, McWithey, Brooks, Carter, Veith again in the other Federal car, Rodee, Magill who spun the Chevy after it came by the stands smoking badly, Brooks again, Hulse who was out with magneto trouble, Freeland who was running 145 until piston trouble ended his chances for this year . . . his luck just about as bad as Arnold's. Hulse again but too slow, Veith again, Brooks too slow with a 143, McWithey and finally as the gun was ready to fire, Freeland, this time in the Hunt No. 47. He took his full run but 142 was his fastest lap. Over twenty cars made attempts but only two, Marshman and Hall were successful. Freeland was the 78th qualifying attempt of the year, certainly a new record as was the average speed of the field . . . 145.302. Bobby Grim, slowest in the field, could once again breathe easily.

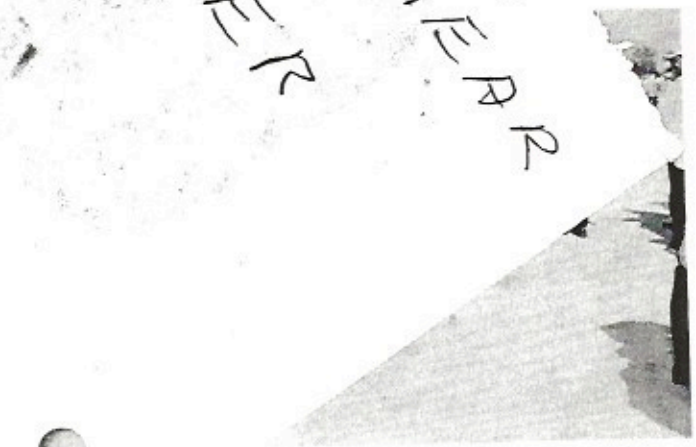
MAY 22 to 29

This was the traditional "tear down" and "Banquet Circuit" week. The track was only opened for fuel tests on Saturday morning and those who missed the program either loaded up and went home or started getting ready for the 100-miler that follows the 500 by a few days. The greats of the motoring world began gathering at the time of the Champion 100-mile-an-hour banquet and the lanes of cars at the gates began growing. Sunday before the race, the first sprint car show at the new Indianapolis Raceway Park was won by A.J. Foyt while Roger McClusky took a nasty flip which might well have kept him from starting the 500 but his luck held and he wasn't injured. The fan clubs had their big night at the annual Kokomo midget show and those with passes attended the drivers' meeting in front of the tower the day before the race. Eddie Rickenbacker was an honored guest and he gave an entertaining speech recalling his first "drivers test" for the 1911 race when he was told to go out and drive until he blew a right front tire . . . his test would consist of proving how well he could handle the car with the tire blown. Eddie Sachs took home most of the awards and did his usual fine job of acknowledging the gifts. Though Sachs is a controversial figure he has never been at a loss for words and is quite a witty speaker.

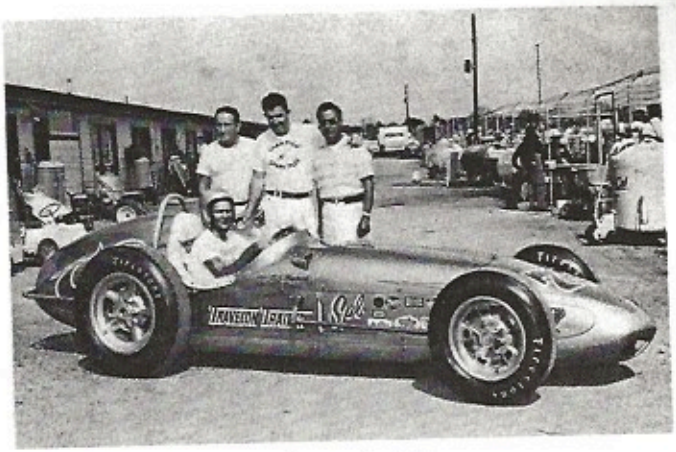
The events of May which merit reporting are too numerous to be included in any volume. There is, perhaps, more drama, comedy, heartbreaks and tragedy packed into thirty days than even the most prolific writer could hope to capture. Many things happen that remain unknown to only the immediate crews but which, if told could make the best seller lists. Friendships are made and friendships are broken; careers are made and careers are ruined; a very few fortunes are made and many are lost. It is all part of the story of the month of May in Gasoline Alley.



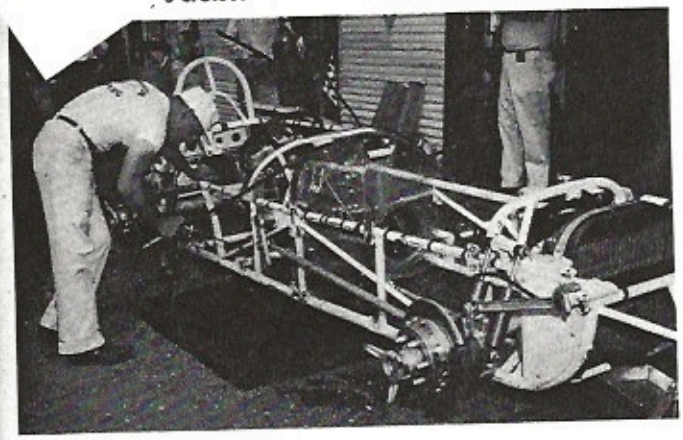
The front row after the month of May. Sachs on the pole, Branson and Hurtubise.



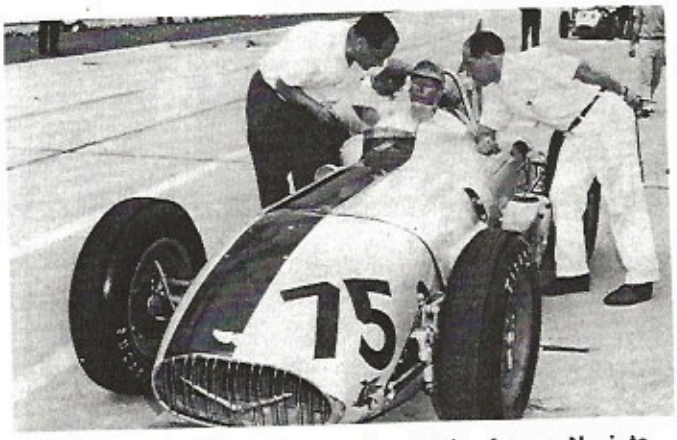
...he local gas station to fill up on the "go
...s cruise.



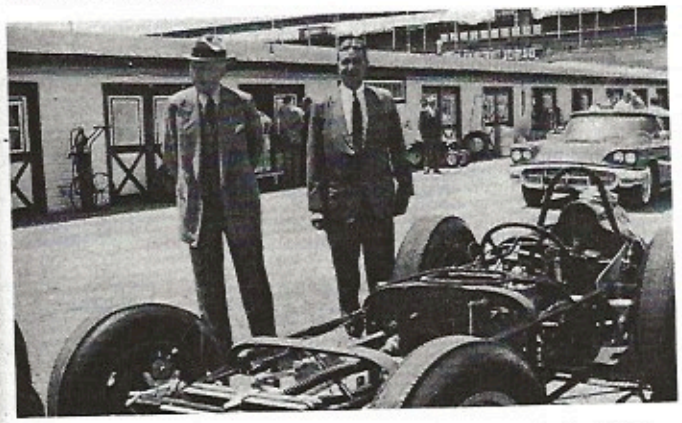
A. J. Shepherd in last year's record setter.



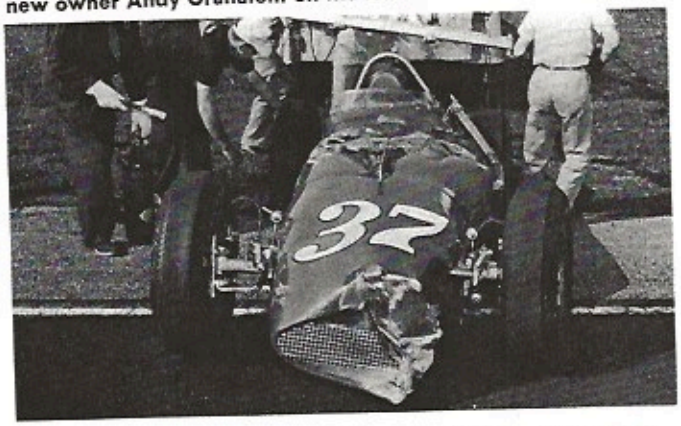
A driver's nightmare: Two hours before the race.



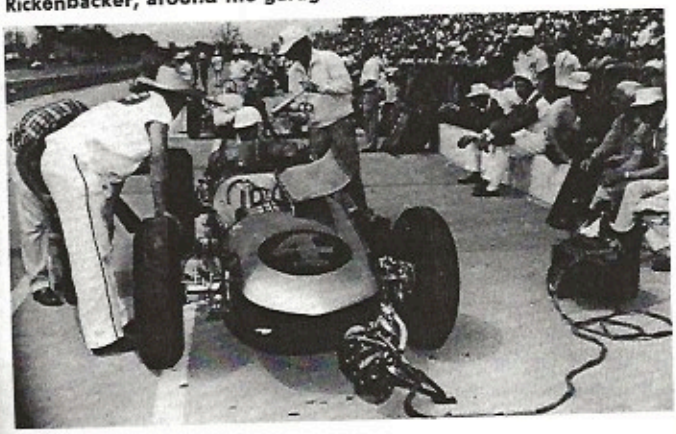
Dick Rathman gives his impression of the former Novi to new owner Andy Granatelli on the left.



Tony Hulman showing former speedway owner, Capt. Eddie Rickenbacker, around the garage area.

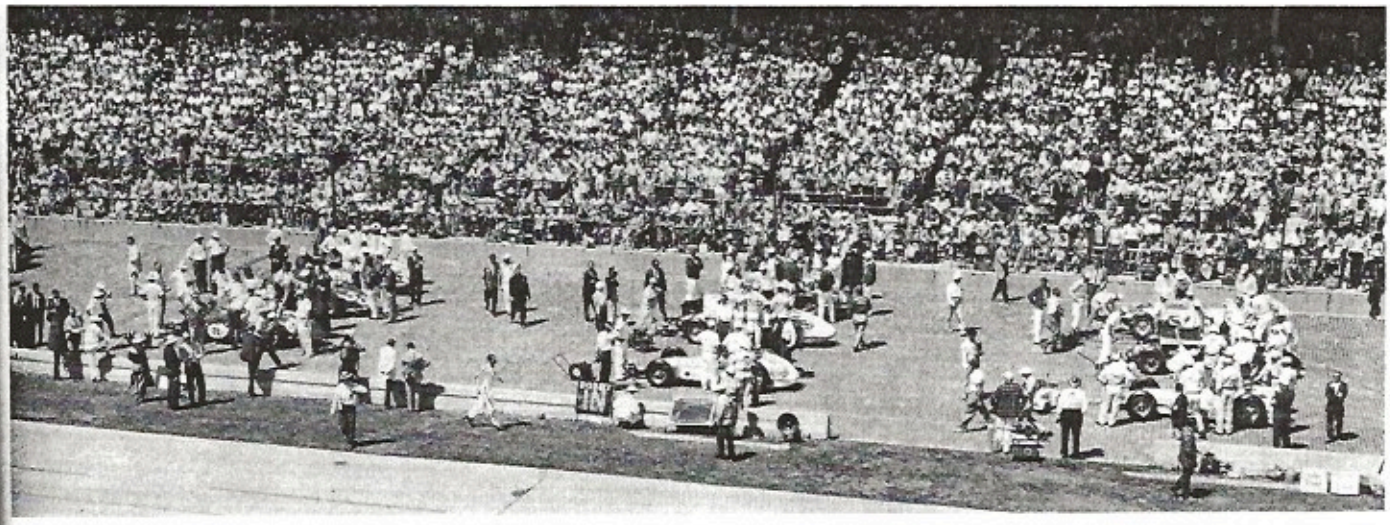


Chuck Hulse's Vatis Spl. a little out of shape after Chuck romanced the wall with it.



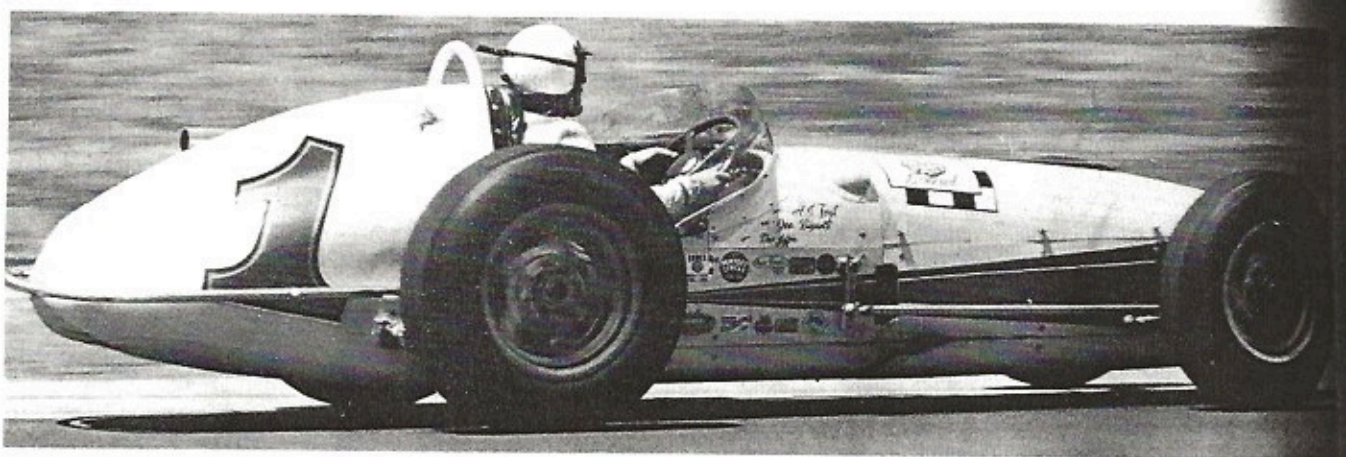
Jim Rathman getting ready for another practice run.

Jim Hurtubise.

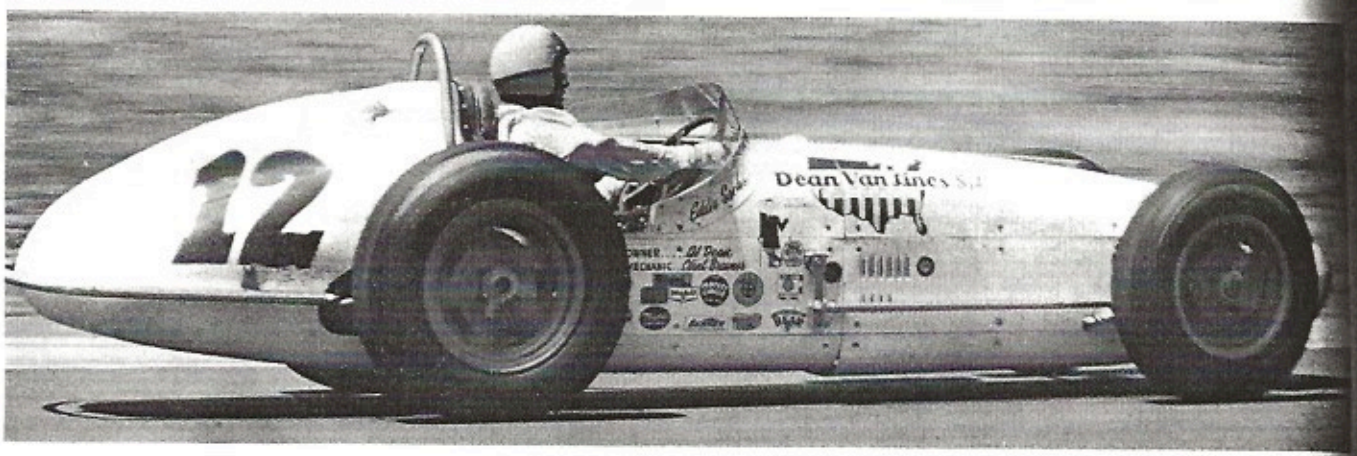


STARTING POSITIONS - 1961

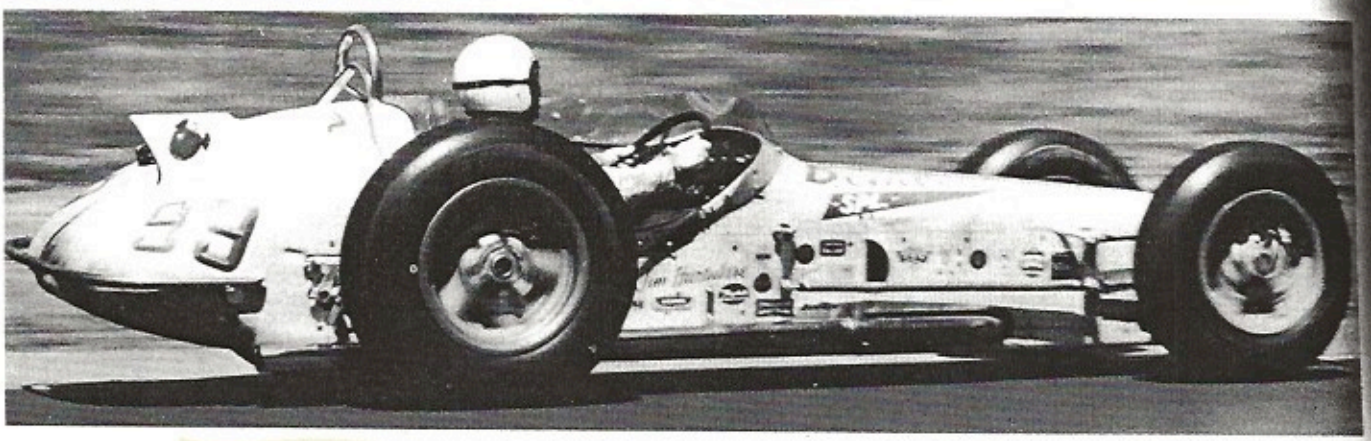
Start Row	Car No.	Driver	Car Name	Qualifying Time	Average MPH
1	12	Eddie Sachs	Dean Van Lines Special	4:04.10	147.481
	3	Don Branson	Hoover Motor Express Special	4:05.16	146.843
	99	Jim Hurtubise	Demler Special	4:06.06	146.306
2	2	Rodger Ward	Del Webb's Sun City Special	4:06.26	146.187
	98	Parnelli Jones	Agajanian's Willard Battery Special	4:06.44	146.080
	97	Dick Rathmann	Jim Robbins Special	4:06.52	146.033
3	1	A. J. Foyt	Bowes Seal Fast Special	4:06.74	145.903
	8	Len Sutton	Bryant Heating & Cooling Special	4:06.75	145.897
	14	Bill Cheesbourg	Dean Van Lines Special	4:06.97	145.873
4	33	Eddie Johnson	Jim Robbins Special	4:06.84	145.843
	4	Jim Rathmann	Simoniz Special	4:07.57	145.413
	15	Wayne Weiler	Hopkins Special	4.07.68	145.349
5	17	Jack Brabham	Cooper Climax	4:08.03	145.144
	73	A. J. Shepherd	Travelon Trailer Special	4:08.35	144.957
	28	Gene Hartley	John Chalik Special	4:08.59	144.817
6	32	Bob Christie	North Electric Special	4:08.59	144.782
	10	Paul Goldsmith	Racing Associates Special	4:08.72	144.741
	7	Shorty Templeman	Bill Forbes Racing Team Special	4:09.41	144.341
7	86	Ebb Rose	Meyer Speedway Special	4:09.41.5	144.338
	41	Johnny Boyd	Leader Card 500 Roadster	4:09.83	144.092
	45	Jack Turner	Bardahl Special	4:08.44	144.904
8	52	Troy Ruttman	John Zink Trackburner Special	4:08.62	144.799
	55	Jimmy Daywalt	Schulz Fueling Equipment Special	4:09.62	144.219
	16	Bobby Grim	Thompson Industries Special	4:09.95	144.029
9	5	Lloyd Ruby	Autolite Special	4:05.05	146.909
	19	Al Keller	Konstant Hot Special	4:06.31	146.157
	83	Don Davis	Trevis-Morcroft Special	4:07.68	145.349
10	18	Chuck Stevenson	Metal-Cal Special	4:07.95	145.191
	22	Roger McCluskey	Racing Associates Special	4:08.16	145.068
	26	Cliff Griffith	McCulloch Special	4:08.21	145.038
11	35	Dempsey Wilson	Lysle Greenman Special	4:09.65	144.202
	34	Norm Hall	Federal Engineering Special	4:09.04	144.555
	31	Bob Marshman	Hoover Motor Express Special	4:09.51	144.293



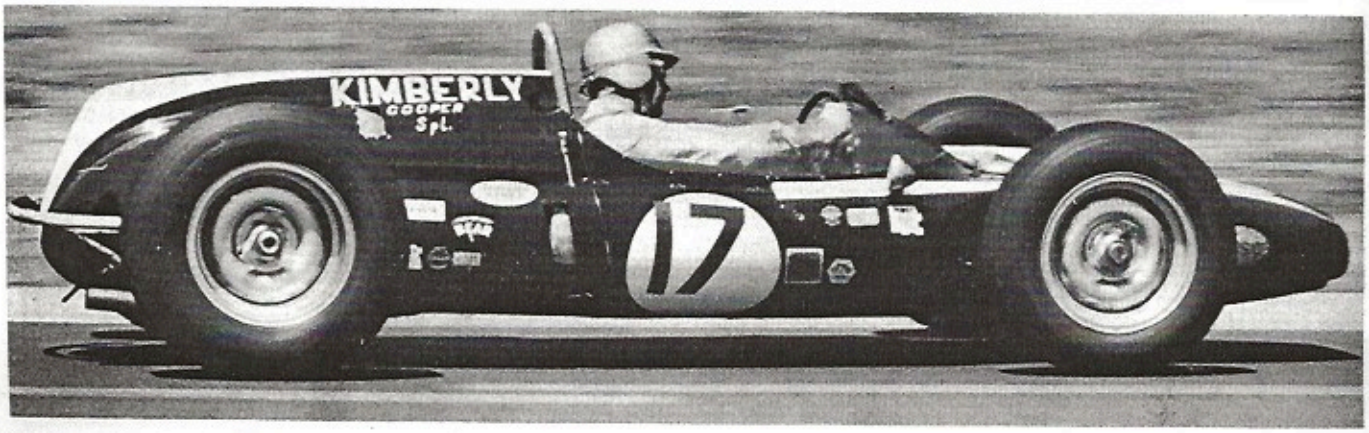
Driving styles: 1 — A. J. Foyt.



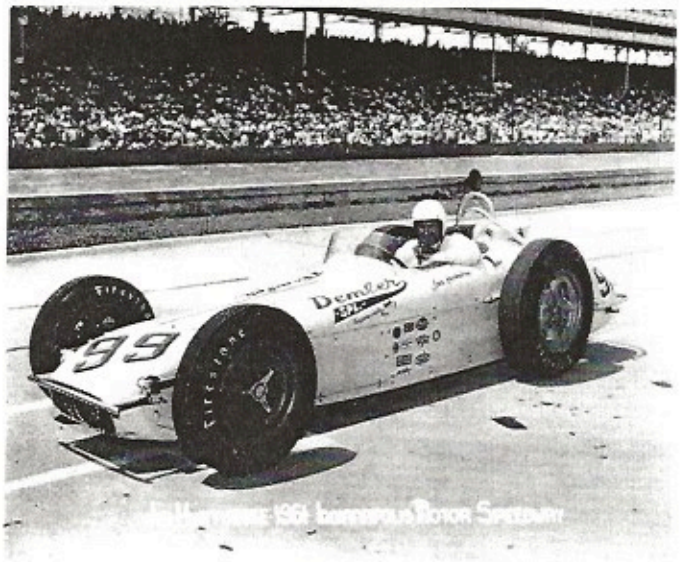
Driving styles: 2 — Eddie Sachs.



Driving styles: 3 — Jim Hurtubise.

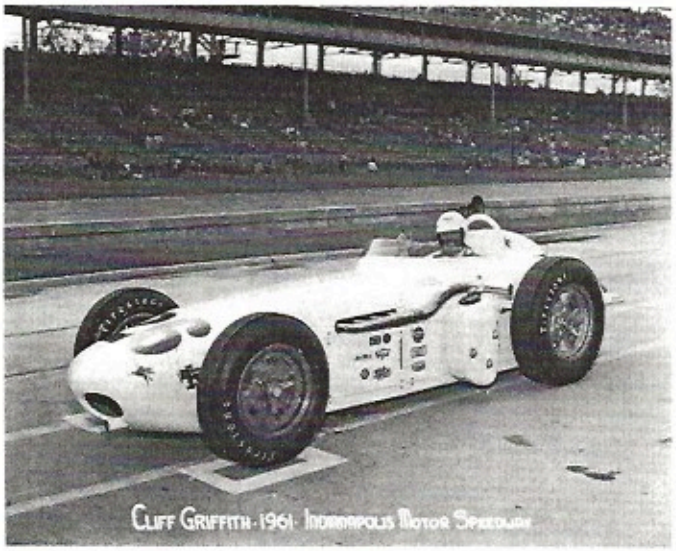


Driving styles: 4 — Jack Brabham.



22nd, Jim Hurtubise—No. 99, Demler Special

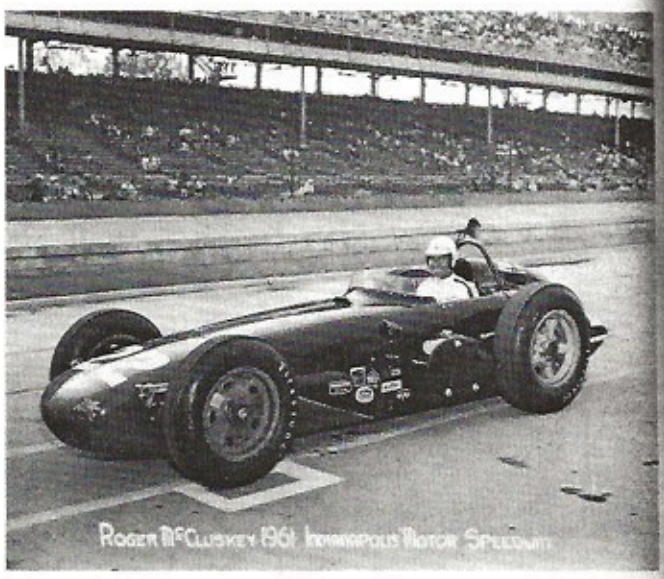
23rd, Ebb Rose—No. 86, Meyer Speedway Special



24th, Cliff Griffith—No. 26, McCulloch Special

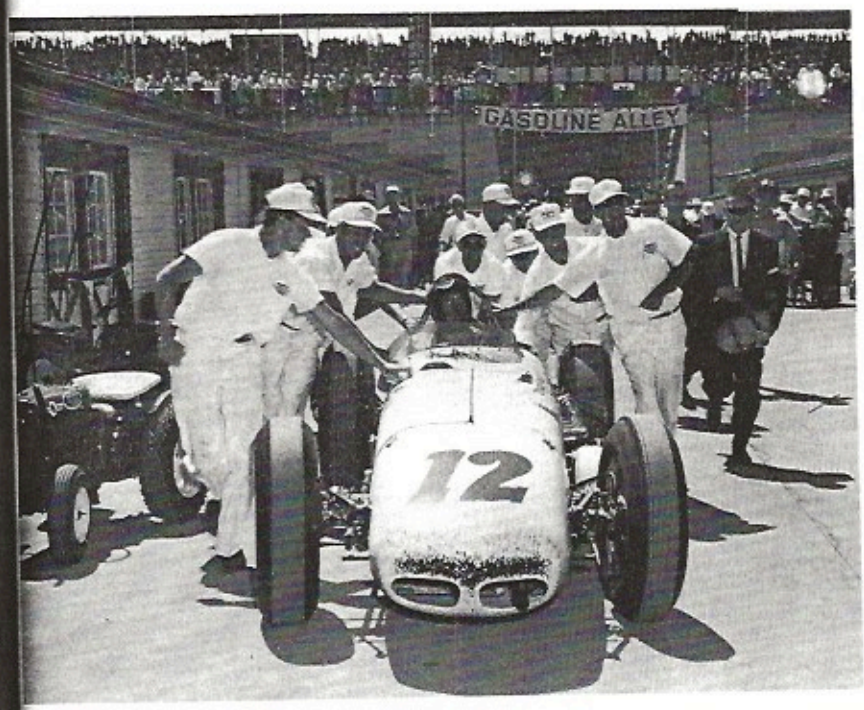
25th, Jack Turner—No. 45, Bardahl Special

26th, A. J. Shepherd—No. 73, Travelon Trailer Special



27th, Roger McCluskey—No. 22, Racing Associates Special

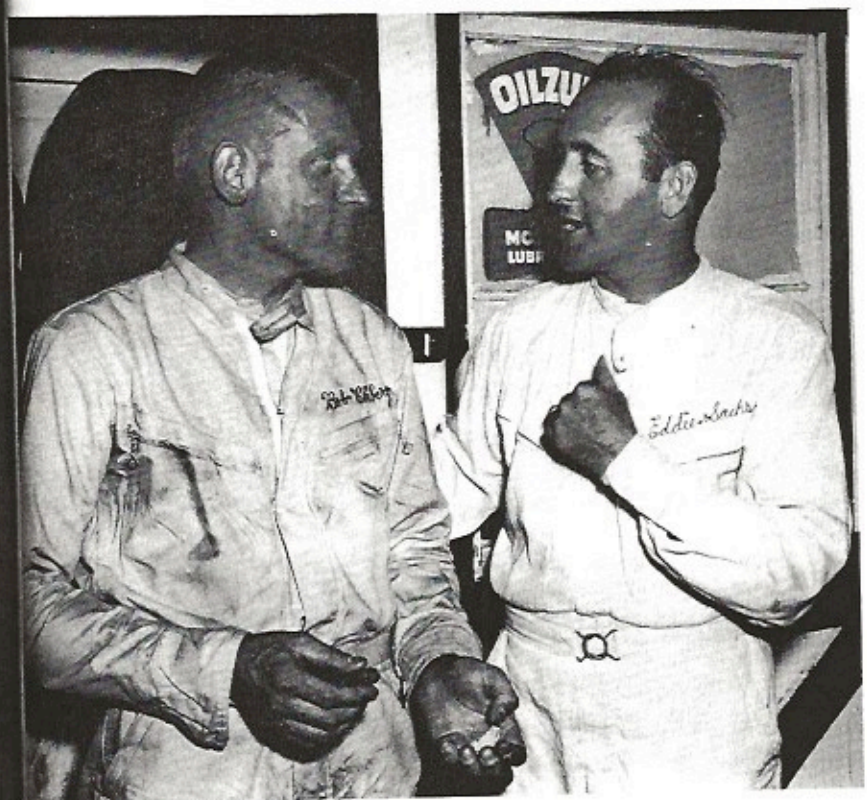
Indianapolis—The Aftermath



A tired Eddie Sachs coming in after a heartbreaking finish.

REASONS FOR NOT FINISHING 500-MILES

CAR	
28	Flagged
98	Flagged
97	Broken fuel pump drive
10	Lost water, overheated and broke connecting rod
15	Broken wheel bearing
35	Broken fuel pump key
32	Plugged injector and burned piston
33	Wreck
8	Sheared clutch bolts
52	Clutch failure
41	Clutch failure
99	Broken piston
86	Broken connecting rod
26	Broken piston and pin
45	Wreck
73	Wreck
22	Wreck
14	Wreck
83	Wreck
4	Magneto failure
55	Broken brake line
16	Plugged injector and burned piston
3	Bent valves
45	Wreck



Bob Cleberg listens to Eddie Sachs explain exactly how he got 2nd place.

Co-rookie Bobby Marshman receives long distance congratulations right after the finish.

AN ENGINEER'S VIEW OF THE 1961 500-MILE RACE

R. G. McMAHAN,
Mobil Oil Company

The atmosphere at Indianapolis this years was surely one of anticipation and uncertainty. Would someone crack the 150 mph barrier — would Jim Rathmann's record be broken — what speed would be required to be one of the lucky 33 — how fast would the pole position be — would Brabham have a chance in the Cooper-Climax — would this car usher in a new era of car design for Indy — how many pit stops could one afford — what influence would all the mechanical gems conjured up by crafty mechanics during the year have on car performance — and would the new crop of rookies fill the dwindling ranks of capable drivers? While the answers to most of these questions are now a matter of history, one at least — the effect of the design of the Cooper-Climax car on American design — must wait for further developments. As usual, some of the more nebulous circumstances not generally known to the public will always remain to be argued throughout the year, but it is generally agreed that the show was utterly fantastic. There were thrills enough to whet the appetite of the fans of all ages for a return engagement next year and an electrifying finish, demonstrating the effect of human and mechanical quirks, could well have been taken from the pages of fiction.

A. J. Foyt, driving the Bowes Seal Fast Spl., applied the modern philosophy of driving — "stand on it" and let the chips fall where they may — to beat Eddie Sachs by 8.26 seconds with a record average speed of 139.130 mph. In fact, both drivers exceeded Jim Rathmann's last year's record of 138.76 mph even though each made an extra pit stop and were hindered with 33.03 minutes of yellow light where slow speeds are mandatory because of wrecks or other situations making driving more than hazardous as against 29.7 minutes last year.

Jim Hurtubise's record first lap of 139.04 mph started the furious pace which continued to mount. Troy Ruttman, who led the race on two occasions, turned the 91st lap at 147.589 mph which was actually faster than Sach's pole position qualifying average. The lead was shared by seven drivers during the race and changed back and forth 23 times. Sixteen new records by Hurtubise, Sachs and Foyt all but rewrote the record book.

The fantastic pace that smashed all records took its toll. Car after car dropped out through mechanical failure — metals just couldn't stand the strain. In spite of the punishment, careful inspection of the cars after the race proved that engine oils, gear and chassis lubricants performed faultlessly. Not one case of lubrication failure occurred. The world's motorists should find reassurance in the fact that 31 of the 33 cars, including the winner, used lubricants identical to those sold at Mobil service stations around the world.

Pit stops were all important. During this time at least three tires are usually changed and 45 gallons of fuel added. Ward's crew made three stops in 66 seconds for an average of 22 seconds. The Sachs and Foyt crews, even with their unexpected fourth stop, did just about as well because their times were 99 and 91.4 seconds respectively. Think what Sachs would have given for this extra 7.6 seconds. He may have been $100,000 richer. This indicates that pit crews are far more important than just five fellows dressed up in fancy duds.

When the Speedway opened for practice early in May, drivers and mechanics faced the fact that of the 69 cars entered only 33 could make the show. This must have had its influence upon the entrants because early practice periods indicated that the cars were in better condition upon arrival at the Speedway. This was further borne out by the fact that 22 cars qualified on the first day with an average speed of 145.302 mph, (another record) with the slowest in the final 33 being 144.029 mph. Eddie Sachs latched onto the pole position with an average speed of 147.481 mph and no one even got close to Jim Hurtubise's last year's record lap of 149.601 mph. Strangely, it appears that this honor was left to Tony Bettenhausen who crashed while testing a car for a friend. All cars were given a chance to qualify and eight rookies made the starting field. This is evidence that the training program sponsored by USAC is working and father time has a way to pushing the older generation to the sideline.

Ten new cars were in the starting field, or, perhaps, we should say eleven, because the Cooper-Climax was an entirely different design than the American entries. There were no radical deevlopments in the design of cars this year and most of the changes were confined to those having an influence on weight distribution, overall weight, suspension, reliability and safety. All 32 of the American entries were powered with the four-cylinder, Meyer-Drake engine having a displacement of approximately 252 cu. in. Differences in performance resulted from variations in handling and the ability of mechanics in applying just the right techniques in assembly and adjustment to make the drivers feel comfortable and the engine to do its utmost. Other things common to all cars were tubular frames, disc brakes, quick-change Halibrand rear axles, Hilborn fuel injection, magneto ignition, torsion bar suspension and magnesium wheels.

Too much can never be said in favor of the USAC safety requirements imposed last year such as rear bumpers, fibreglass-covered fuel tanks, better seat belts, and improved roll bar design. Perhaps the best testimony to the effect of this program is the fact that six drivers walked away from what could have been fatal wrecks.

A most interesting attempt toward the improvement of engine reliability was the application of full flow oil filtration. In view of the present engine design this took quite a bit of doing but the results on three cars seem to justify further work.

One of the greatest problems facing drivers is absorbing the punishment from road shock resulting from the rough track and fast steering. Repeated attempts have been made to apply power steering, not necessarily to help in steering the car, but to absorb or block out the shock. Some progress has been made but the influence on steering has been such that no driver has been willing to risk his chances in the race with this device as yet.

To say that the Cooper-Climax car has ushered in a new era of car design for Indy would be putting it mildly. Already, the Watson cars driven by Ward and Boyd are equipped with coil-spring suspen-

sion instead of torsion bars, eliminating about 100 lbs. weight and other builders are awaiting approval from USAC to consider building the short wheel base, light rear-engine design.

The Board members of USAC are much more interested in the reduction of engine size than ever before and realize that a car having full independent suspension and reduced unsprung weight would be attractive, but are faced with the problem that such steps would make obsolete a lot of expensive equipment. Also, safety must always be considered, and experience has shown that too much weight in the rear of a car can be quite dangerous at high speed.

The John Zink Trackburner Special would have created more interest at the track if it could have been completed in time. This car would have been powered by a rear-mounted Boeing gas turbine with the driver sitting up forward. Unfortunately, there just wasn't time to finish the car, but we certainly are looking forward to a preview later this year.

Wherever racing is involved there is always a demand for power and we have to deal with people who are always seeking a fuel that will produce the ultimate. Other factors that a fuel may have, such as an influence upon mileage, easy-starting, availability and cost are often considered secondary. For this reason, there generally is not an ideal, ready-made product, such as gasoline, available that has all the necessary features built in to satisfy the average motorist, and such situation must be considered separately and a fuel selected that meets the individual requirement.

The major influence that a fuel may have upon power comes as a result of the compression ratio it will stand without knocking, its effect upon the charge density and the amount of available oxygen it can contribute for combustion.

Generally, the higher the compression ratio an engine has, the greater the power output, but the influence becomes less and less as the numbers go up. At Indianapolis the compression ratio of the engines varied from 13 to 15.5 to 1. This is quite a long ways from the maximum of 10.5 to 1 found in 1961 passenger cars, and obviously, a fuel of much higher antiknock value than is available to the public was required.

The engines are normally aspirated (not supercharged) and the weight or density of air-fuel mixture inducted into the cylinder during the intake stroke depends upon the temperature. Since fuels cool the surrounding atmosphere as they vaporize, they have an influence upon the induction temperature making the mixture more dense, and those having the greatest refrigerating effect are normally preferred for high-power output.

The fact that these are air breathing engines, the power potential is dependent upon the amount of air or oxygen available. It only stands to reason then, that if a fuel could be used that carries a portion of oxygen with it that is available for combustion, such a material would be attractive for high-power output. Some are, and they are used to the fullest extent consistent with the ability to keep combustion under control so as not to damage the engines.

Our experimental blends of Mobil Racing Fuel match individual requirements through the use of nitromethane to provide additional oxygen, the alcohols for cooling and Mobilgas components of mileage. They have a potential beyond which even the most advanced passenger car engine of today could utilize. However, as compression ratios approach those used in racing today, and it is indicated they will, the experience gained now could be of great advantage in the manufacture of fuels for the car of the future. Judging from the records established, little need be said about the fuel's excellent performance.

While it was unfortunate that a few good cars were eliminated during qualifications, it is generally conceded that the 33 starters were the cream of the crop. At the end of the race only 12 cars were running and two of these, the Chalik Spl. and Agajanian Willard Battery Spl. were flagged at 198 and 192 laps respectively. However, when we consider that six of the 21 that failed to finish were in accidents, the number eliminated by mechanical considerations were less than anticipated.

Many reports were given this year of engines literally exploding and sometimes others were described as being cut in two. To the uninitiated this must sound horrifying and some may feel that fuel and lubricants were responsible. Actually, everything that goes into the engine is involved, but in this case, it was just simply a case of exceeding the strength of materials, and when a connecting rod, piston or piston pin lets go nothing could be more devastating.

In the search for more horsepower, mechanics are always tempted to increase engine speed in the hope that they can get away with it for a little while. Shortly after the war, the engine speed was limited to about 5200 rpm and considering a 4⅜" stroke a mean piston speed of 4000' per minute was achieved. This was considered as reasonably high in engineering circles at that time. Now, some concession has been made because of the development of improved materials, but at an engine speed of 7200 rpm with a 4.375" stroke, the mean piston speed has jumped to 5250' per minute which is a bit unrealistic. The attempted use of magnesium-thorium pistons to reduce inertia loads was a step in the right direction but provided hardly enough relief to prevent premature fatigue failure of parts. Even they had to be discontinued because of their inability to withstand high combustion temperatures.

Increases in engine speed and power caused other parts to fail besides engine parts. This year there seemed to be an unusually large number of clutch failures also. The appendix records the causes for cars not finishing the race.

Relatively few people are aware of the United States Auto Club procedure which guarantees that certain automotive products used in the race are truly "stock," or identical to the products widely sold to the public. In the case of oil, for example, the Mobiloil used was selected by the Technical Committee of the USAC a few days before the race, transported to the track and placed under lock and key. At 5:00 a.m. on the morning of the race, representatives of USAC took the required amount to each garage, observed that the oil tank was drained and refilled with nothing but Mobiloil and sealed the cap. Then they stayed with the car during the entire race to see that this seal was not broken.

As an interesting sidelight, many of this year's cars did not use more than one quart of oil and in 1911 it was not unusual for a car to consume a full barrel of oil. A lot of this unusual consumption of oil, no doubt, was the result of leaks. That is why the rules today do not permit adding oil and, obviously, the engines are much more carefully assembled to prevent leaks. Consequently, the track is much safer.

Those who lost this year will rebound with unbelievable alacrity. They have already analyzed their mistakes, planned new strategy, regained their composure and are putting their new ideas to work. Such is the history of racing and if they fail they will try again.