

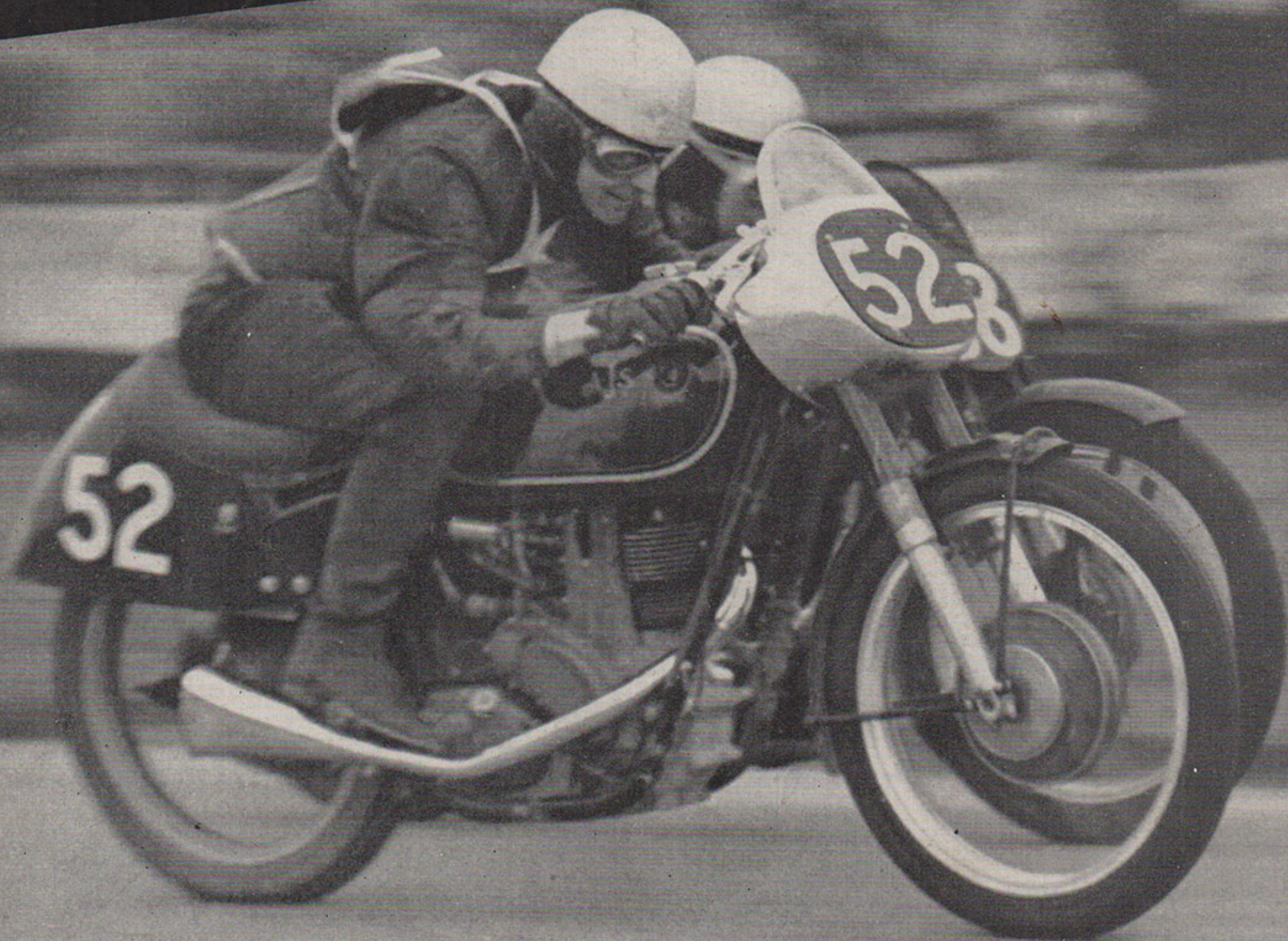
# CYCLE

**SIDECAR THRILLS WINNING  
THE BELGIAN GRAND PRIX**

By William H. Onslow

**OCTOBER 1950**

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E. J. Frennd, AJS, fights past A. R. Foster, Velocette, during race at Blandford in England. A superb bit of action

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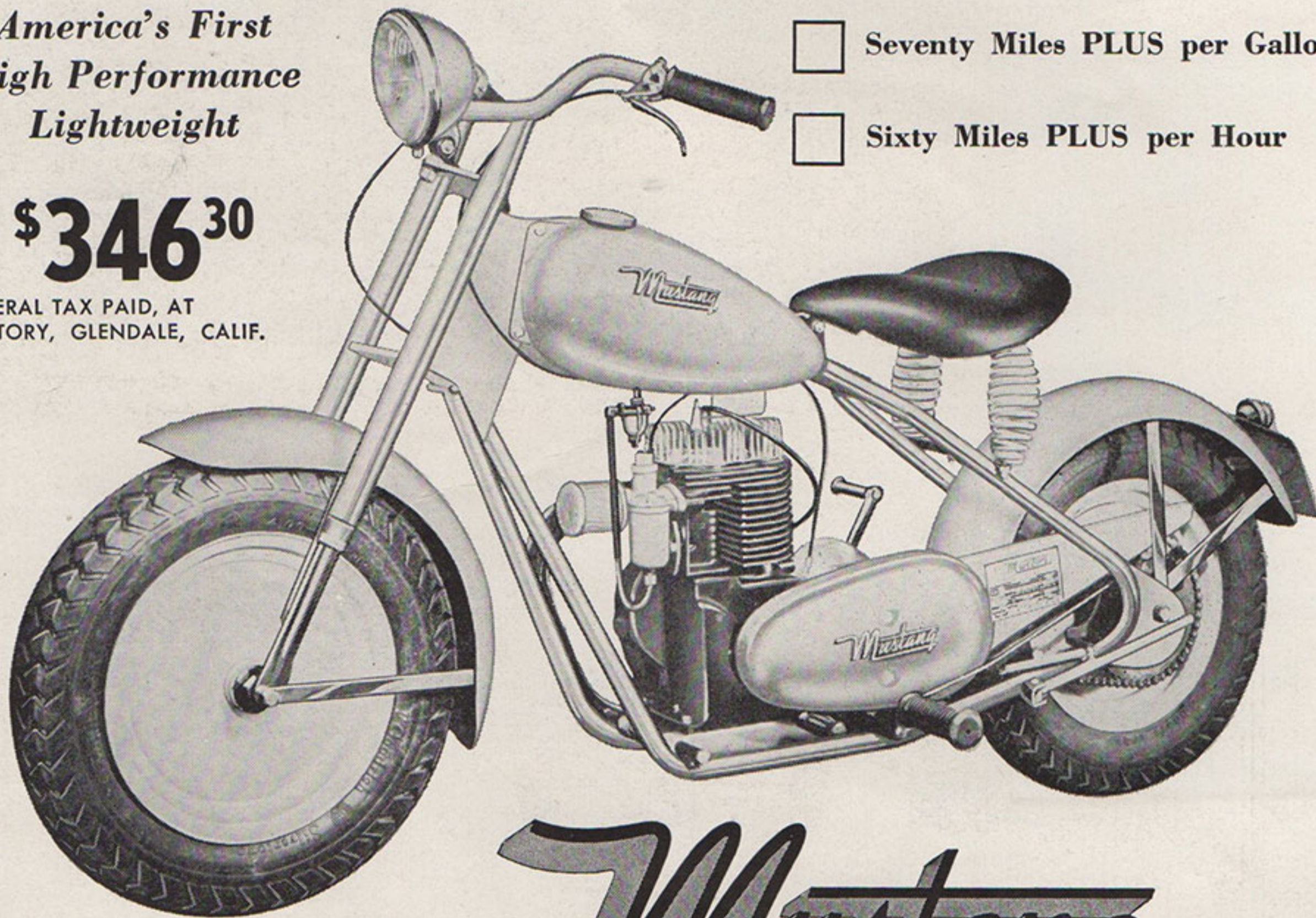
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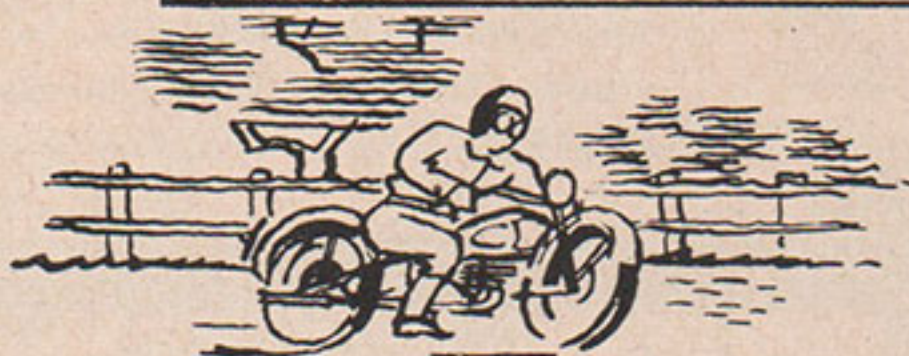
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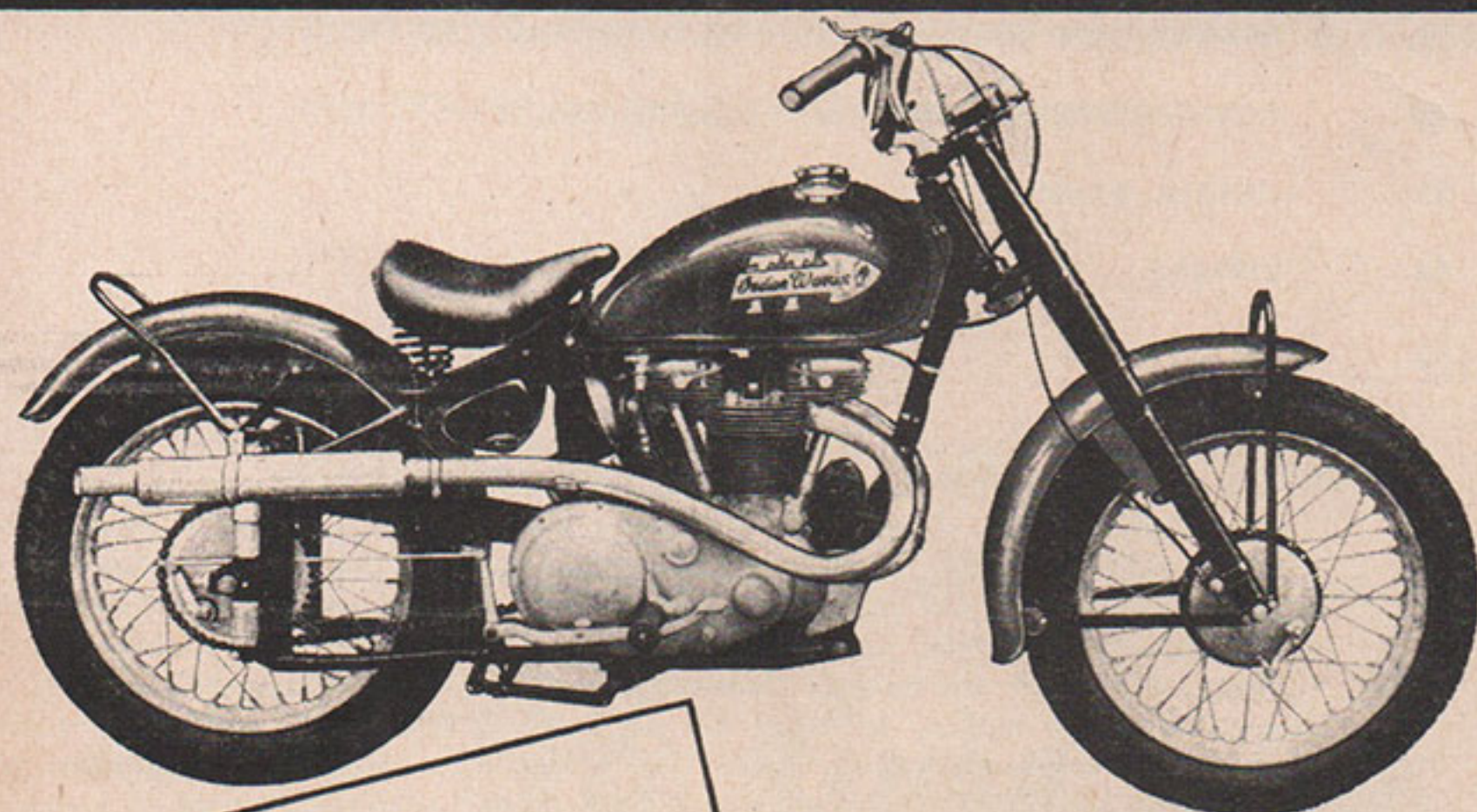
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# Editor's Viewpoint

OCTOBER 1950

# CYCLE

"World's Largest Monthly Motorcycle Circulation"

VOL. 1 Published Monthly No. 7

PUBLISHERS—R. E. Petersen, Robert R. Lindsay  
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CIRCULATION MANAGER—Gordon Behn  
WRITERS—John Lowry, Tim Witham

“WHY DO you put so much emphasis on foreign motorcycle activities in CYCLE magazine?” This question has been put to us more than once. Our reply is logical and factual. Here it is:

Motorcycle activity in the U. S. for a quarter of a century has been on a steady decline. With only two U. S. motorcycle manufacturers supplying the domestic market, the sport became a matter of “Nameplate Worship.” If you owned an Indian the Harley riders looked at you with disdain. If you owned a Harley the Indian riders maligned you. Such attitudes developed antagonism between the two factions.

With a new publication we elected to try to raise the sights of U. S. riders and potential motorcyclists by revealing the many engineering advancements, modern design features, and worthwhile contributions to the two-wheeled game as they are made in other parts of the world where “Nameplate Worship” does not exist.

For us to have aligned ourselves with the narrow, petty, childish, and dogmatic practices attendant on “Nameplate Worship” would have still longer kept the U. S. riders and readers in the dark, and ignorant of world motorcycling. Such a policy causes us to suffer some loss of advertising revenue and some rebukes but we believe our policy is sound.

The sport of motorcycling is enjoyed by millions of people all over the world. We shall continue to bring this fact home to our readers.

WHO MAKES the best motorcycle in the world is a question that has started many an argument. It is just as easily answered as that oldy of “how long is a piece of string?”

All motorcycles have two things in common: they all have two wheels, they all have engines.

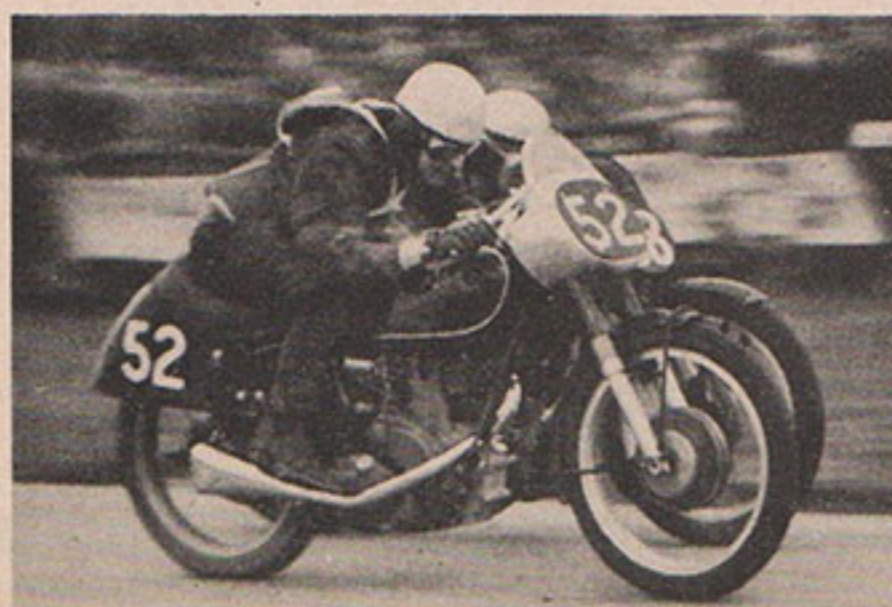
Other components, although similar on all machines, are not necessarily common to all makes. It is this principle which makes one bike more desirable to certain buyers in contrast to others.

One rider desires a motorcycle for his own purposes, another rider desires a motorcycle for other purposes, which differ from those of the first rider. Therefore, there is no “best motorcycle” for all types of riding, in all weathers, over all terrains, and under all conditions. There is only the “best machine” for individual circumstances. What is your preference? Write us and tell us why.

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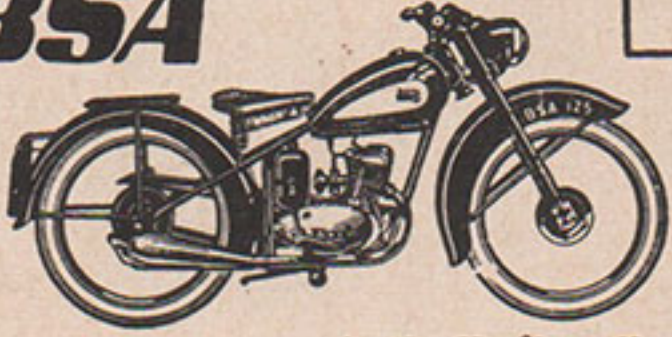
## ON THE COVER

This photo was snapped as the two riders were about 8 ft. from the finish line, a most exciting moment and a very unusual finish. E. J. “Ted” Frennd has been a member of the official AJS factory racing team for several seasons. A. R. “Bob” Foster has just recently joined the same team to fill the place of injured Bill Doran. AJS now have Les Graham, Bob Foster and Ted Frennd, a most formidable trio, for future races



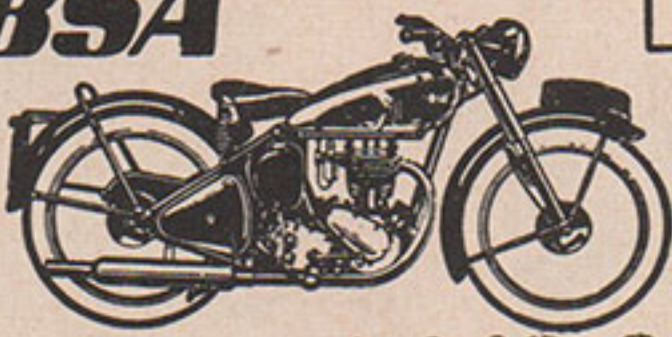
# What say fellow - let's trade Bikes

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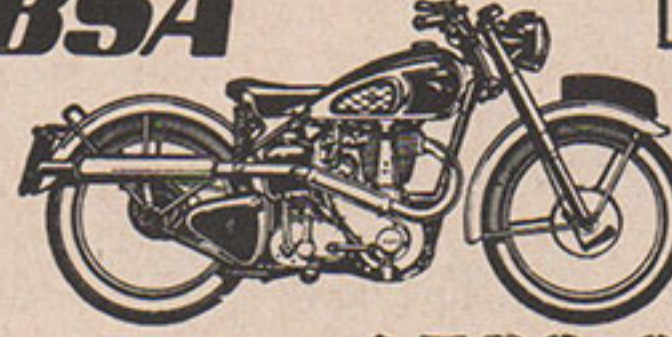
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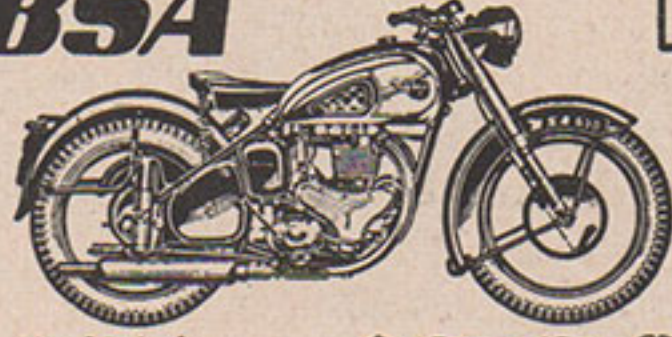
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# INAUGURAL AIR STRIP RACE MEET

## EDDIE KRETZ, JR., TRIUMPH, WINS 50 MILE FEATURE

By Bill Bagnall



Photo by Thomas J. Medley

The young man in the center is the 50 Mile race winner, Eddie Kretz, Jr. The man without the Triumph sweater is tuner (and Technical Writer for CYCLE magazine) Tim Witham. It's really a waste of words to introduce the other man, but it's Ed Kretz. He was a proud papa that day!

WHEN something new comes up in U.S. motorcycle competition you can bet that it will originate in Southern California. Florida's rivals have been first to introduce "Scrambles" and "English Trials" to this country. In the automotive fields, Southern California has given birth to midget auto racing, the hot rod, and custom auto styling.

Another Southern California "first" was chalked up on July 16th. And that "first" was a motorcycle road race held on airport runways in the U.S.A. However, in England and throughout Europe, this type of course is quite popular. The course used for this race was a rectangular-shaped, two-mile circuit formed from the runways and roads of the Santa Ana Naval Blimp Base.

### EDDIE KRETZ, JR. FIRST

Another "first" was garnered by Ed Kretz, Jr., Triumph mounted, who copped the 50 Mile Main Event. (Road racing must be right up young Kretz's alley, for he just recently annexed the 50 Mile Amateur Road Race at Laconia, New Hampshire.)

Promotor Al Papp also had an air

rescue demonstration and hot rod acceleration tests on the program for the 16,500 fans. Also on tap were a couple of acceleration match races between motorcycles and also a few tests between hot rods and cycles.

Following the air rescue demonstration, put on by the Civil Air Patrol, the road race program got under way with two five lap heats. Win Young, on the only Harley-Davidson entered in the day's program, walked off with top honors in the first heat. Nick Nicholaides, AJS, and Paul Lockhart, Triumph, following Young across the line in that order.

Don Bishop, mounted on a Triumph, took to the macadam like a Manxman, and led Johnny Gibson, Triumph, and Charles Minert, BSA, plus the rest of the field, on a merry chase in the second ten mile heat. First three places were as in order given.

From the performance put on by the riders in these two preliminary events, the fans sensed an action packed Main Event awaiting them.

The Trophy Dash was captured by Johnny Gibson, who had all he could do to keep in front of Don Bishop and

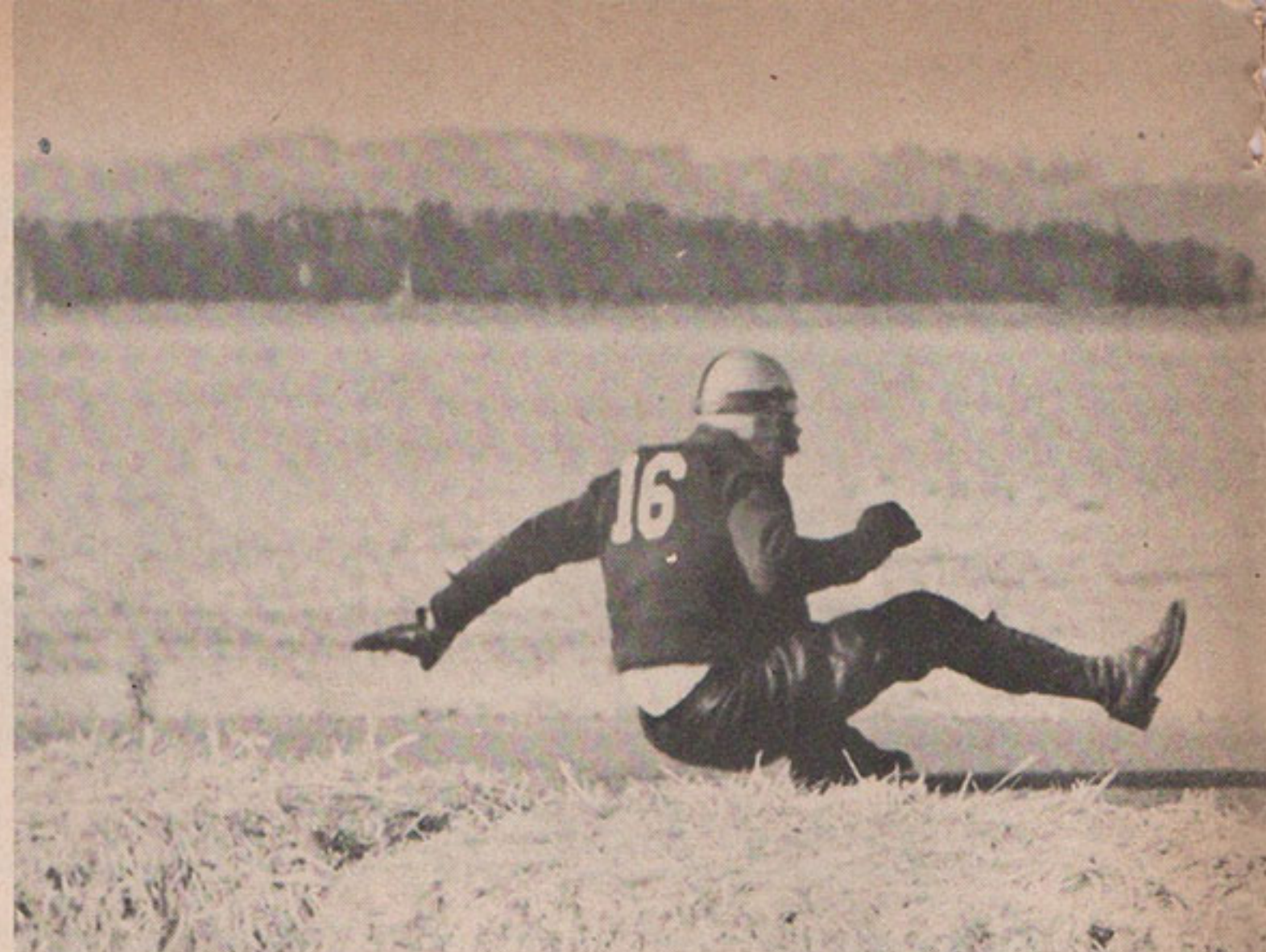


Photo by Stedman Profitt

Turning point in the race. Don Bishop falls off, while Eddie Kretz, Junior, calmly takes "avoiding action." Bishop was not injured, placed Third

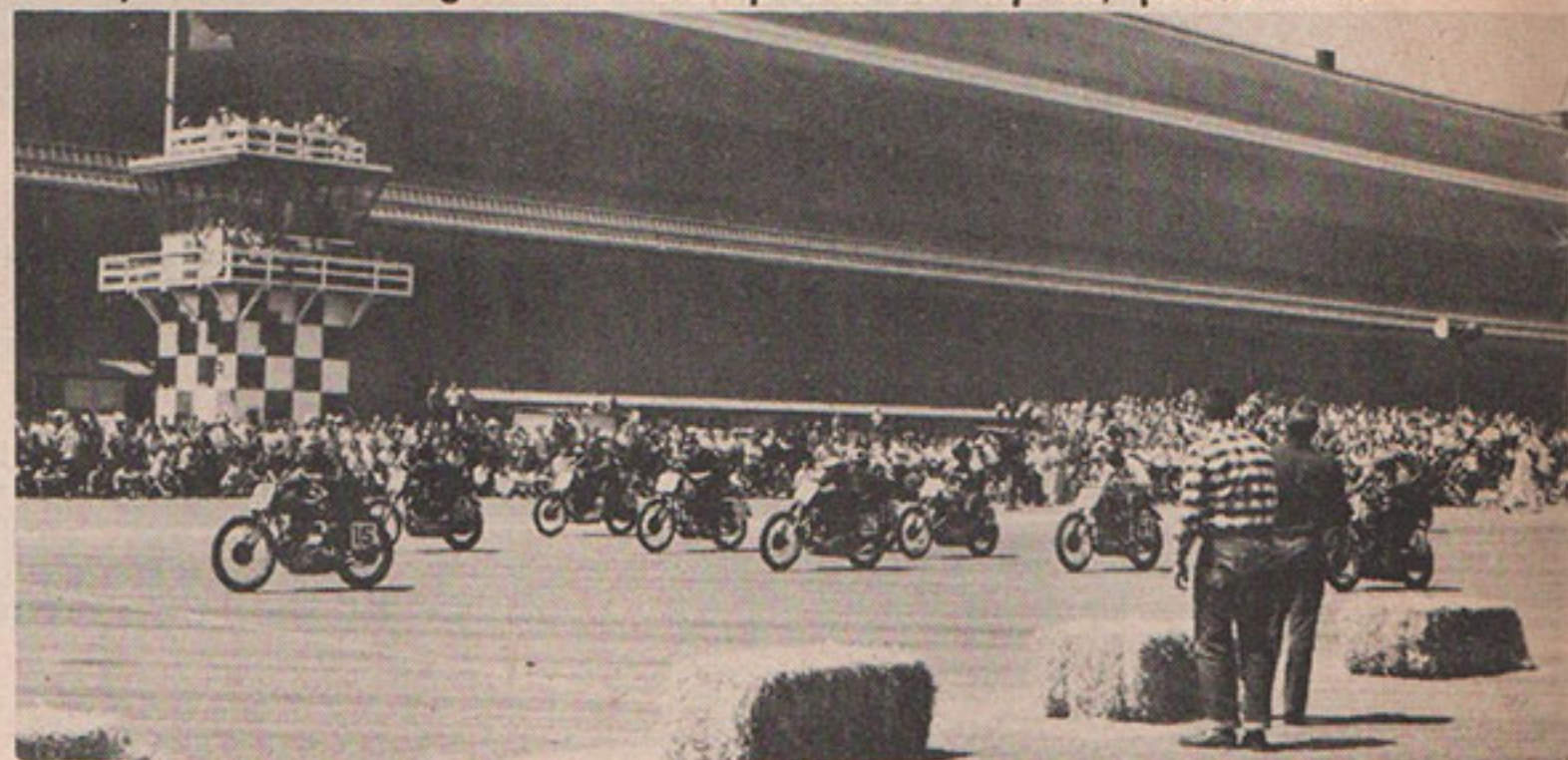


Photo by Stedman Profitt

The starting flag has just dropped and the Main Event riders get under way. No. 15 is Nick Nicholaides, AJS, one of the brightest stars in Pacific Coast racing this season. Nick attends University of California, is majoring in Advanced Mathematics. Dark building is blimp hangar

Charles "Feets" Minert for the two lap event.

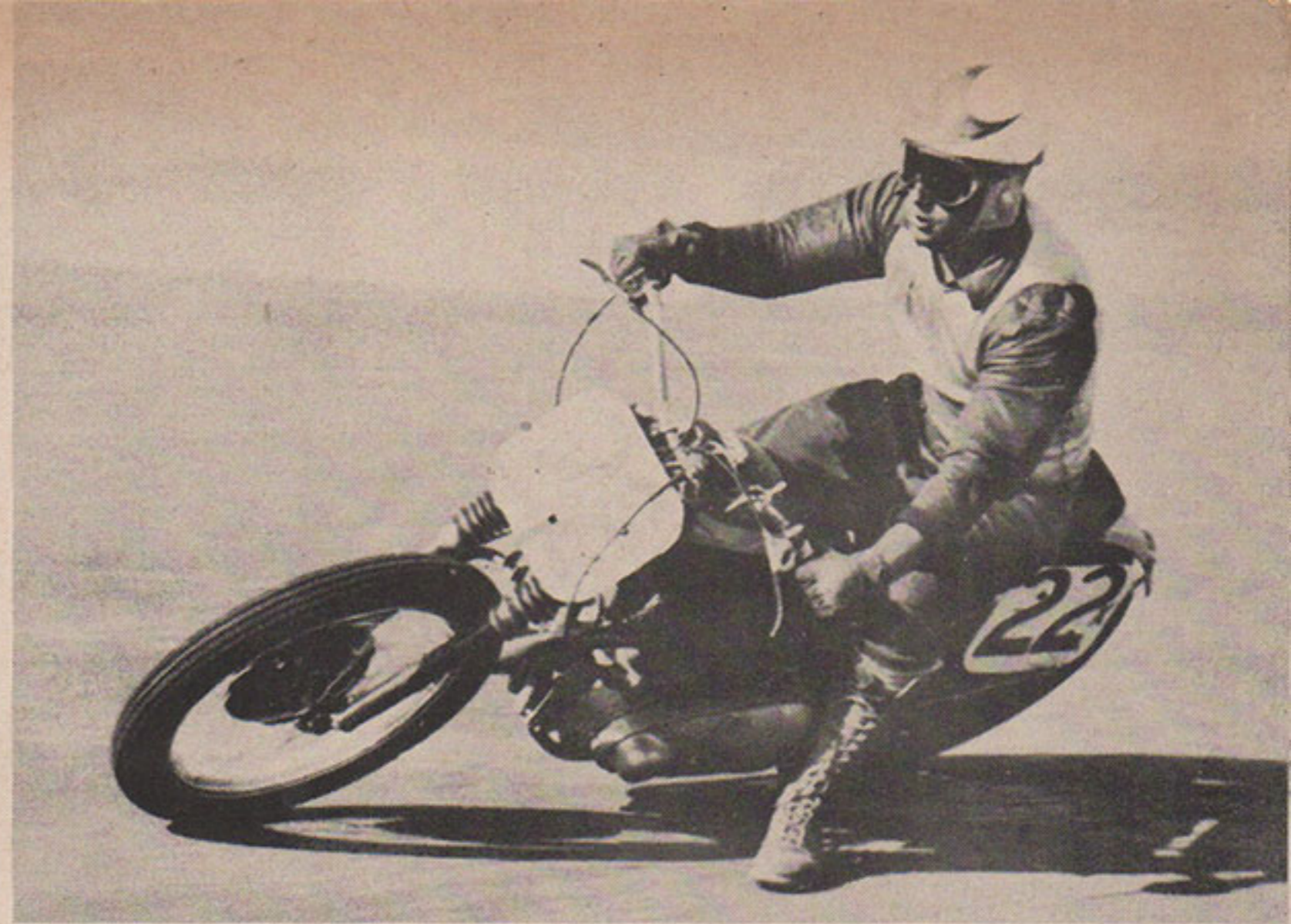
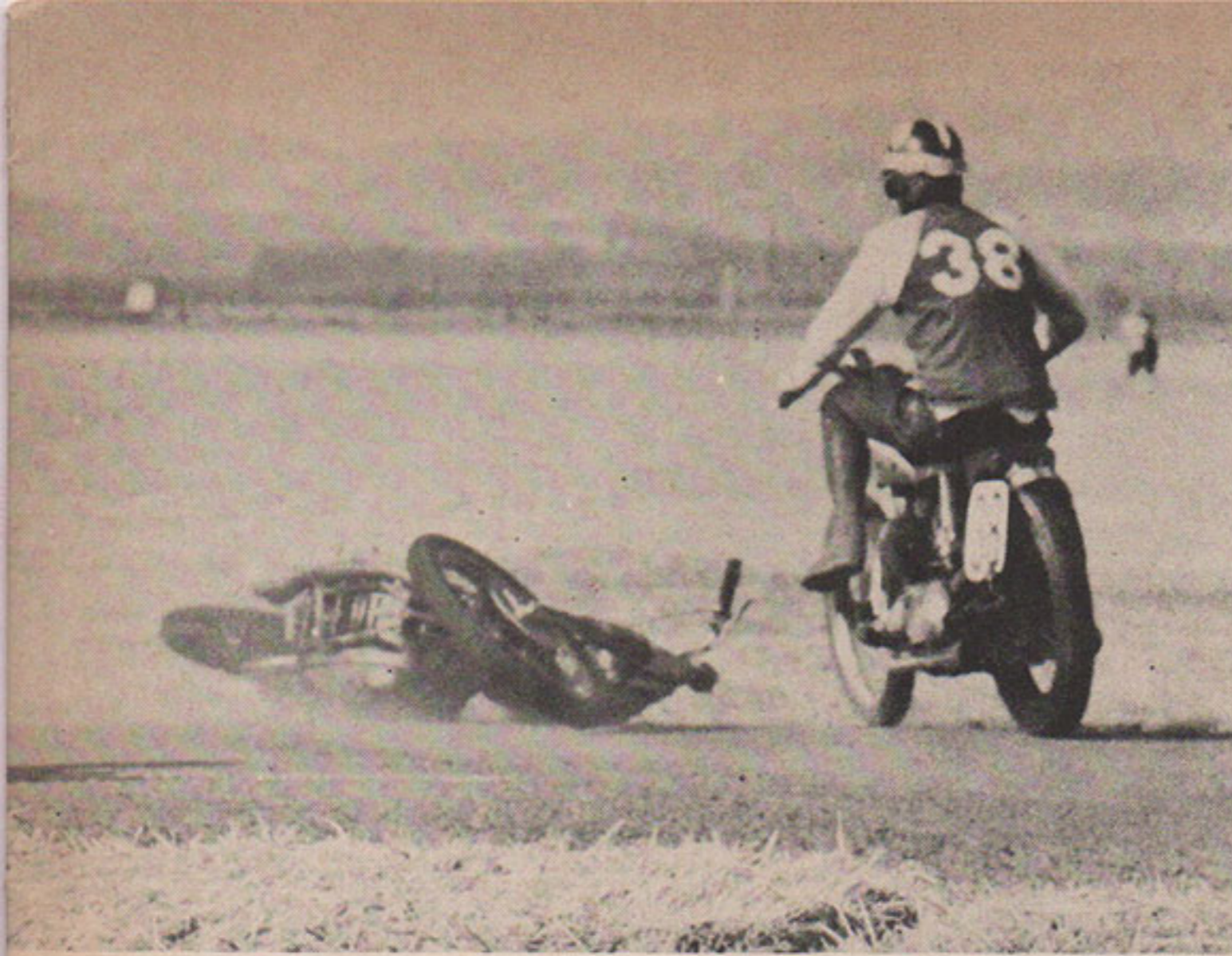
### THE MAIN EVENT

Twenty-two riders lined up for the starting of the 25 lap Main Event. Out of this group of machines, only two were primarily designed as road racing motorcycles; the Manx Norton, piloted by Bud Hogan, and the model 7R, 21 inch, AJS. The other cycles were straight modified road jobs.

At the drop of the starter's flag, it was Don Bishop and Johnny Gibson who came through the first turn side by side, and Eddie Kretz, Jr. was hot on their (w)heels with the rest of the pack strung out behind. It was these first three Triumph-mounted riders that gave the fans something to shout about during the rest of the race.

Eddie started the ball rolling by catching Gibson. He then set his sights on Bishop. For four laps Bishop led Kretz by only a hairsbreadth between his rear tire and Eddie's front tire. These two men were setting a sizzling pace for the rest of the field. Each lap was being turned at better than 74 miles per hour average. On the seventh lap Eddie got around Don when the latter spun out





Canaan Photo

but Bishop didn't call it quits for he got right back in the fight and held second spot. Meanwhile Johnny Gibson had been building up a lot of pressure and it was only a matter of a couple of more laps when he maneuvered around Bishop.

To watch the riders come through the first turn (the most sweeping of the four corners) was an experience to be remembered. Each man had his own style. (Kretz, Jr., would be so heeled over that occasionally his foot peg would scrape the asphalt. On a couple of these times it looked to your writer like he

by increasing the distance between himself and Gibson. Likewise, Johnny also had a "safety margin" over Don Bishop. This trio finished in one, two, three order, a grand triumph for Triumphs.

#### CYCLE - HOT ROD DRAG RACES

Following the 50 Mile race a few of the hot rod roadsters paired off with some of the two wheeled jobs in Quarter Mile acceleration match races. However, there being no substitute for inches, the four wheeled vehicles outclassed the majority of their motorcycle competition.

Sam Parriott's Ariel Square Four was the second fastest vehicle at the acceleration trials. He was outrun only by the Evans Special, a torpedo shaped 170 mph hot rod. Evans was timed at 120 mph at the end of a Quarter Mile from a rolling start while Parriott was clocking 115 at the end of the same stretch. In a match race with Marty Dickerson's Vincent, Sam was the winner "hands down."

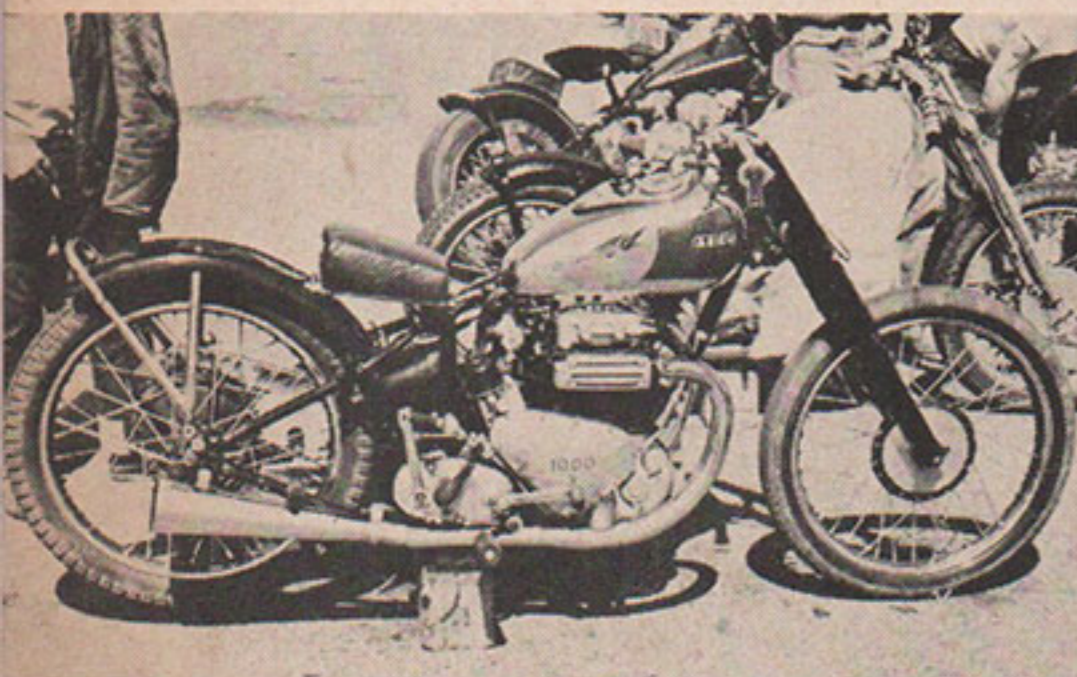


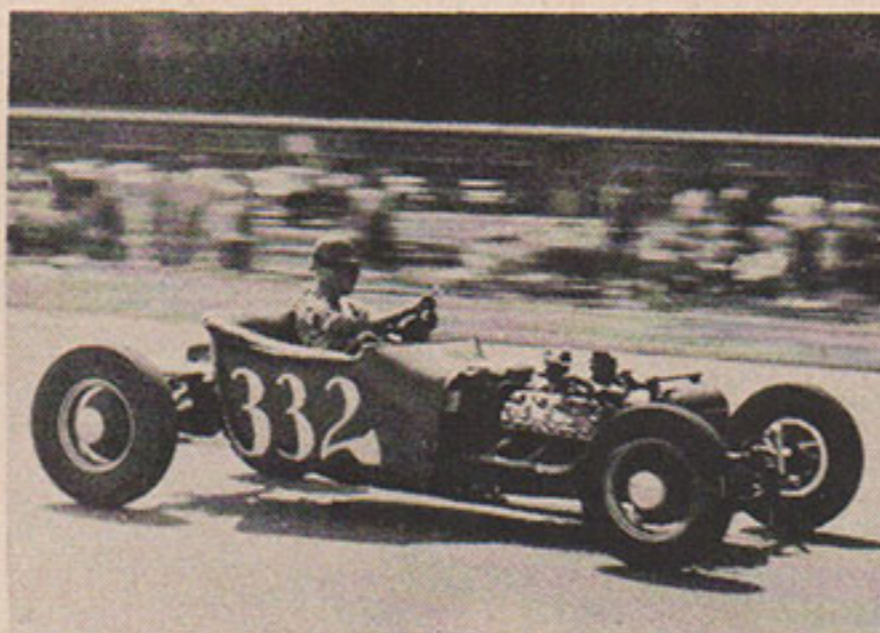
Photo by Stedman Profitt

The flyin'est Ariel Square Four in this here land, Sam Parriott's "drag race" mount. Parriott has won more drag races than he can remember, but the Hot Rods beat him at Santa Ana but not by much, about 5 mph. Parriott won cycle cup

was going to "lose" it for sure. But never underestimate the skill of a Kretz, for he "rode them out" with the know-how accredited to his name.) A few, not yet accustomed to the hard surface, came through the first turn with their skid-shoe scraping, and yet others looked like seasoned Isle of Man racers, with "feet up and head down" as their rule for high speed cornering.

On the eighteenth lap Gibson gave the front straightaway spectators something to cheer about by pulling alongside Kretz. They both traveled sprocket to sprocket down to the first turn, but here Eddie regained and held his lead.

By the final 29th lap, young Ed had considerably insured his lead position



Canaan Photo

For readers not acquainted with what a California "Hot Rod" roadster looks like, here is a representative example. This car has a Model T frame, a late style Ford rear end, 1941 Ford front axle layout. Engine is a 1948 Mercury, bored out and stroked, using two dual-throat carburetors, burns alcohol fuel. Transmission incorporates Lincoln Zephyr gears, provides high peak speeds in "low" and "second." Rear tires are 6.50x16, differential gears are 3.27-1. Developed horsepower exceeds 200 bhp, weight is very low. Power-weight ratio plus skillful gear shifting practically always enables a good Hot Rod to out-drag the best and hottest motorcycle

The one rider who did it consistently and successfully! Johnny Gibson is here seen broadsiding a turn with his foot down on pavement!

With the closing of the day's events the die had been cast for a new type of motorcycle racing for the U.S. racing fan and the vast superiority of light, easily handled, foot-shift, hand clutch, motors was apparent to everyone.

#### SUMMARY OF RESULTS

Five Lap Qualifying Heat	
Win Young.....	H-D
Nick Nicholaides .....	AJS
Paul Lockhart .....	Tri.
Time 8m, 6.08s	
Five Lap Qualifying Heat	
Don Bishop .....	Tri.
Johnny Gibson .....	Tri.
Charles Minert .....	BSA
Time 7m, 49.17s	
Two Lap Trophy Dash	
Johnny Gibson .....	Tri.
Don Bishop .....	Tri.
Charles Minert .....	BSA
Time 3m, 9.34s	
50 Mile Road Race	
Ed Kretz, Jr.....	Tri.
Johnny Gibson .....	Tri.
Don Bishop .....	Tri.
Charles Minert .....	BSA
Nick Nicholaides .....	AJS
Paul Lockhart .....	Tri.
Time 44m, 11.15s	

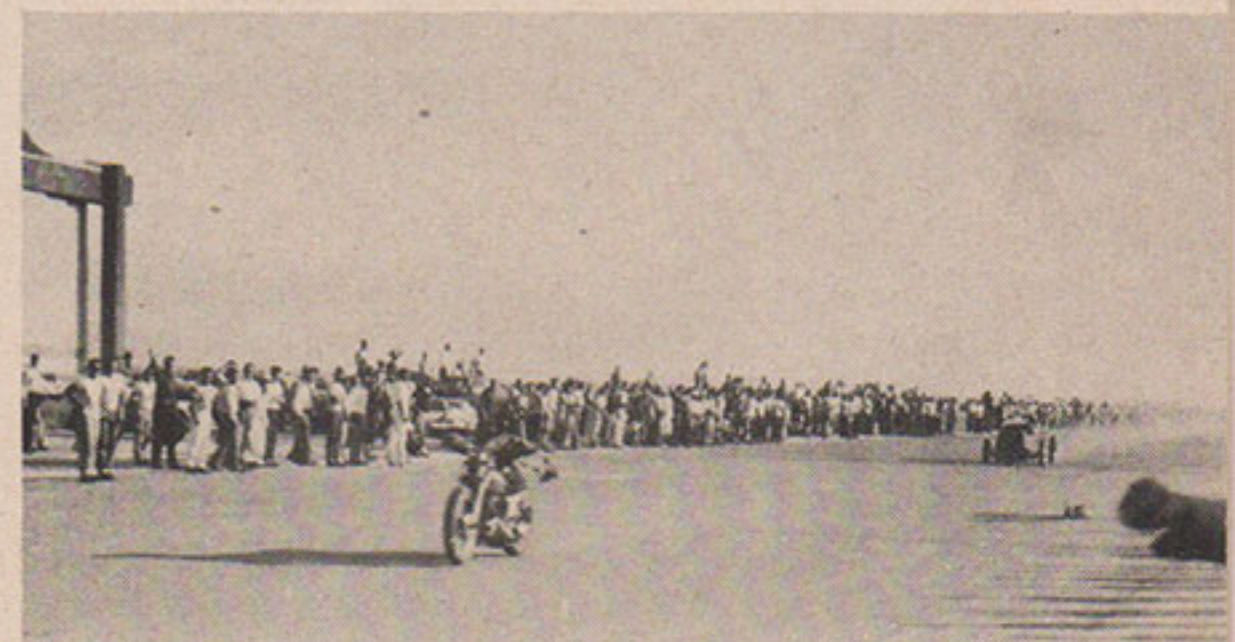
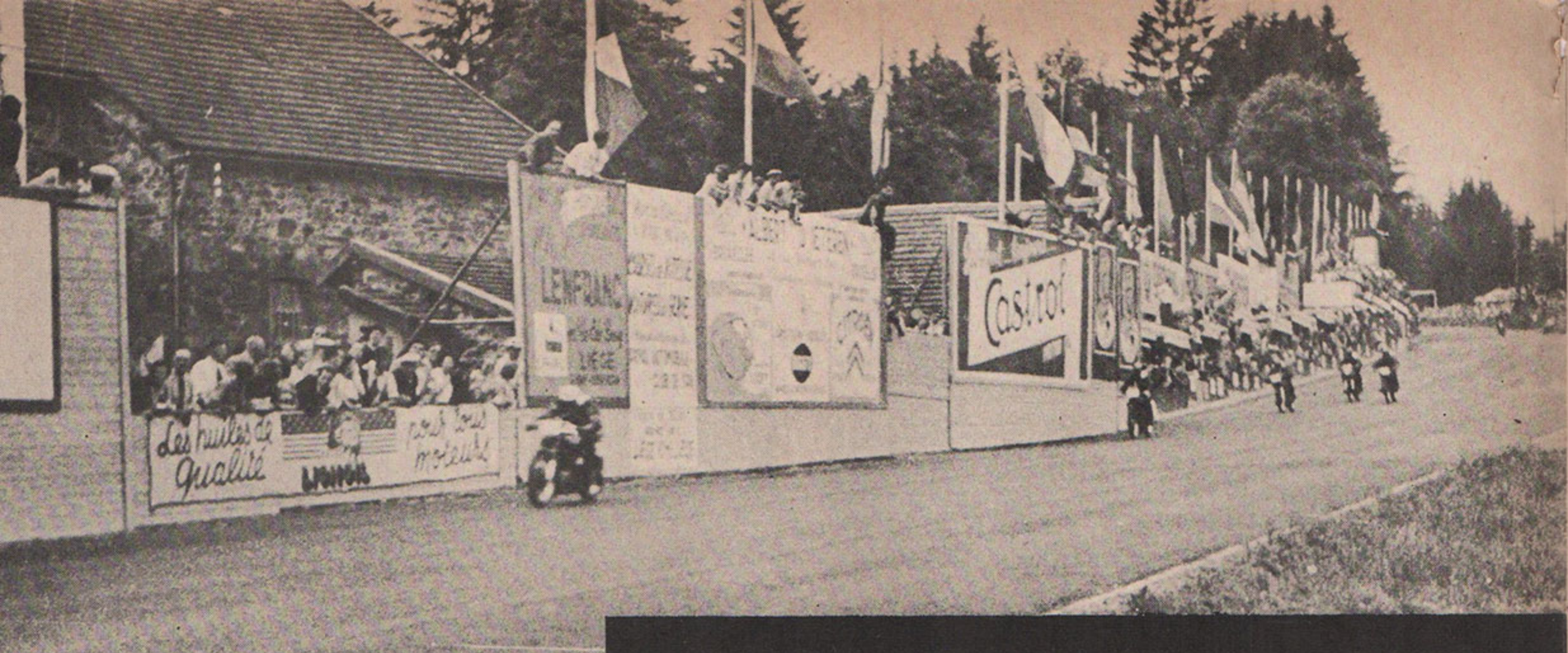


Photo by Thomas J. Medley

Hurrah! A Harley "74" is here seen "out-dragging" a Hot Rod. This type of result was rare. When it happened 'cycle fans yelled like crazy





## GILERA 4 WINS SENIOR, VELOCETTE THE JUNIOR

# BELGIAN GRAND PRIX

By William H. Onslow

**T**HE DAY'S program opened with the 350 cc race for International honors. It was expected, and the expectation was realized later in the day, that new race records would be set. Rather easily, too, because of the physical alterations to the course proper.

The 350 cc event attracted 50 starts, all on British machines. The revamped Nortons, the redoubtable Velocettes, and the AJS Boy Racers comprised the field, riders being top-grade in every instance. Using a massed start technique the spectacle was most thrilling when fifty "three fifties" fled from the line in response to the starter's flag.

Foster led at the end of Lap 2, Bell at the end of Lap 3, Foster again, etc. Les Graham, poor fellow, blew his cammy Ajay into wee bits during the third round and retired. One of the real challengers was thus eliminated.

Observing the next few laps from a point along the famed, fast Masta straight I was amazed to learn that Lomas (Velocette) was officially clocked at nearly 129 mph! And on a 350 cc bike, or as you Americans would say, a 21-inch job!!

By the tenth lap, Bob Foster, displaying his uncanny and but recently officially recognized great skill and experience, had edged to a 10-second lead over Artie Bell.

Whitworth fell at Burneville Bend. Raf-feld, the Belgian AJS exponent, took heroic evasive action but unfortunately, and unavoidably, struck Whitworth with fatal results to the latter. A most terrible occurrence, as David and his wife were on vacation, with David unable to resist a chance to compete in the "Belgian 350" just for the sport.

No one at the finish line was aware of the tragedy at Burneville as Bob Foster received the checkered flag, followed a half minute later by Bell.

### Summary of Results

Bob Foster	Velocette
Artie Bell	Norton
Geoff Duke	Norton
Bill Lomas	Velocette
Charley Salt	Velocette

Foster's speed averaged 97.26 mph for 96 miles

**I**F EVER a motorcycle race should go down in history it should be the 500 cc event for the Grand Prix de Belge, witnessed by scores of thousands of spectators at the Spa-Francorchamps circuit, July 2, 1950. This famed venue is situated in the Ardennes Forest, close to the area of the famed Battle of the Bulge.

The starting line-up displayed a truly International field; 20 Englishmen, 9 Italians, 7 Belgians, 3 Australians, 2 Swiss, 2 New Zealanders, and one Dutchman. The struggle would represent the second leg of the World's Road Racing Championship and the atmosphere was tense with excitement.

Bandirola (Gilera) hurtled away at the drop of the flag, slip-streamed by Bell and Duke (Nortons) and Pagani (Gilera). It could be seen at once that the pace would be terrific, especially as Les Graham, noted for his terrific first lap riding, could only fill the fifth position at the end of the first lap. Masetti was reported charging along the Masta straight on his Gilera 4 in excess of 128 mph, and on his first lap, no less!

Part way round on the second lap fate played her hand. Bandirola entered a fast left hand bend with Graham, who had put on a tremendous spurt into second place, hard astern. The Gilera 4's do not have flywheels and when throttled back seem to slow down as though braked hard. Apparently Bandirola eased the twist grip when Graham was about to ride over the Gilera's rear fender. The almost instantaneous retardation of the four caught Les unprepared and the Ajay front wheel touched the Gilera rear wheel. Graham fell.

Unable to avoid the sliding, careening, gyrating, riderless Porky, Bell plunged into the wreckage. Graham was little hurt, Bandirola not at all, but Artie Bell, for the first time in any International race meeting, fell very heavily and sustained injuries which may prevent his ever racing again. The circumstances and the results are somewhat

parallel to the case of the great Tim Hunt in the early thirties.

As the four leaders passed the pits at the end of the second lap it was seen that Duke had become "boxed in" by the three screaming Gileras. Disappearing round the 100 mph Stavelot curve the lone Norton rider had a Gilera in front of him, a Gilera behind him and another Gilera beside him, with the grass roadside on his right offering scant help.

The Italianos hemmed him in again as they passed the pits to complete the fourth lap, while Lockett clung valiantly to fifth. The struggle was one of 12 cylinders (three four cylinder bikes) against one single cylinder, albeit of greater bore and stroke. The fight went on.

The ninth lap saw Duke do the impossible—head the field and gain a 14-second lead all in one lap. To do it he had to set up a new lap record, 103.84 mph. It appeared as though Duke was to repeat his Isle of Man victory.

He maintained the lead till two laps from the finish. Again fate played her hand, snatching the tire tread from his rear tire. Not even Duke could ride with a treadless rear tire and he halted for the day. Lockett experienced tire failure also and dropped out on the next lap.

Masetti led his teammate Pagani across the finish line by 1 min. 11.7 sec., to average 101.09 mph for the distance. Masetti now has 8 points toward the World's 500 cc Championship for 1950, as does Geoff Duke for his T.T. win.

### Summary of Results

U. Masetti	Gilera 4
N. Pagani	Gilera 4
Ted Frennd	AJS Twin
C. Bandirola	Gilera
A. Artesiani	M.V. 4





**T**HE SEVEN-LAP Sidecar Race was scheduled next on the program. Having learned of serious injuries to my friend Dave Whitworth in the previous race and having now to ride as passenger with 1949 World Sidecar Champion Eric Oliver in my first International event, I felt somewhat inadequate to the task at hand.

One of the Swiss drivers had a charmingly attractive and very petite girl as his passenger! Onslow returned to his outfit determined that if a winsome young miss could perform as "ballast" Onslow could do it, too. Or was I just kidding myself? (Later I learned that the feminine charmer was the wife of the rider.)

Presently, the yellow "20 seconds to go" light appeared, followed nearly instantly by the "Green" go signal. My ordeal commenced. Oliver and Onslow, the Double O's, on their "double knocker" (two overhead camshafts) Norton 600 cc rig, had the good fortune to have the engine fire at once. Being honored with the No. 1 starting position in honor of Oliver's 1949 Belgian victory.

Lying flat down on the flooring of the "chair," I gripped the handles staunchly to keep from being shaken adrift, all the while with my head hitting the planking like a woodpecker as we hurtled down the poplar-lined road at well over 110 mph. The road surface, less than 3 inches from my nose, suggested "Black Water," it flowed past so rapidly, while the spectators' faces all round the course reminded me of vari-colored grains of sand being blown by my rocketing platform.

The succession of corners and the se-



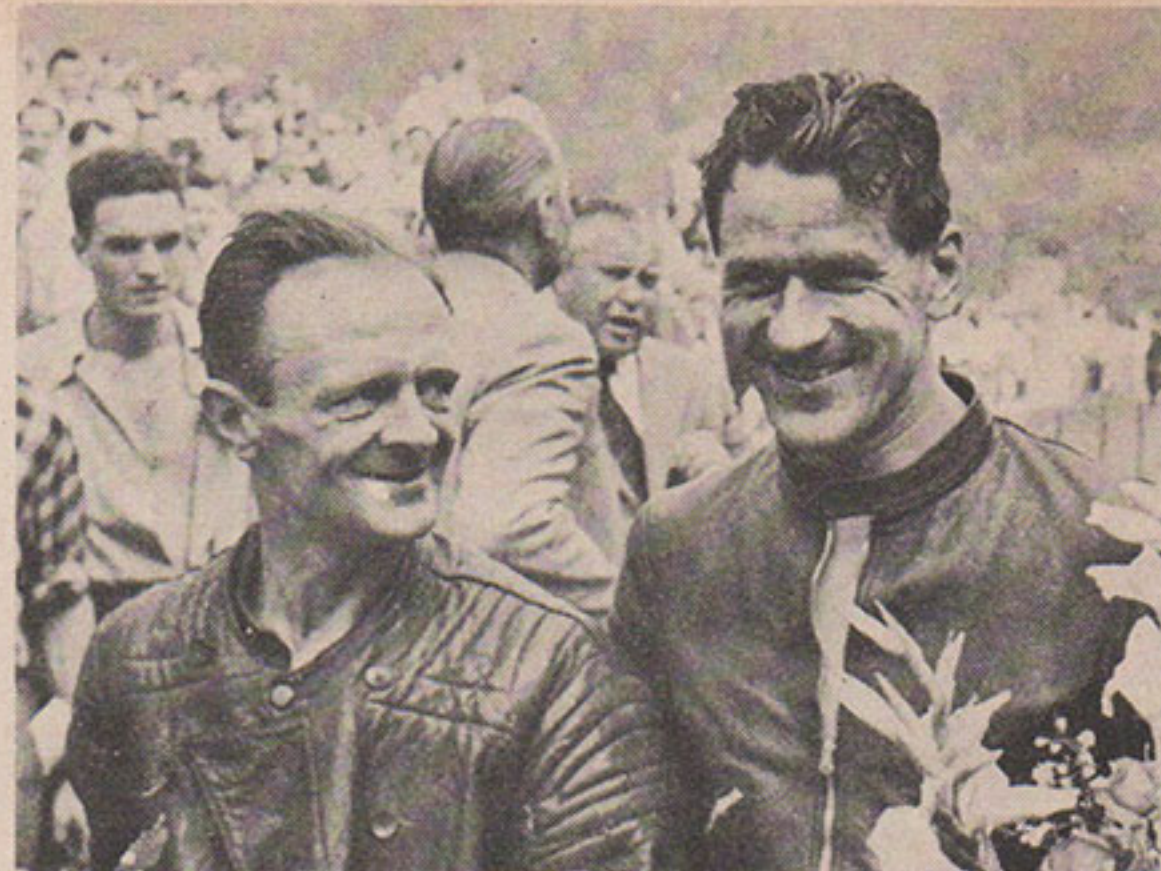
**LEFT—Umberto Masetti, winner of 500 cc race**  
**CENTER—A. R. "Bob" Foster, Junior race victor**  
**RIGHT—W. H. Onslow, E. Oliver, sidecar champs**

quences in which they approached caused me to concentrate hard on our forward progress. After several minutes, however, I chanced to glance rearward with no idea of what I would see. Belgian Champion Frans Vanderschrick had his front wheel only 3 inches from my trailing feet. Instantly, I drew my boots into the "chair" to save the only two pedal extremities that I have from apparent destruction.

Glancing up again at the "Champ" I saw his "devil-may-care" grin burst forth and I silently prayed that he would not respond to Frans' challenge and do anything too rash. My prayers were not heard, I guess, because on the next left-hand turn we roared by the Belgian as the "Champ" kept the wick turned full up. This left-hander found my nose practically buried in the roadside grass.

Perhaps the grass tickled my nose because I was forced to sneeze violently, with the result that I forgot to observe the approach of the next turn, a sharp left-hand twist, resulting in the "Champ" negotiating it without Onslow's help. The spectacle was viewed in a rather dim light because the "chair" was "aviated" nearly two feet high for the full distance of the bend.

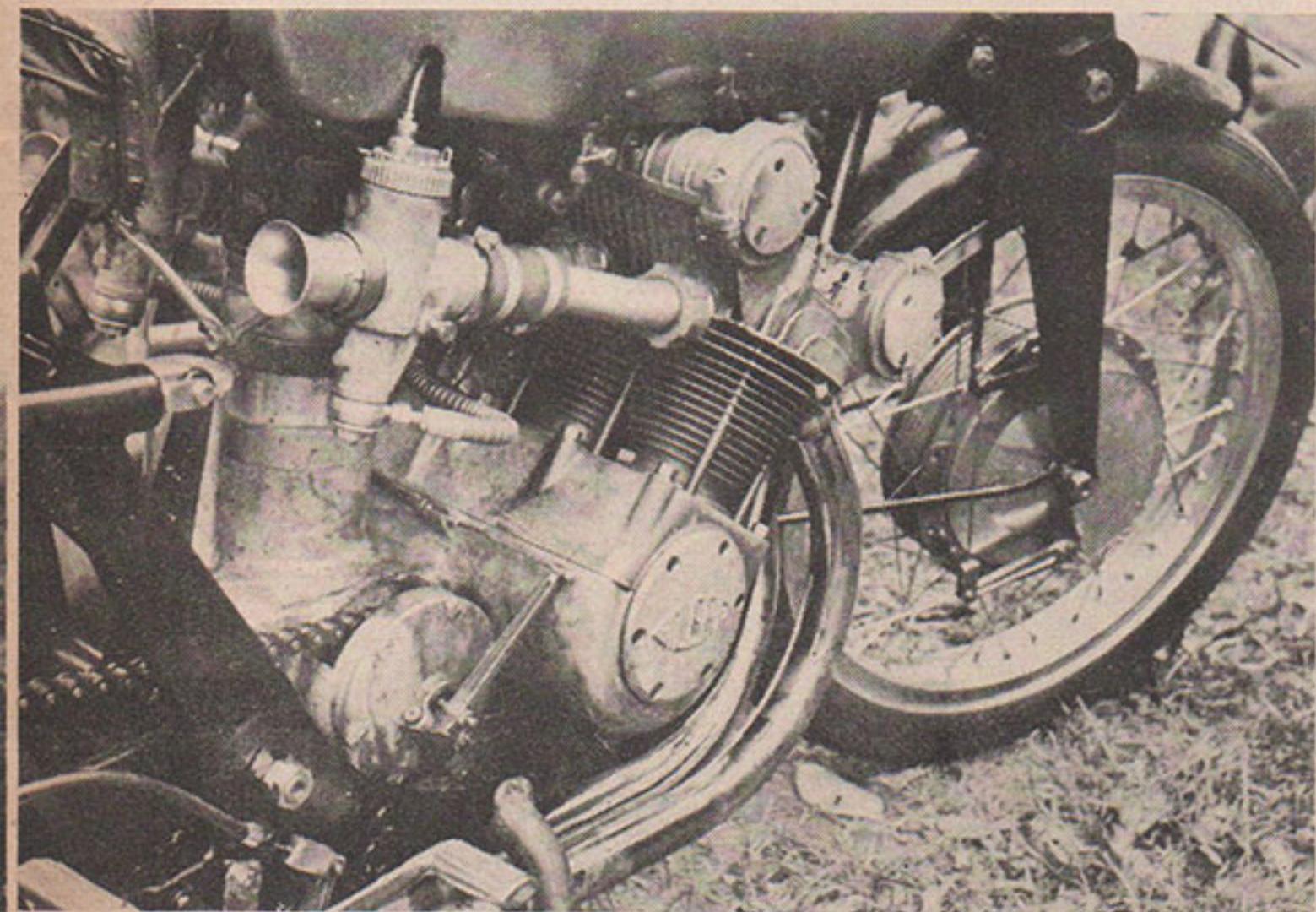
About half way round on the third lap I signalled the "Champ" that we were still "towing" Vanderschrick and a second outfit being ridden by Hans Haldemann, the Swiss Champion Sidecar dicer. A series of right-hand turns approached. These would require



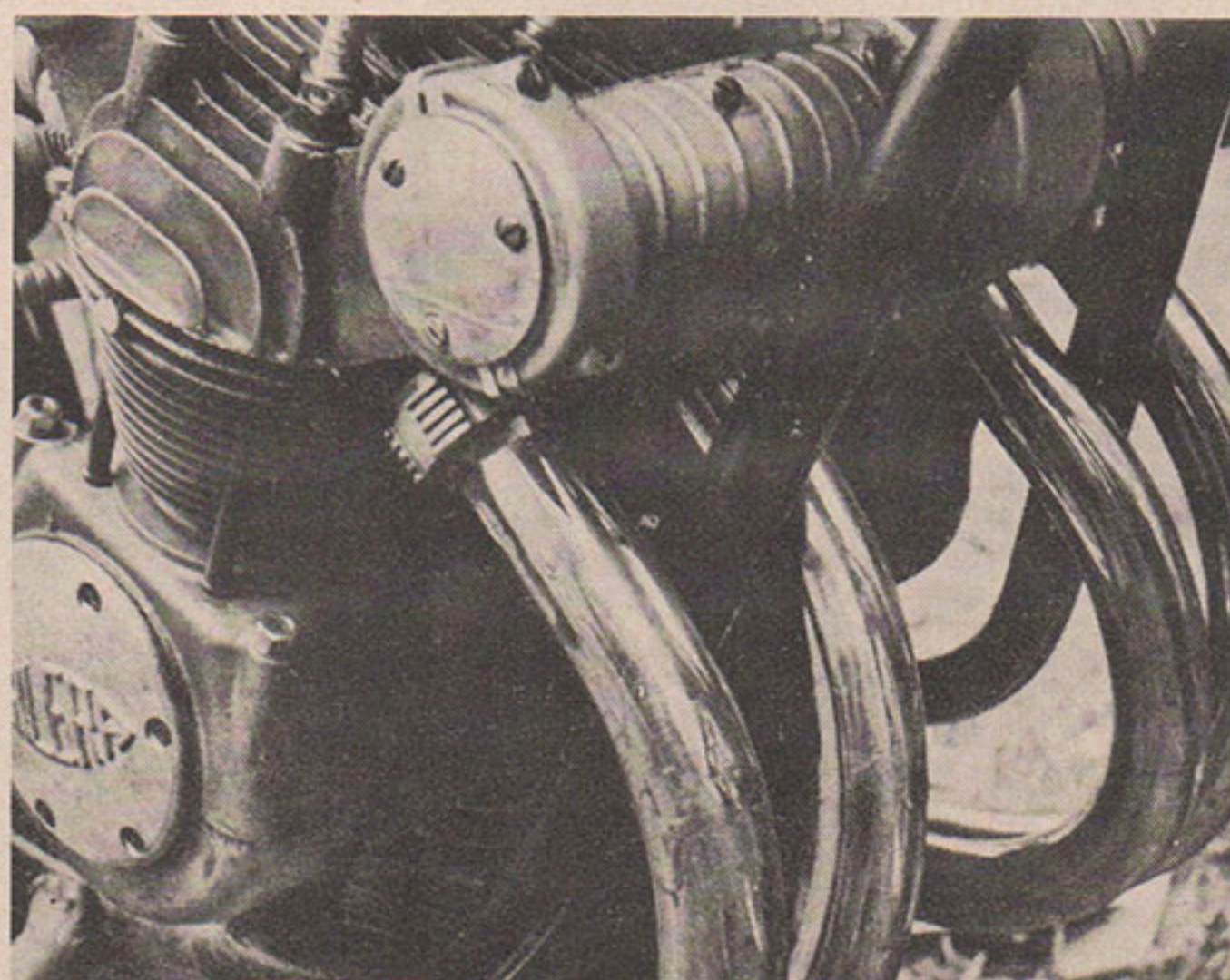
Onslow's body to be draped over the rear fender pad. I attempted to rise to assume the prescribed position, but was nudged by the "Champ" to remain prone on the "chair" bottom.

With top gear engaged (normally this corner required third gear) and the twist-grip wrung for all the world like a chicken's neck, we somehow entered the curves. My hands clutched the holding rods with more strength than Onslow ever possessed before, my teeth were clenched like a vise, my head kept beating on the slats of the "cellar" but my ears kept our exhaust note clearly poised. A lurch or two, a screaming protest from our Dunlops, and a steady bellow from the megaphone told me that "Catastrophe was Close." For no apparent reason we emerged from our heart-stopping antics intact, and I stole a glance backward. My quaking heart hardly permitted me to open my eyes, but I did finally. There was no Frans or Hans in view. The "Champ" had indulged in just the right maneuver at the proper time to shake off our pursuers. Phew!

To finish up this tale of torture, fright, and fun I must record that the "Champ's" last lap, besides bringing us victory, also established the fastest lap speed of the day and a new lap record. He beat the vaunted Gilera 4, a water-cooled lightning rod (excuse me for indulging in such a cliché, but the Gilera was quite a remarkable three-wheeled "hot rod" and it did possess an astounding turn of speed), by a full half second to set the new lap record. With the race over my exhaustion was complete.



Engine of the 1950 Gilera 4 cylinder 500 cc machine, winner of the Belgian Grand Prix. A week later this design also won the Dutch T.T. Y-shaped intake manifolds support two carburetors, cylinder head hold down studs extend into crankcase, engine is mounted across the frame. Girder-type front forks are used. Take special note of huge hub



Close up view reveals cooling fins on cylinder head, barrels and crankcase. Ribs on overhead exhaust cam housing are for structural rigidity. Overhead camshaft drive is from center of crankcase to center of camshaft via spur gears. Four exhaust pipes and 8500 rpm produces the sweetest music this side of heaven (with apologies to Guy Lombardo!)



# CARE and MAINTENANCE of MOTORCYCLES . . .

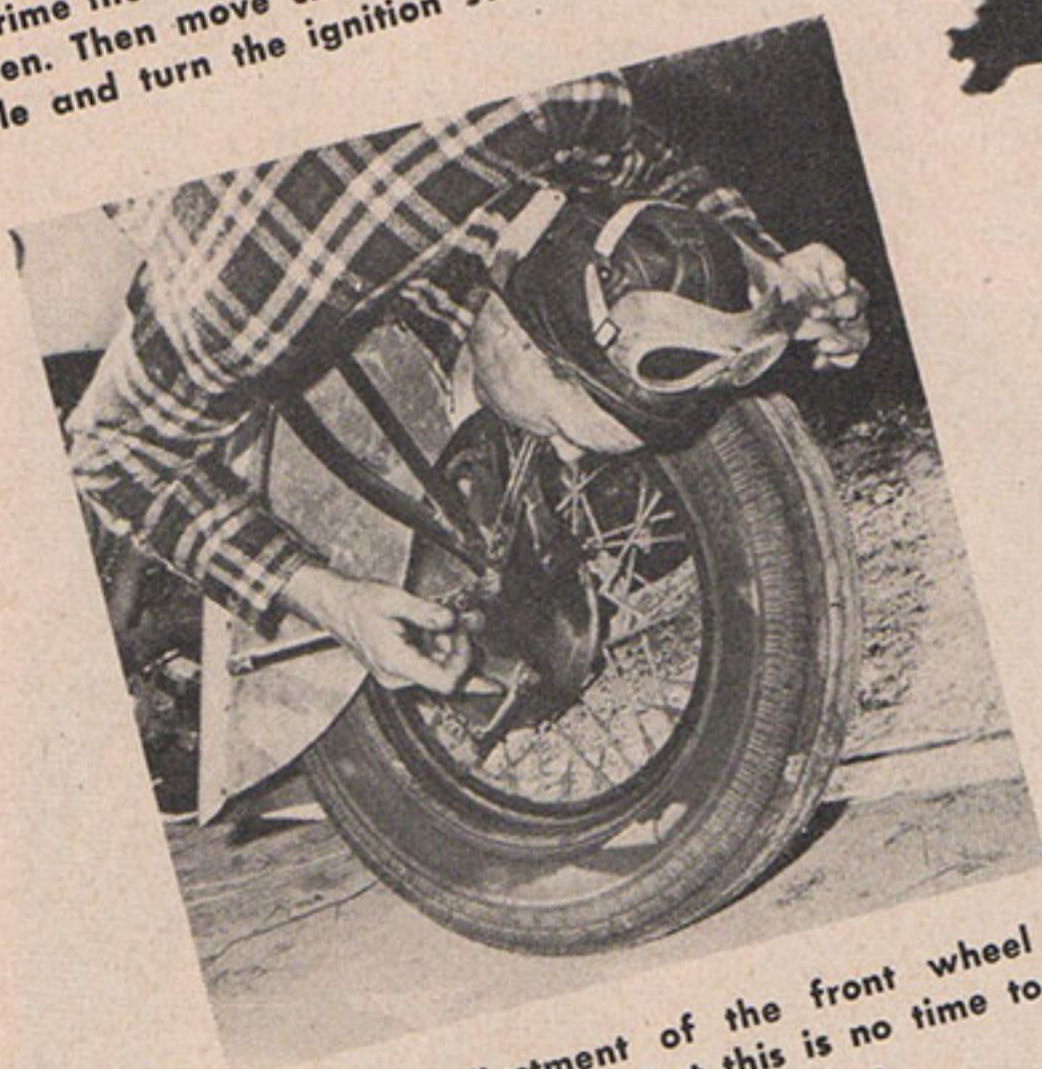
Photos and Captions by Eric Wahleen



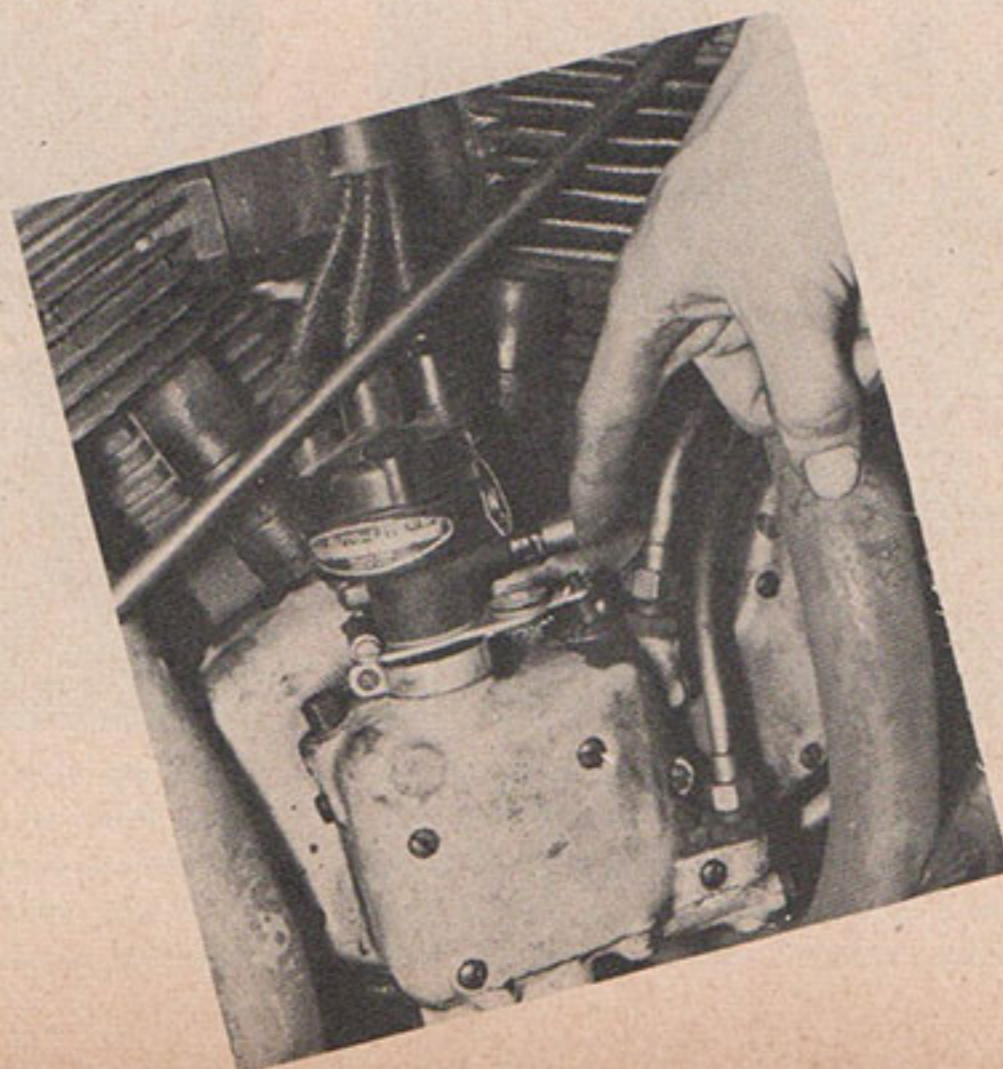
2. Kick over the motor vigorously



1. To start your motorcycle open valve in gas line, prime the motor with switch off and throttle open. Then move choke lever up, close the throttle and turn the ignition switch on



3. Care and adjustment of the front wheel brake is very important, but this is no time to look it over. Do that some other time



4. To get back to starting your motorcycle. We forgot to mention it, but it's a good idea to RETARD THE SPARK before you start the engine. Let us now look into the care and adjustment of the distributor. Or would you rather go for a ride





5. Speaking of Sparks reminds me that now is a good time to look at the electrical system on your motorcycle. As we pointed out you have a distributor. Also in the vicinity (I forget just where) there is a high energy coil. This energy is transmitted to the spark plugs. If you want you can test your spark plugs by putting your finger on one. Then you are energized but the motor isn't. This is a sad state of affairs. It is also impractical. Remember—keep the spark plugs clean and your fingers free from blisters

6. Now that you are familiar with the electrical system on your motorcycle, let us give some attention to the brake controls. Proper adjustment of both front and rear brakes is very necessary if you want to stop efficiently. Front wheel braking may be adjusted by adjusting the effective length of the front braker, while the rear braker may be shorter than the front. Brake action is purely instinctive or mechanical. It's really very simple once you get the hang of it

7. Speaking of brakes somehow or other reminds me of the clutch. It is attached to the motor-cycle. In fact, if you will use your clutch intelligently you will be more likely to remain attached to your motorcycle as time goes by. The clutch in this case is operated by pressing the toe down to engage. Rock the heel back to disengage. "Feel" of the clutch is necessary for smooth operation. If you have a hard time getting the feel of the clutch, take your shoes off. Don't get your toes caught



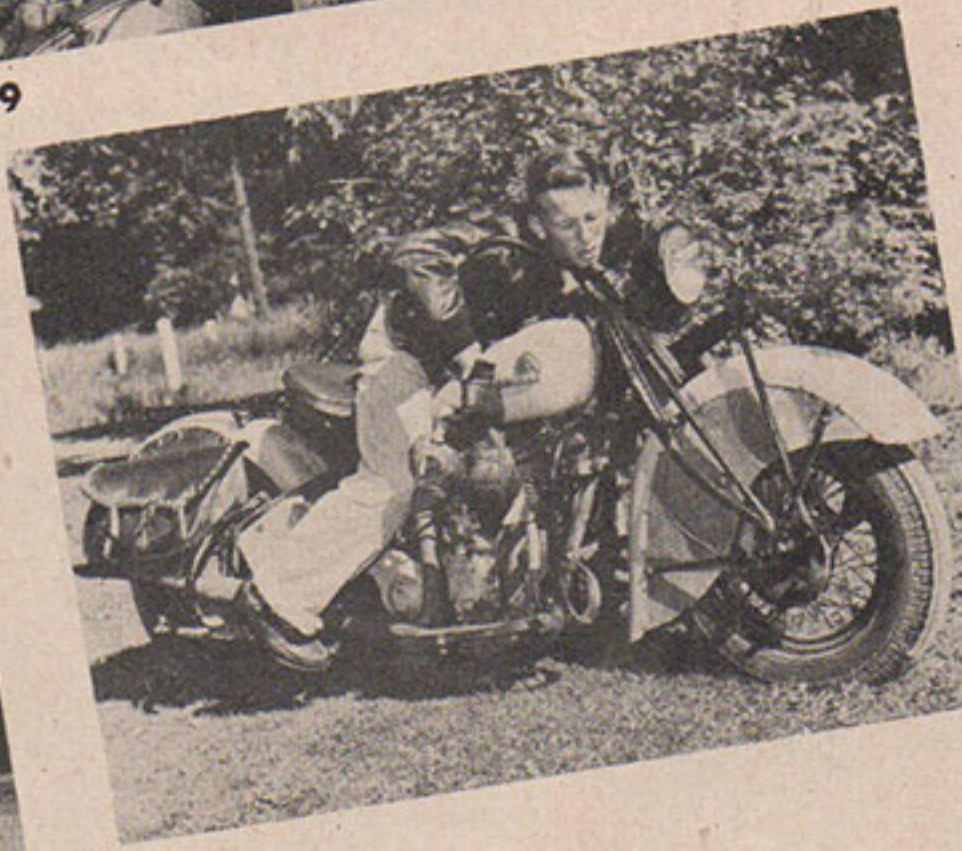
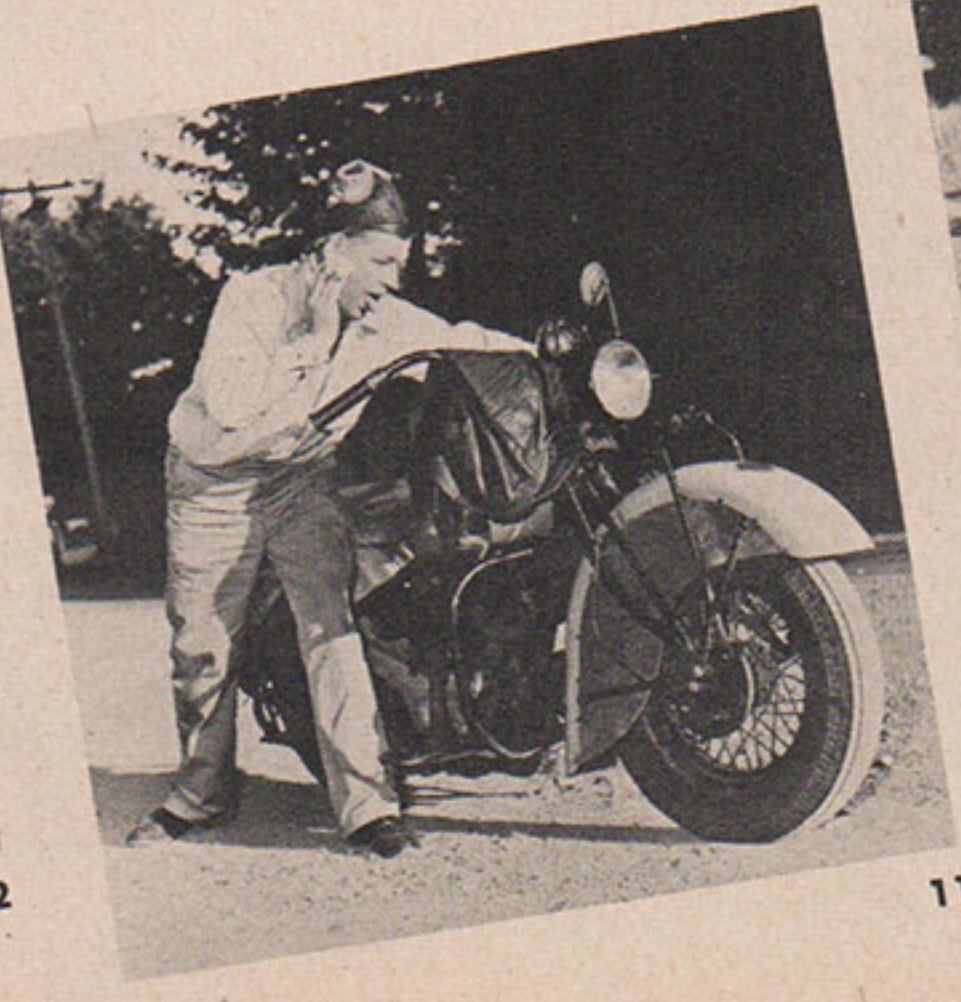
8. That's right, we were going for a ride, weren't we? Well, now is a good time to say a few words about sources of motor troubles and remedies, and why you don't always go for a ride like you thought you were going to. First let us deal with the motor that won't start. The chances are the oil is congealed in the motor. Kick it over a few times before trying to start. You can't do a good job of it unless you get good and mad

9. If the motor stops continually after starting, your fuel pipe is probably clogged. You may do plenty of kicking, but still get no results. Get out your tools and clean out your pipe. You'll brood about the fact that it is getting too late to go for a ride anyway. Cheer up, you didn't REALLY want to ride, did you? Besides, it might rain

10. There are other sources of motor troubles which vary with different riders. Some riders find the motor hard to start. One of the reasons is weak kicking of the starter. It often takes several days to start a motor if the kicker is weak. The remedy is a muscle-building course for the rider. There is nothing wrong with the motor

11. Sometimes you will find that your motor overheats, although as a rule it is the rider that gets overheated, not the motor. He gets that way from pushing his motorcycle. No wonder he is warm—he has probably been running with his spark retarded. Remember: if you have gasoline in the tank you won't have to push your motorcycle

12. There are times when there is evidence of lack of power. That is most noticeable when you are trying to wheel your motorcycle from hither to yon, yon being about 20 feet away, too short a distance to warrant starting the motor. There is only one good reason for this situation. It is lack of power in the pusher. Usually he is too lean, or has poor compression. I suggest getting a more powerful pusher







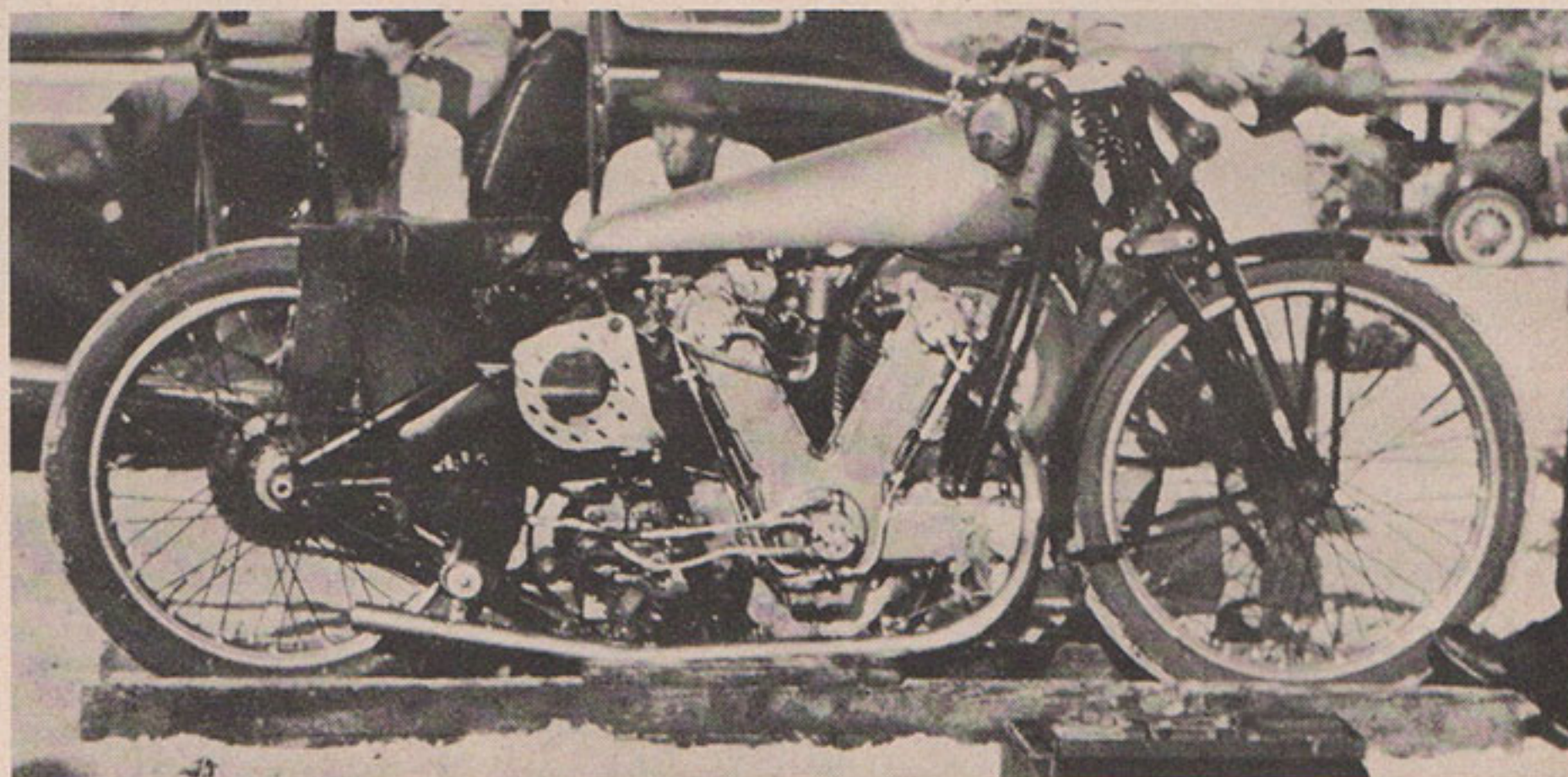
# MOTORCYCLES "DOWN UNDER"

Text and Photos by Clarry Rial

**T**HIS machine was first conceived in the early part of 1930 by the original A. J. Stevens Company of Wolverhampton, England, before the company was taken over by Associated Motorcycles Ltd., and was designed solely for the purpose of attacking the world's motorcycle speed record.

In its original form it was unblown, and in this condition it was first run, publicly, in France, and as far as I can trace, was ridden by the British rider of that era, Capt. O. M. Baldwin, and the speed attained was 130 mph. The attempt was unsuccessful, and various troubles beset those connected with it, it was then taken back to the factory, and during the next two or three years further alterations and development work continued, of which, more later.

The engine, in its original unblown form, had steel cylinder barrels with hardened bores. It was a 50 degree vee-twin with a bore of 79mm and a stroke of 101mm, giving it a capacity of just under 1000 cc. The valves are actuated by overhead camshafts, chain driven, and the engine is, to all intents and purposes, a twin edition of the 495 cc, ohc TT models of that period, each camshaft being driven by a separate chain on exactly the same lines as in the case of their "single." For those not familiar



The 1930 AJ's world's speed record contender, 1000 cc overhead camshaft twin. Once a blown job, the blower casing is seen below the saddle. Now runs with two Amal carburetors

with the older ohc AJ's models, from 1930 to 1936, it is well to mention that this type of ohc chain drive was automatically tensioned by means of a Weller chain tensioner, which consisted of a preloaded flat spring steel strip bearing directly against the chain.

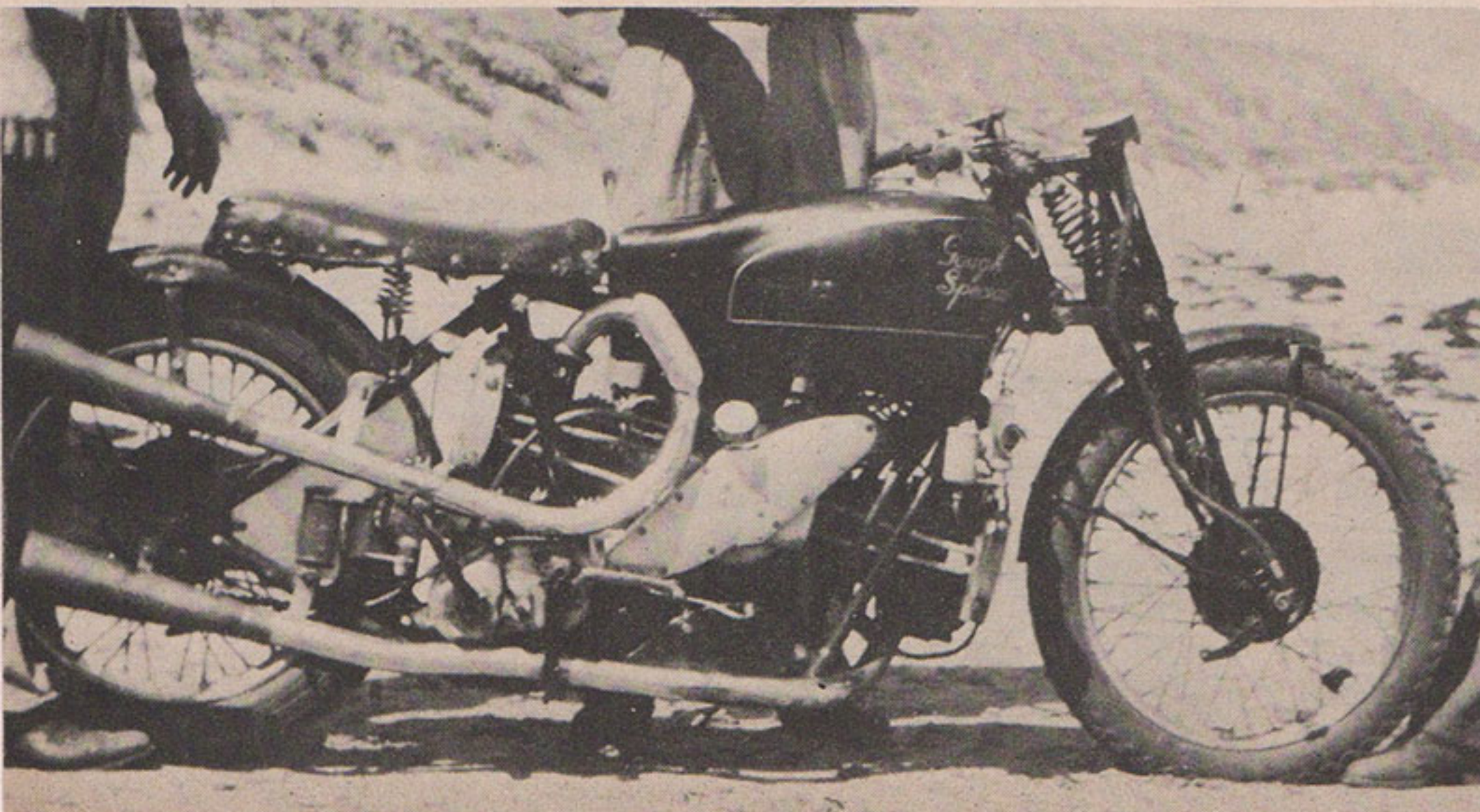
The cam drive chaincase casting is a particularly fine piece of work and has three branches, one for each camshaft drive and one for the magneto drive. The crankcases and the crankshafts are extremely massive. The flywheels are of steel. In their original form they

weighed 42 lbs. The connecting rods were fully machined and polished all over, and were of great strength.

The cradle frame, which gives a wheelbase of 60 inches, is extraordinarily interesting, and is of very massive construction. The single top tube is 2½" in diameter! This tube is closed at each end so that it may be used as an additional oil tank if necessary. The twin cradle tubes are 1⅜" in diameter, sweeping downward from a massive head lug to run below the engine and gearbox, extending to the rear axle. Great care was taken to ensure rigid mountings.

The forks are of the TT type, made specially heavy, and having self-aligning ball races throughout. An Andre steering damper was fitted originally and the handlebar was in two halves, in a dropped link. The wheels were of heavy construction, hubs being of very large proportions machined out of solid steel bar, using radial, non-adjustable ball bearings.

It is believed that in blown form the engine developed approximately 104 bhp at 4800 rpm. No data seems to be available on the boost pressure employed with the supercharger, which was a British Powerplus, eccentric vane type, driven at engine speed by a single chain from the mainshaft sprocket. Incidentally, the compression ratio in unblown form was 10.5 to 1.





FROM Tasmania, known to us on the mainland of Australia as the "apple-Isle," come further news and photographs of an interesting and unusual machine which has been the subject of a great deal of time and thought by its owner-constructor, Mr. W. Gough, of Launceston, Tasmania. Unfortunately, many of the real intimate details of this interesting job are not available at this time. However, I will endeavor to give what details I have.

I understand the frame is of BSA manufacture, which has been considerably modified by the builder to accommodate the "flat-twin" engine. The forks, too, I believe, were from a BSA machine, together with the road wheels.

The special engine is very interesting, particularly as I am informed that Mr. Gough made up the patterns and fabricated the crankcases and timing case assembly in his own workshop. This also applies to the crankshaft assembly and many other parts. It is said that the modified cylinder barrels, cylinder heads, valve gear, etc., came from a 500 cc BSA machine of approximately 1936-37 vintage. The cylinder capacity of this twin motor is 992 cc and two Amal carburetors are used to take care of carburetion.

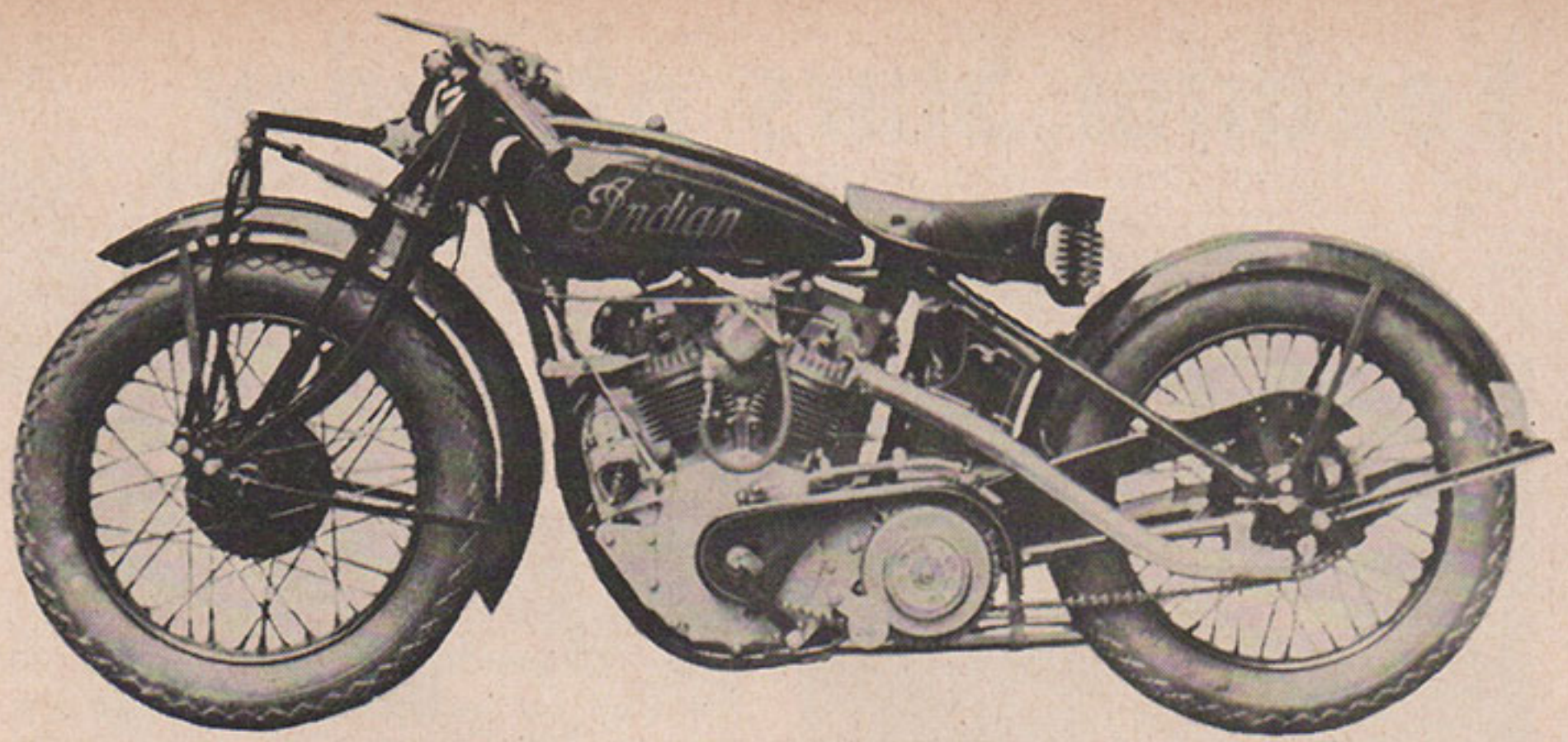
The engine is inclined at an angle, to keep the wheelbase as short as possible (61 inches), and to easily accommodate the BSA gearbox.

The gearbox used is a heavyweight BSA type, apparently from one of the 500 cc ohv singles, and is extremely robust in construction and will usually take care of added stresses and power from any 1000 cc machine.

The large capacity fuel tank, I am informed, was also made by Mr. Gough, and a very workmanlike job he appears to have made of this. The saddle has also been fabricated by him. I understand that, at the time this photo was taken, Mr. Gough had not carried out any large amount of tuning to the engine but was primarily concerned with testing the machine as to performance and handleability.

In the pictures shown, taken at the tests at speed trials run at Baker's Beach in Tasmania, the machine attained a speed of 102.8 mph and, I believe, crossed the finish line with a flat rear tire at that!

It is understood that Mr. Gough hopes to put in a deal of further work developing and improving this interesting machine with a view to attacking Australian and Tasmanian motorcycle speed records in the not-too-distant future. It would seem that motorcycle enthusiasts in Tasmania are just as keen and enthusiastic as those on the mainland and it is to be hoped that more good news will be forthcoming on this interesting job.



A "factory" Indian racer, a 45 cu. in. ohv model, once supplied only to top flight riders. This model ran 117 mph for 25 miles at Muroc Dry Lake in the early Thirties. Model envied by U.S. riders

THIS machine made its debut in Australia during the period of 1930-31 and was, without a doubt, quite an exceptional machine, and from its specifications and performance it was quite ahead of its time. The machine in question was known in Australia as the "Edwards-Indian," after its constructor, Mr. Ern F. Edwards, an engineer, of Sydney, N.S.W. The photograph shown is not the actual "Edwards-Indian," as the original photo is not suitable for reproduction but is one of similar design and construction, with the exception of frame and forks.

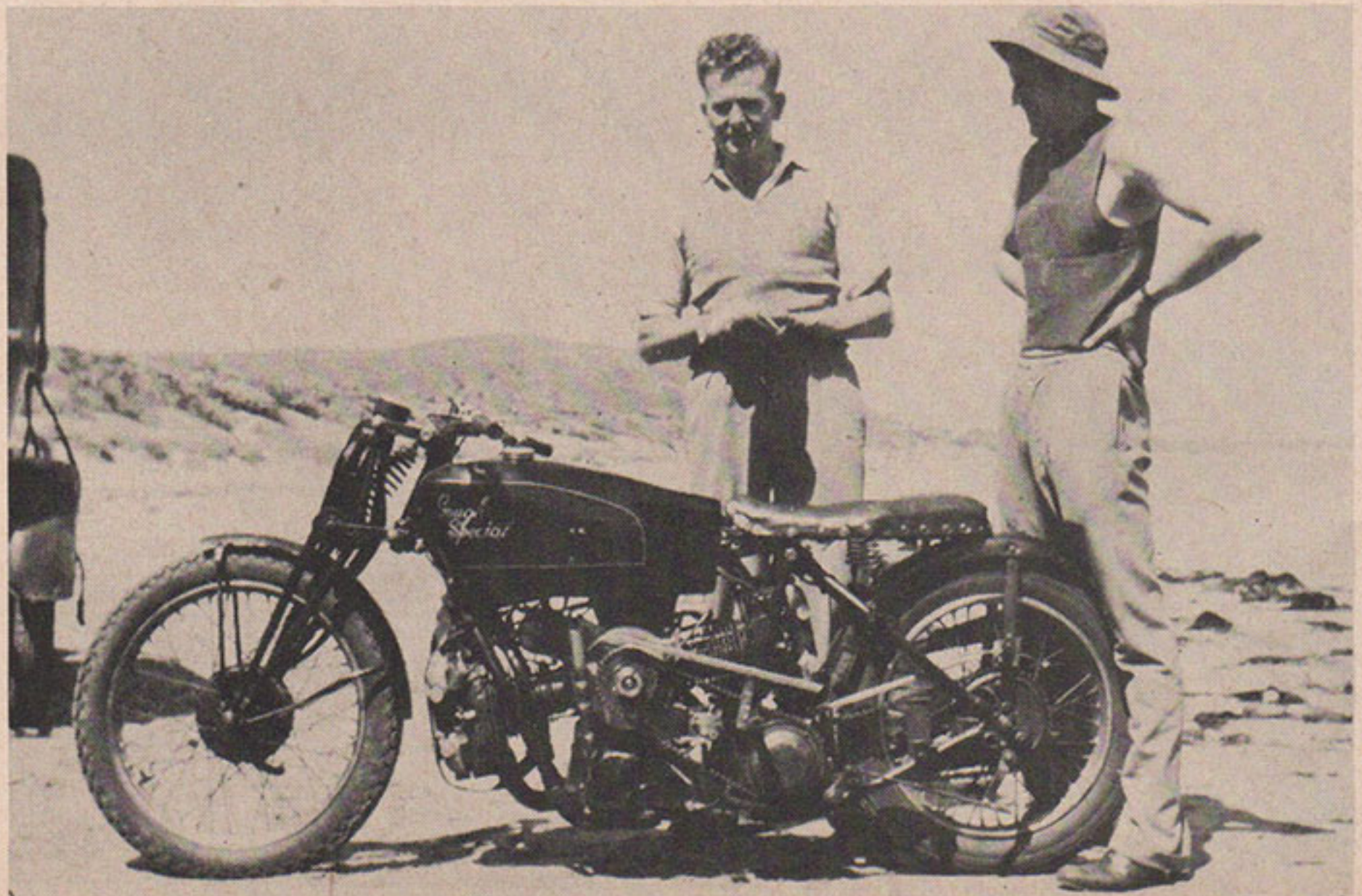
The photo shown is a special job which the Indian factory built up for use by their leading riders of that time in the States. Mr. Edwards imported one or two of the identical engines and built his own frame with modified forks and other improvements to his own design. He was employed at that time in the capacity of head mechanic at the Sydney, Australia, Indian distributors.

That the machine was exceptionally fast is shown by the fact that Edwards established six Australian records for the 440 yards standing start, the Solo and Sidecar events in 750 cc, 1000 cc,

and unlimited classes at the Bargo Dirt Track, Sydney, N.S.W. Electrically timed tests of the machine showed that it would accelerate from a standing start to 90 mph in 15 seconds, which is good going even today.

According to information I have from an American magazine of that period, Jim Davis, who was one of the Indian factory top riders at that time, rode a similar machine, with the same type engine but obviously installed in a lighter, single loop, racing frame and equipped with racing wheels and tires, at Muroc Dry Lake, California, at 117 mph for 25 miles. This would further seem to indicate that these jobs were plenty fast and that reliability at this speed was a prevailing feature.

These engines were also used extensively in hillclimbs throughout the States at that time, installed in special hillclimb frames, and it is on record that famous riders like Orrie Steele (no relation—ED.), Swede Mattson, Howard Mitzel and others used them with success in these events. The 1931 45" National Championship Hillclimb was won by Gene Rhyne, riding one of these machines.





# Youthful Stars of Today

## ERNIE ROCCIO

by Charles Arthur Edmondson



Photo by Campbell

**T**HIRTEEN years ago, two California brothers, Jack and Cordy Milne, journeyed to England to ride in British Short Track races. They were accompanied by their friend, Wilbur "Lammy" Lamoreaux. In three years, 1937-38-39, this trio gained worldwide fame.

Jack Milne won the London Riders' Championship in 1937 and 1939, in addition to winning the World's Short Track Championship in 1937. His brother, a "natural," placed third in the World's Championship of that year, being nosed out for second place by Lamoreaux.

The next year, 1938, Jack placed second in the World's title struggle, with Lammy again right next to him in third spot. The fateful year of 1939 saw Jack again win the London Riders' Championship, while Cordy was leading in Point Standings for the World's crown (Lammy was third on "points") when the war called a halt to the final run-offs.

Being a Londoner, I have seen many changes in Short Track racing. The name has changed; it's now called "Speedway."

The enthusiasm by spectators has increased along with the building of new tracks and the instituting of new forms of Speedway operation.

Many new faces have entered the Starting Gates, particularly since V-J Day. Of course, Lammy returned to England for several seasons after the war, as did Jimmy Gibb and Charles "Pee Wee" Cullum from the U.S. An Australian, Vic Duggan, developed into "the best," while old campaigner Joe Abbott met with fatal injuries just recently. Old, old maestro Jack Parker, approaching the middle of his forties, still takes some beating, while Max Grosskuetz, a veteran High Beech rider, has entered the promotional field. (High Beech was the first short track in England. Its inaugural race was held in February, 1928—ED.)

But, once again, a California Comet has invaded Britain to carry on the undying glory of the Milnes and the great Lamoreaux. The comet has a name—Ernie Roccio, home town Los Angeles, age 23, married with a family. The boy is a whiz and the British Speedway fans, 100,000 attendance at a track is not unusual, have taken quick notice of his prowess.

In the heading of this article I have asked a question, "Will Ernie Roccio become the next World's Champion?" I, for one, believe that the possibility is very good. He rode his first "foreign" race recently at Dublin, on the Shelbourne track. His debut saw him crack up very spectacularly but without injury. The next night he rode at Wimbledon, in London, and earned the spot of Reserve Rider for his own team, Wimbledon. Such a meteoric rise never had taken place before in the whole history of Short Track, sorry, I mean Speed-



Photo by Campbell

way, racing.

On his return to Dublin, six nights later, he finished the card in second spot. Then he was scheduled to meet the legendary Vic Duggan, three nights later at Harringay, in a match race. Away to a rather poor start, he was on Duggan's back wheel in 1½ laps, passed the "Great One" entering the first turn of Lap Three only to shatter his JAP engine into a thousand pieces. In the pits later, Duggan remarked, in his true Aussie way, "That Roccio, now, 'e's a real hard rider. Knows his wiy round the course, 'e does."

I've seen Ernie ride many a race in this country; short track, half mile, T.T.'s, and Daytona. He garnered seventh on Clarence Cysz' Norton in this year's 200-Miler at Daytona. He is not partial to machines, either. Norton, Ariel, JAP-engined short-trackers, Indians, or Harley VL's. He's a naturally talented race rider and I'm going to make a strong reply to my own question. "Yes, I think Ernie Roccio has a real chance to become the 1950 World's Speedway Champion."

## GEOFFREY DUKE

by W. H. Onslow

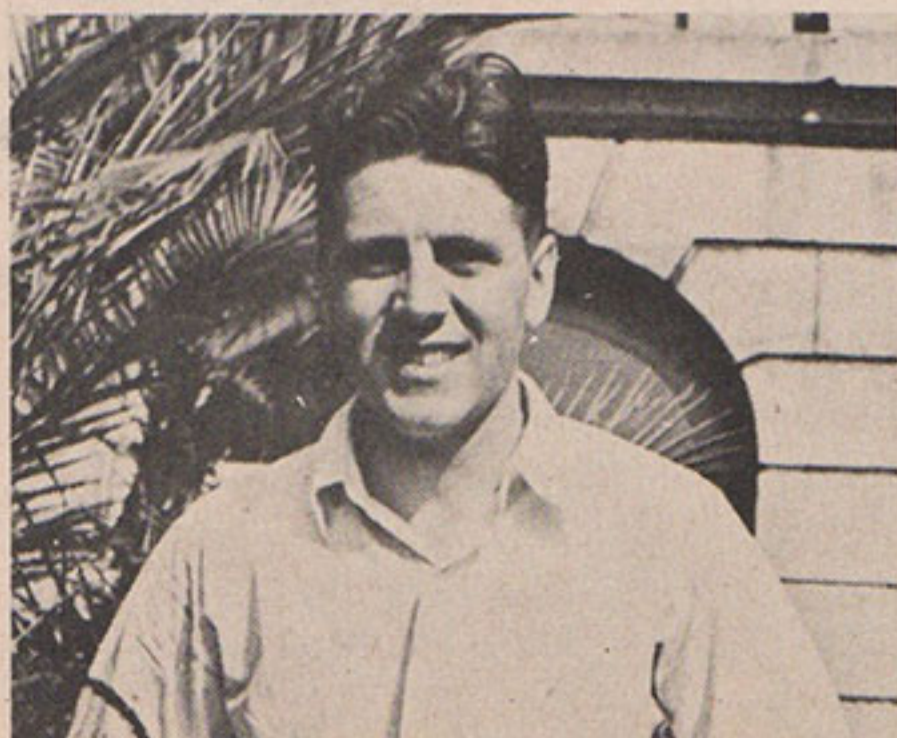


Photo by Onslow

**"T**HE DUKE'S Meteoric Rise to Stardom," "Boy Wonder Licks the Giants," and many other headlines have consistently topped the sports columns of British daily papers following the Norton 1-2-3 victory in the Senior T.T.

Such remarks are not strictly true as applied to the 27-year-old Lancashire rider, for to him it has meant 14 years of struggle to master all branches of motorcycle sport. Above all, he struggled for most of that period against a slim pocketbook and the wishes of his parents.

The "bug" bit him at the age of 13 years, when, to his youthful eyes, a car was the acme of everything. Obtaining an old belt-drive Raleigh, the boy spent many hours try-

ing to convert it into a four wheeler with little success.

Fired with enthusiasm for the dicers of his day, he resolved he would become a miniature Daniell or West. Together with his brother he obtained an old sidevalve Triumph and it is recorded that this machine was pushed almost as far as it was ridden by the two hopefuls. Not yet old enough to ride on the road, they had to push their machine 5 miles either way to and from a suitable training ground.

At the outbreak of war, Geoff was the possessor of a 1928 ohc AJS, but was rather downhearted at the prospect of being unable to continue with his racing studies.

(Continued on Page 26)



# 200mph!

## SOME PROBLEMS TO BE SOLVED

By Noel Pope

TAKING the problem of establishing the world's motorcycle speed record from an engineering point of view, we must look at it from what motorcycles are available from present manufacturers and not from the source of a pipe-dream of building a special multi-cylinder job that would cost a fortune. Obviously, the latter would enable one to adopt freakish engineering designs, but the matter of cost would make this prohibitive.

Taking what known factors we have of motorcycles now available for such a task and working as closely as we can to the data pertaining to these machines, we can obtain a fair picture of the requirements which must be met when attempting to set a new world's record.

There are two basic formulae around which all other engineering practices must pivot.

$$1. \text{Thrust} = \frac{\text{HP} \times 550}{\text{feet per sec.}}$$

$$2. \text{Resistance (lbs.)} = A C V^2$$

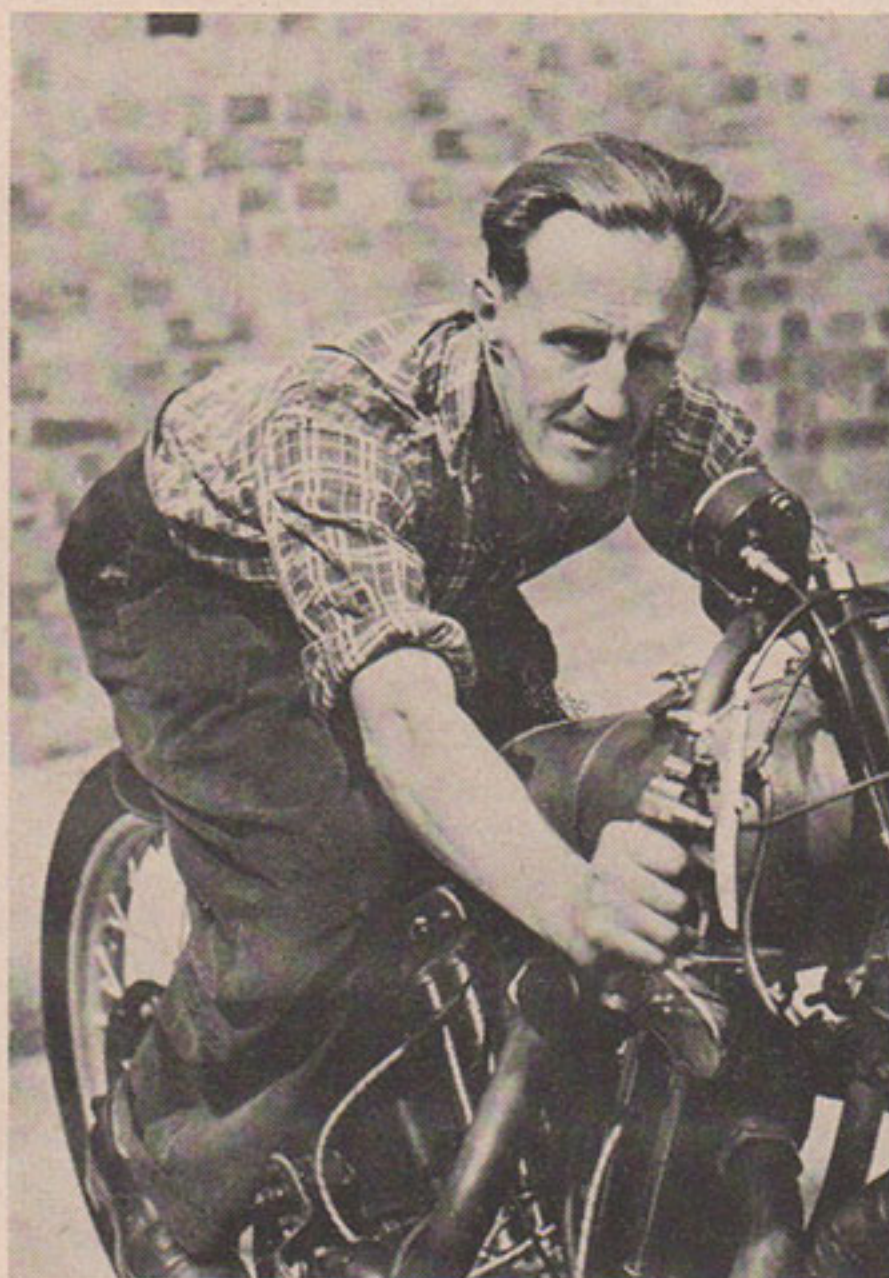
A = Area in square ft.

V = Velocity in feet per sec.

C = A constant, depending upon the shape of the machine, called "Drag Coefficient."

As the German BMW now holds the world's record, let us start first studying that machine. Since a road-racing 500 cc machine, using petrol/benzole fuel, produces 45-50 bhp as compared to a blown road racing machine which would produce 55-60 bhp, one wonders why the blown engine does not develop higher performance. To my mind, this power development is not higher because of the necessity for the reliability factor for Grand Prix racing. For example, a blown BMW at absolute peak performance could give a snap reading of 100 bhp, but I do not believe that this peak could be sustained, and in any case, would be unusable on normal racing circuits.

From more than one reliable source, it has been stated that the blown BMW ridden by Ernst Henne in 1937 to establish the existing motorcycle speed record of 173 mph produced approximately 78 bhp. I think we can assume that this figure is very close to being accurate. Henne's speed of 173 mph is known and applying the stated engine performance and the resulting speed to



Fox Photos Ltd.

to the formulae above, we get:

$$\begin{aligned} \text{Thrust} &= \frac{\text{HP} \times 550}{\text{feet per sec.}} \\ &= \frac{78 \times 550}{173 \text{ mph or } 255 \text{ ft. per sec.}} \\ &= 168 \text{ lbs.} \end{aligned}$$

It is necessary to assume a certain amount of rolling resistance which must be subtracted from the value "C." Let us assume this rolling resistance to be 10 lbs. We thus arrive at value "C" = 158 lbs.

The frontal area of a stripped racing bike and rider is approximately 4½ to 5 square feet. When a streamlined shell is fitted to such a machine, the frontal area is increased, as the contour of the shell fills in space between machine and rider in normal guise. The minimum frontal area that I can conceive for Henne's machine would be 6 square feet, with a "Drag Coefficient" of .0004. Checking this with the formula, we have:

$$\begin{aligned} \text{Resistance} &= A C V^2 \\ &= 6 \times .0004 \times 255^2 = 156 \text{ lbs.} \end{aligned}$$

This close checking proves that our assumptions are not too far out of line.

This study gives us a fair picture of the ultimate problem to be solved in attempting to better Henne's existing record. In my own case, I pondered the problem and decided upon the use of a supercharged Brough Superior machine because there existed some known

factors regarding this design.

The late Eric Fernihough did much experimenting with a partially streamlined, supercharged Brough Superior which housed an 8/80 model, 1000 cc JAP engine which produced approximately 120 bhp. Fernihough attained a speed of approximately 170 mph in these circumstances. Applying Part One of the formula this showed:

$$\begin{aligned} \text{Thrust} &= \frac{120 \times 550}{255} \\ &= 258 \text{ lbs.} \end{aligned}$$

Inasmuch as the machine and the rider were somewhat heavier than the BMW-Henne combine, let us assume that Fernihough was confronted with a rolling resistance of 15 lbs. Applying this figure, we have:

$$T = 243 \text{ lbs.}$$

The "Drag Coefficient" of a rider lying "flat down" on a machine like this would be approximately .00075. Not being a fully streamlined machine, we can adopt the figure of 5 square feet for frontal area which produces a final mathematical result of:

$$\begin{aligned} \text{Resistance} &= A C V^2 \\ &= 5 \times .00075 \times 255^2 \\ &= 244 \text{ lbs.} \end{aligned}$$

These two comparisons show that without a streamlined shell a power of 120 bhp is required to do the work that 78 bhp would accomplish with a streamlined shell.

In preparing for my Bonneville Salt Flats record attempt, my Brough Superior was equipped with a scientifically designed streamlined shell. With this shell, the mathematical figures for operation at sea level (with an anticipated speed of 200 mph) were:

$$\begin{aligned} \text{Thrust at 200 mph} &= \frac{120 \times 550}{293} \\ &= 225 \text{ lbs.} \end{aligned}$$

To the rolling resistance established for Fernihough's machine, I assumed an additional 5 lbs. rolling resistance, due to the inherent nature of the salt surface upon which the attempt was to be made. Thus, my calculated rolling resistance totaled 205 lbs. Applying these known figures to the formulae, we can see that my machine was capable of very nearly 200 mph.

At present, there are three other contenders for the world's motorcycle speed record working toward a common goal. They are Bob Berry with an unblown 8/80 JAP engined Brough Superior; Roland Free, unblown Vincent HRD; and Bus Schaller, unblown Harley-Davidson. To date, Bob Berry has attained 155 mph; Roland Free, 150 mph; and Bus Schaller 141 mph. Because Berry has attained the highest speed of the trio, let us apply the formulae to his efforts.

(Continued on Page 27)



# DUTCH T.T. RACES

## GILERA 4 WINS 500 CC RACE

Text and Photos by William H. Onslow

**K**ING CARNIVAL reigned over the small town of Assen, in the Province Drenthe, Holland on July 8th. The gaily clad and happy multitude chattered and danced against a background of brightly decorated stores and cottages, while at night the neon signs shed contrasting lighting upon the merriment abounding. The majority of the spectators to view the racing, some 120,000 strong, found overnight camp sites around the circuit and stayed the night round cheery campfires, midst songs and refined celebration the whole night through. It seems as though the annual Dutch T.T. races have come to mean more to the spotlessly clean Hollanders than to any other country comprising the annual series.

Eleven a.m. was starting time for the opener, the Junior event for machines of 350 cc capacity. Nine non-starters reduced the field to 41 contestants with Duke (Norton), Lomas (Velocette), and Graham (AJS) filling the front row. Rather reminiscent of the previous week's Belgian 350 cc Grand Prix, the three marques were evenly represented on the starting grid.

The "green" starting light sent the field away en masse with Bob Foster taking command almost at once. None knew that Foster would lead from wire to wire, no one else able to match the fleetness of his Velo nor his stylish, greased lightning cornering. For 140 miles Foster outsped them all, his Velocette maintaining its crisp exhaust note lap after lap.

At the last turn before the finishing straight on the first lap George Morrison, the Australian, overdid his approach and fell hard. His shoulder took the brunt of the fall, with his ribs also becoming involved. Nothing serious but terribly disappointing for Morrison, who was nearly 10,000 miles from home.

Early on it was noted that Foster was exceeding, with great consistency, the lap speeds established by Fred Frith last year. His opening, standing start, lap recorded a brisk 83.317 mph and as the day progressed so did Bob's average speed. (His race average proved to be 88.54 mph, without anyone

pushing him hard all day.)

Geoff Duke and Dicky Dale, Norton mounted, countered the steady efforts of Les Graham (AJS) for the No. 2 spot. At around the 75-mile point, Bill Lomas displaced Dale for good, placing Duke in second, Lomas in third, and Graham in fourth.

The real surprise of the day occurred around the 100-mile mark when Reg Armstrong, Velocette, discovered many additional "horses in the engine room" and began closing up on the leaders. By contrast, his performance outshone everybody's but Foster's, bringing him from near mid-field into fifth place in something less than the remaining fifty miles of the race.

Fickle Fate finagled Les Graham, in the closing stages, as he was seen to limp into the pits and retire with engine trouble. Quick inspection revealed a broken engine mounting bolt which permitted the powerplant to vibrate most horribly.

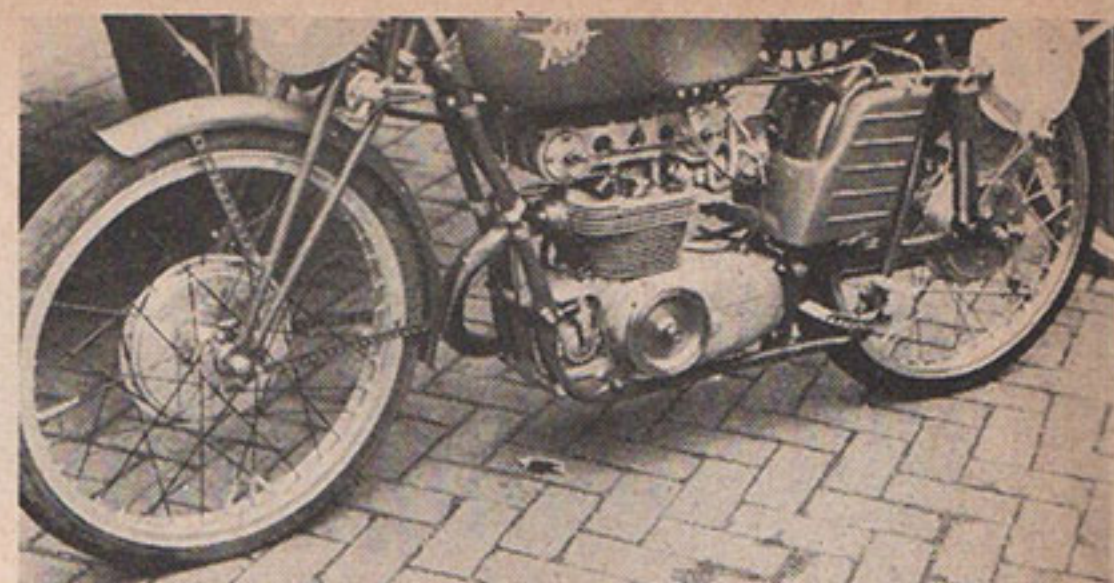
Foster ultimately returned the fastest lap of the day at an average speed of 89.96 mph and secured first place by finishing a comfortable 33 seconds in front of Duke. By so doing, he repeated his "Belgian" success of the previous week.

### Summary of Results

Bob Foster	Velocette
Geoff Duke	Norton
Bill Lomas	Velocette
Johnny Lockett	Norton
Reg Armstrong	Velocette

**I**MEDIATELY following the Junior event the little "Pea Shooters" lined up for a 7-lap dice on the dikes. These 125's look so inoffensive when in repose that their ultimate performance drains away my superlatives to dust. Of course, the race was expected to be dominated by the products from Sunny Italy, what with twin-cam Mondials and Moto Morinis rather dominating the line-up. Ten Dutch machines, Eysinks, fitted with Villiers engines, were amongst the starters but were no real match for the "Roman Iron."

Two Mondials ridden by B. Ruffo and



Newest contender for 125 cc road racing honors, the Italian M.V. dual overhead cam, four stroke. Girder front forks, outside flywheel, swinging arm rear springing are featured on this popper

Gianni Leoni burst away from the starting grid like Easter bunnies to straight-off head the parade. Apparently Mondial team orders were: don't race each other, just finish in front. Said instructions (I'm only assuming instructions had been given) were followed to the letter.

Both the Mondials and the Moto Morinis carried four-stroke engines, which proved vastly superior to the two-stroke Eysinks and Normans. I shall not try to explain the impression one receives while watching these Tom Thumb four-strokes whiz around a course at 75 mph average. Suffice to remark that their performance is so amazing that one must see them first hand to believe that their speeds are so "out of this world" when produced by a mere 125 cc. (125cc=7½ cu. in.—ED.)

### Summary of Results

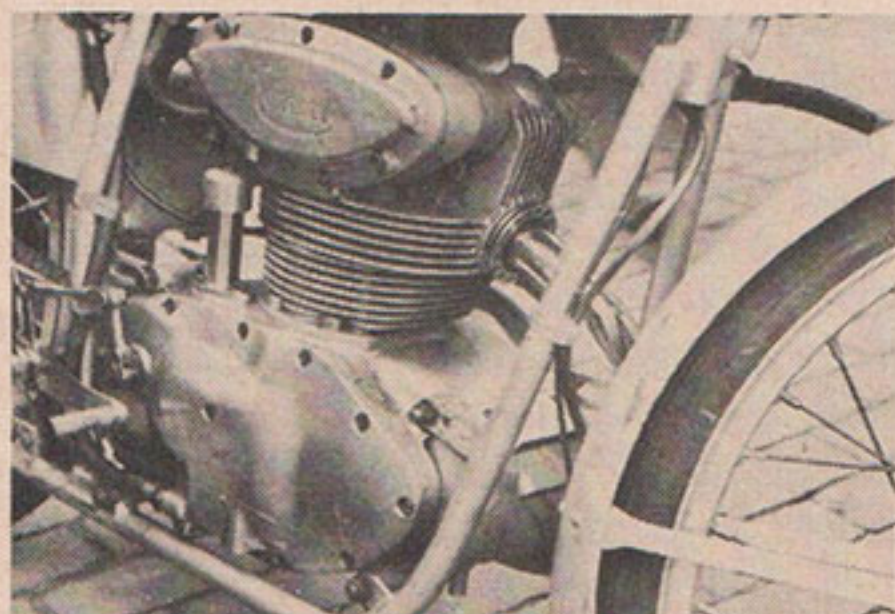
B. Ruffo	Mondial
G. Leoni	Mondial
G. Matucci	Moto Morini
U. Braga	Mondial
F. Benasedo	M. V.

Ruffo's race average speed was 75.07 mph, Leoni finishing but 10 ft. astern.

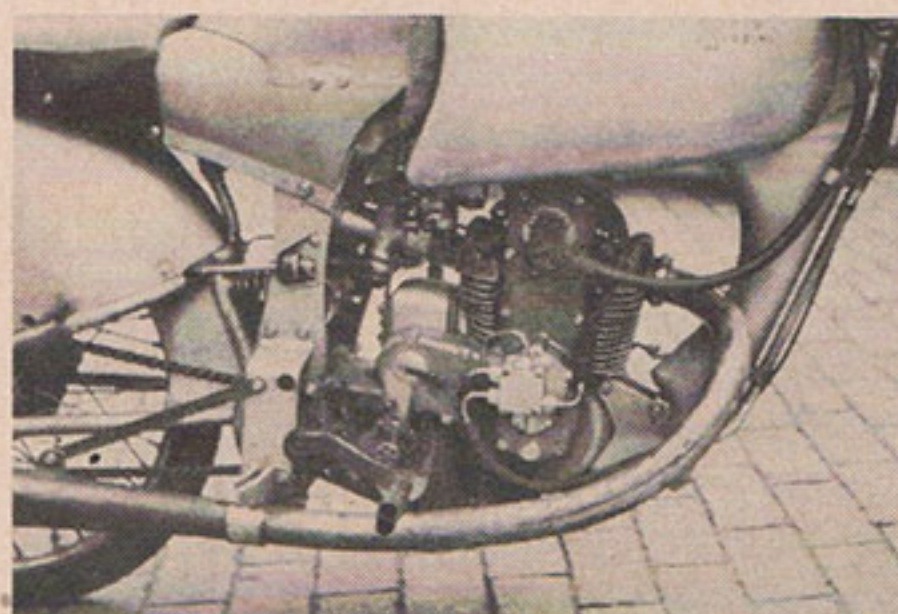
**T**HE LAST wailing 125 was barely off the course when the "giants" began to be wheeled to the starting line. The "giants," of course, were the 500 cc Senior bikes and they were scheduled to do 18 laps of the course. The previous week-end had seen the beautifully built Gilera 4's finish one-two in the Belgian Grand Prix. With the same superb machines and their "flushed with victory" riders on the starting grid at Assen, the air was full of the one big question, "Will Gileras pull it off again today?" (The answer, known to the world two hours later, was "Yes, they can—and did!")

Thirty-eight "giant killers," The Riders, rested beside their machines awaiting the "Green" starting light. Another massed start witnessed a concerted forward surging of 38

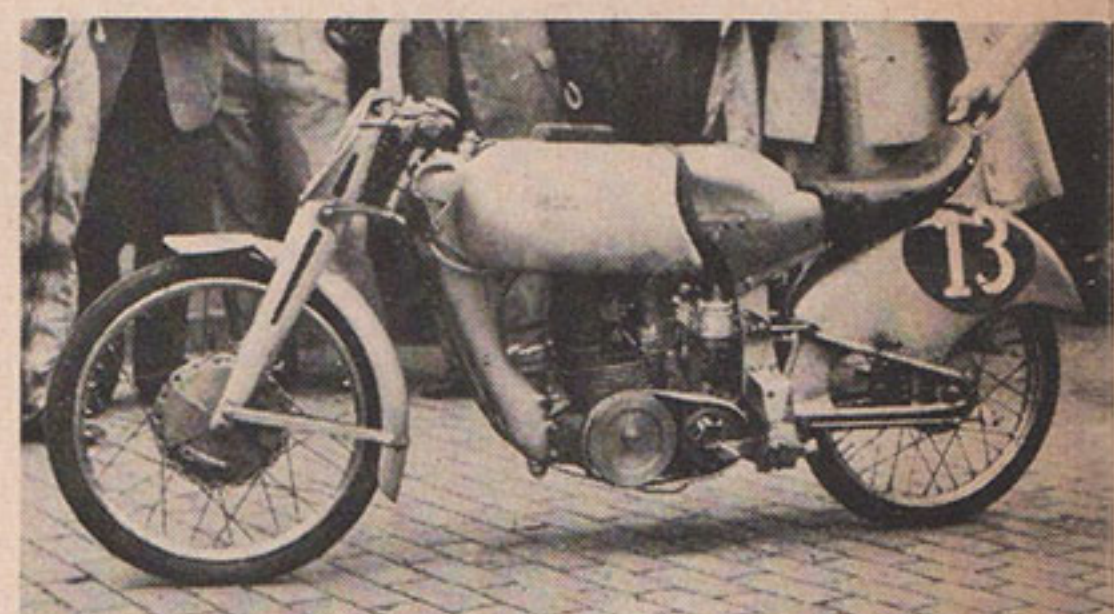
(Continued on Page 29)



Engine of the most successful Continental 125 cc racing machine, the Mondial, also built in Italy. A four-stroke with dual overhead cams, peaks at 10,500 rpm, runs over 82 mph on fuel



Close up view of Italian Moto Morini 125 cc racing engine. Design incorporates single overhead cam, hairpin valve springs. Camshaft is chain-driven from timing gear case direct



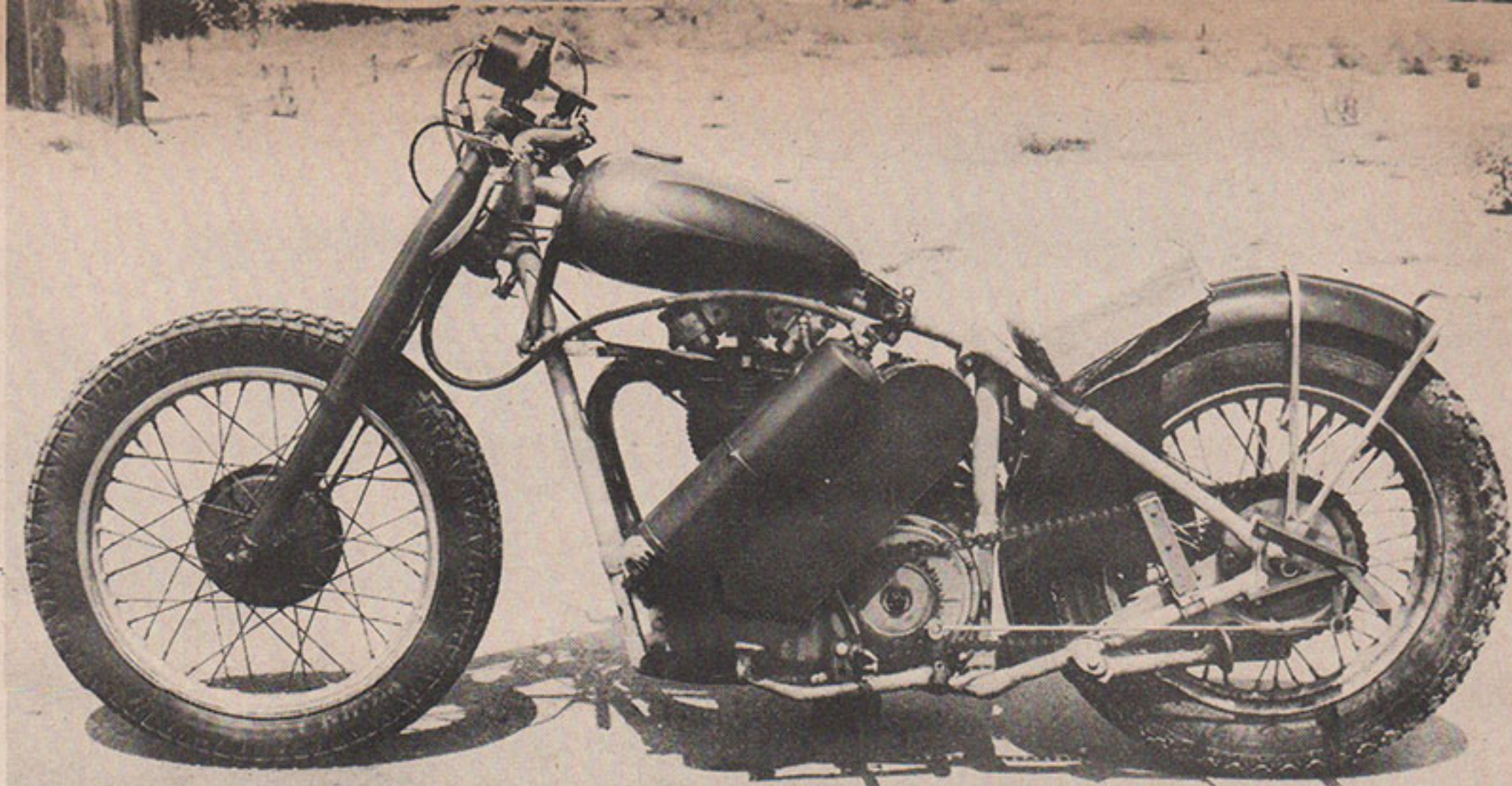
Full view of 125 cc Moto Morini. Pressed dural front forks and front down tube, contoured gas tank and saddle, swinging arm torsion bar rear springing are seen. Handling is very good



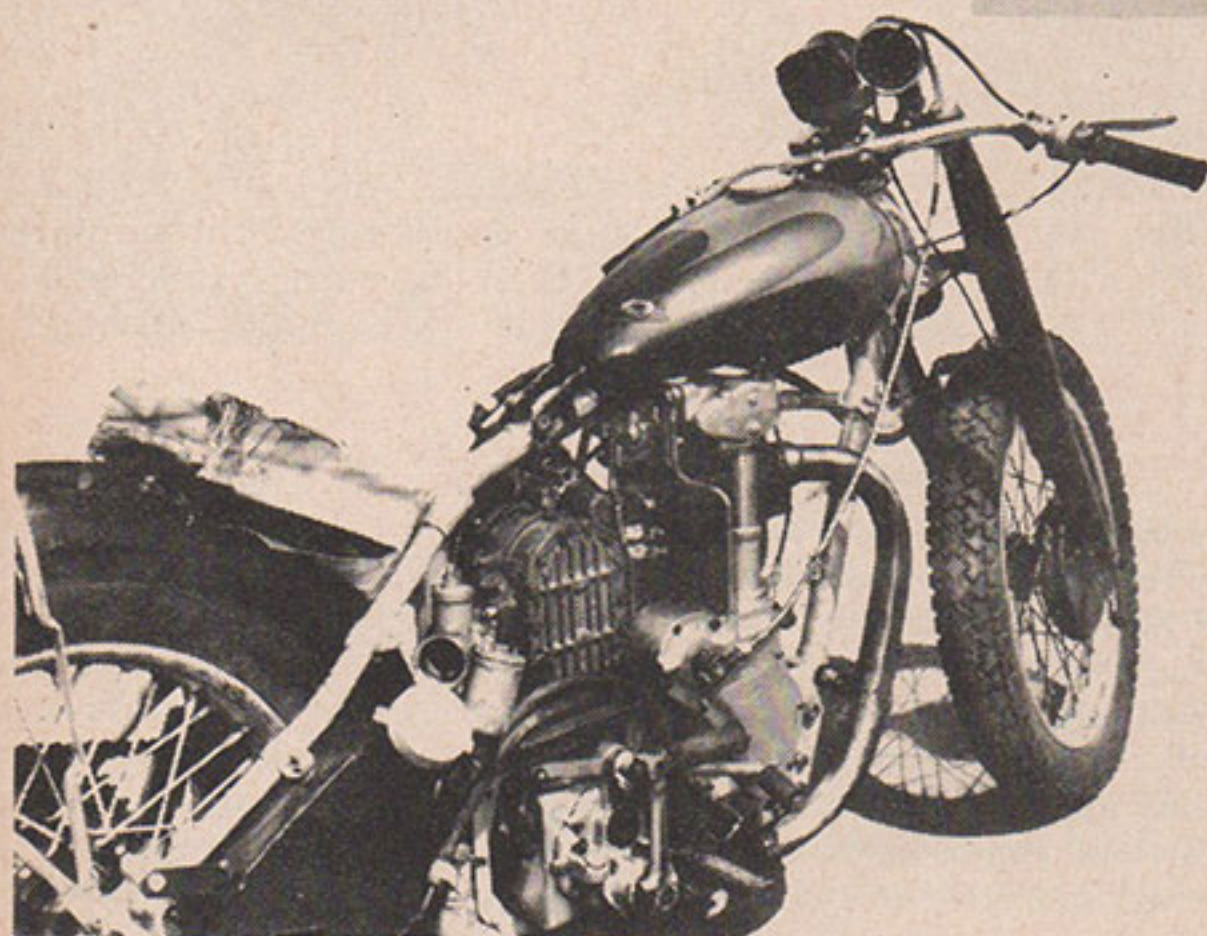
# "BLOWN" Velocette

**Ingenuity and Effort Produce Potential Projectile**

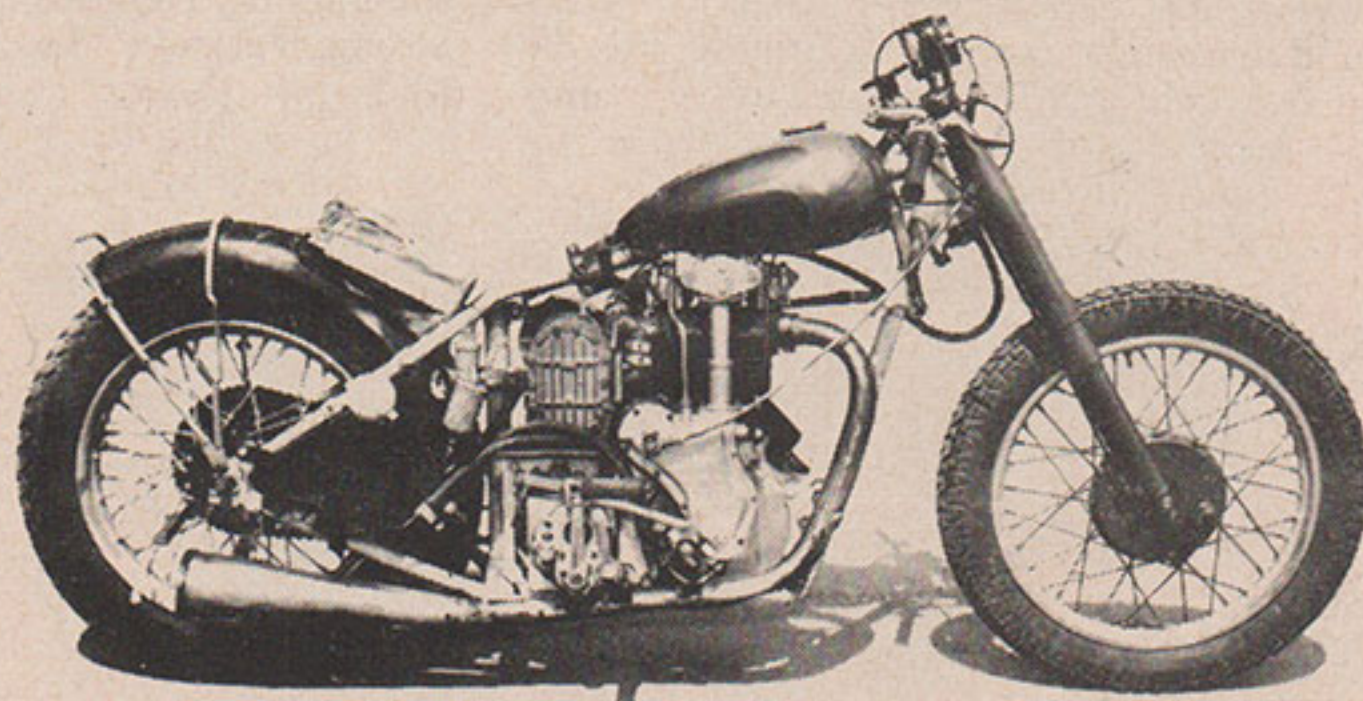
By Thatcher Darwin



ABOVE—Left side view of machine showing the location and relative size of the accumulator tank used to prevent "surging" in the incoming fuel charge. Blower chain drive is enclosed, sprocket power take-off



ABOVE—Right side view reveals compact mounting of blower directly above the transmission



LEFT—Rear three-quarter view shows shape and location of fabricated oil tank, special handlebars

Photos by Thomas J. Medley

PROBABLY every enthusiast who has owned a particularly "urgeful" bike has at some time been prodded with the tantalizing thought, "I wonder what she'd do—blown—?" (Blown=supercharged—ED.)

Marion Smithwick of Sun Valley, California, owns an MSS Velocette which, bored and stroked out to 38 inches, with polished ports, heisted compression, etc., had, in 1949, achieved a very useful 110 mph over a flying ¼ mile at Rosamond Dry Lake. This machine had all the basic qualities that were required and when the blower bug bit, "Smitty" was a pushover for the idea.

His friend, Jim Seely, was immediately commissioned to undertake the job of engineering and construction, and after many weeks of intensive spare time work, the installation was completed. As can be seen from the photos, the results are unusually interesting.

The supercharger used is a McCullough Roots-type unit, using two 3-lobe rotors. The blower passes 24 cubic inches of air per revolution. It is mounted on a fabricated steel platform aft of the engine and just above the transmission. This is the space normally occupied by the Velo oil tank, so the tank was replaced by a specially shaped, built-up

unit mounted further back in the frame.

The blower draws through a 1½ inch Amal carburetor fitted with an .067 jet and pumps into a special manifold made of steel tubing. One branch of the manifold goes directly to the intake port. The other branch goes to an accumulator tank.

#### USES ACCUMULATOR TANK

This latter component, mounted diagonally along the left side of the engine, is a very necessary feature of the design. A characteristic of single cylinder engines is that pulsations are set up in their short intake manifolds caused by rapid acceleration and deceleration of the mixture flow. With the addition of the blower this condition would have been aggravated by relatively high momentary pressures. The accumulator tank was fitted in order to dampen or smooth out these pulsations. Theoretically this tank cannot be too large and by careful space planning Seely was able to use a cylindrical tank 4 inches in diameter and 14 inches in length. This chamber is fitted with a 60 lb. blow-off valve to prevent damage to the supercharger in case of engine backfire.

Drive to the blower is by chain from a sprocket on the mainshaft, which re-

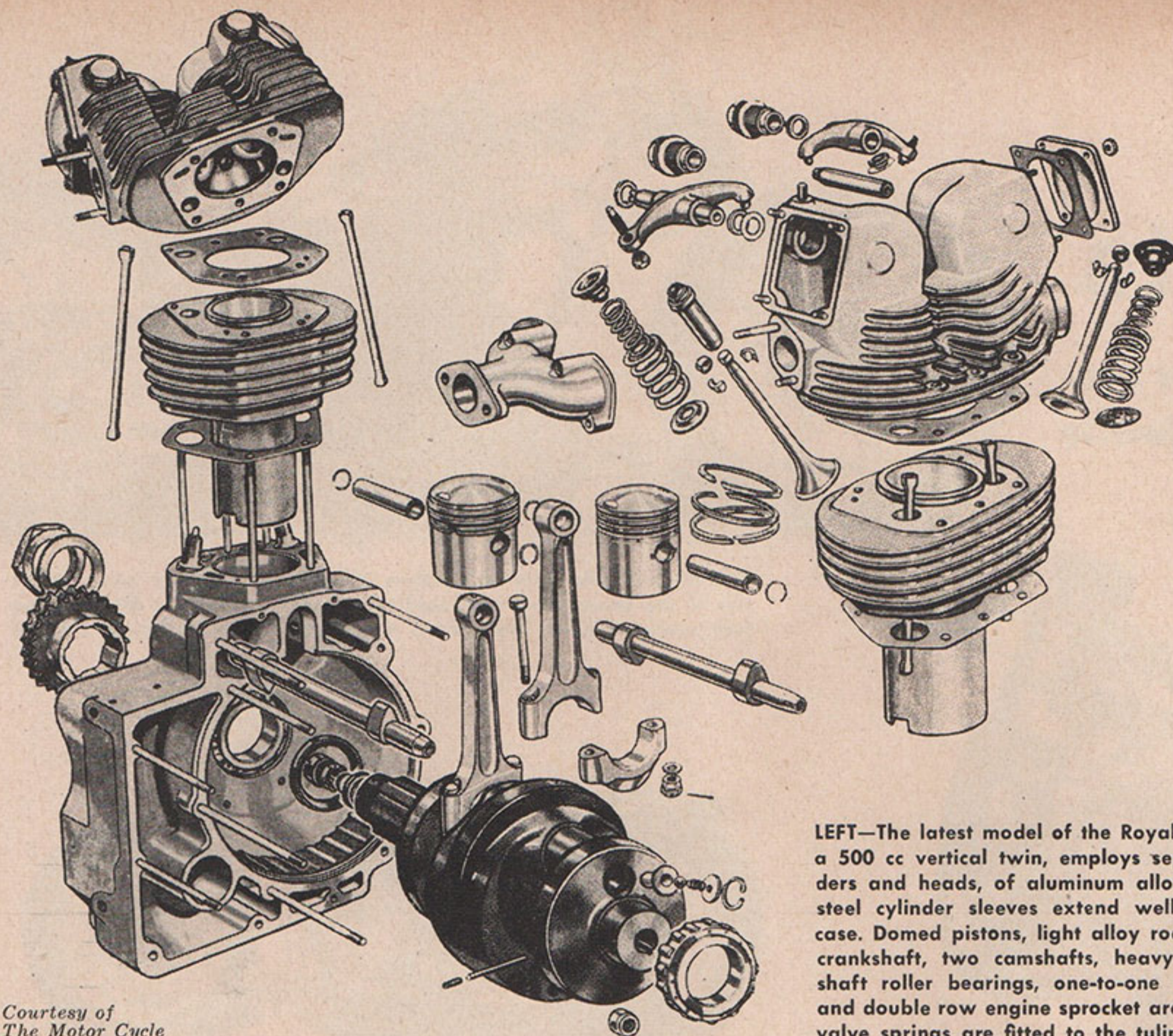
places the generator drive. The ratio is 1.2:1 step-up. This chain runs in a stout welded guard. Blower gears run in an oil bath (SAE 30), and rotor bushings are splash lubricated.

The Velocette is fitted with a manifold pressure-gauge and a tachometer. During preliminary test runs the blower has held 49 inches of mercury at 6300 rpm in high gear. The largest sprocket obtainable for the transmission countershaft had 24 teeth and the engine pulled this ratio easily. Transmission gears are stock Velocette ratios.

Considering its unquestionable high potential, the machine is reasonably tractable, though hardly the thing for pattering along in rush hour traffic. The engine can be kick-started on its 8½ to 1 compression, fuel is pure methanol with a small quantity of oil added.

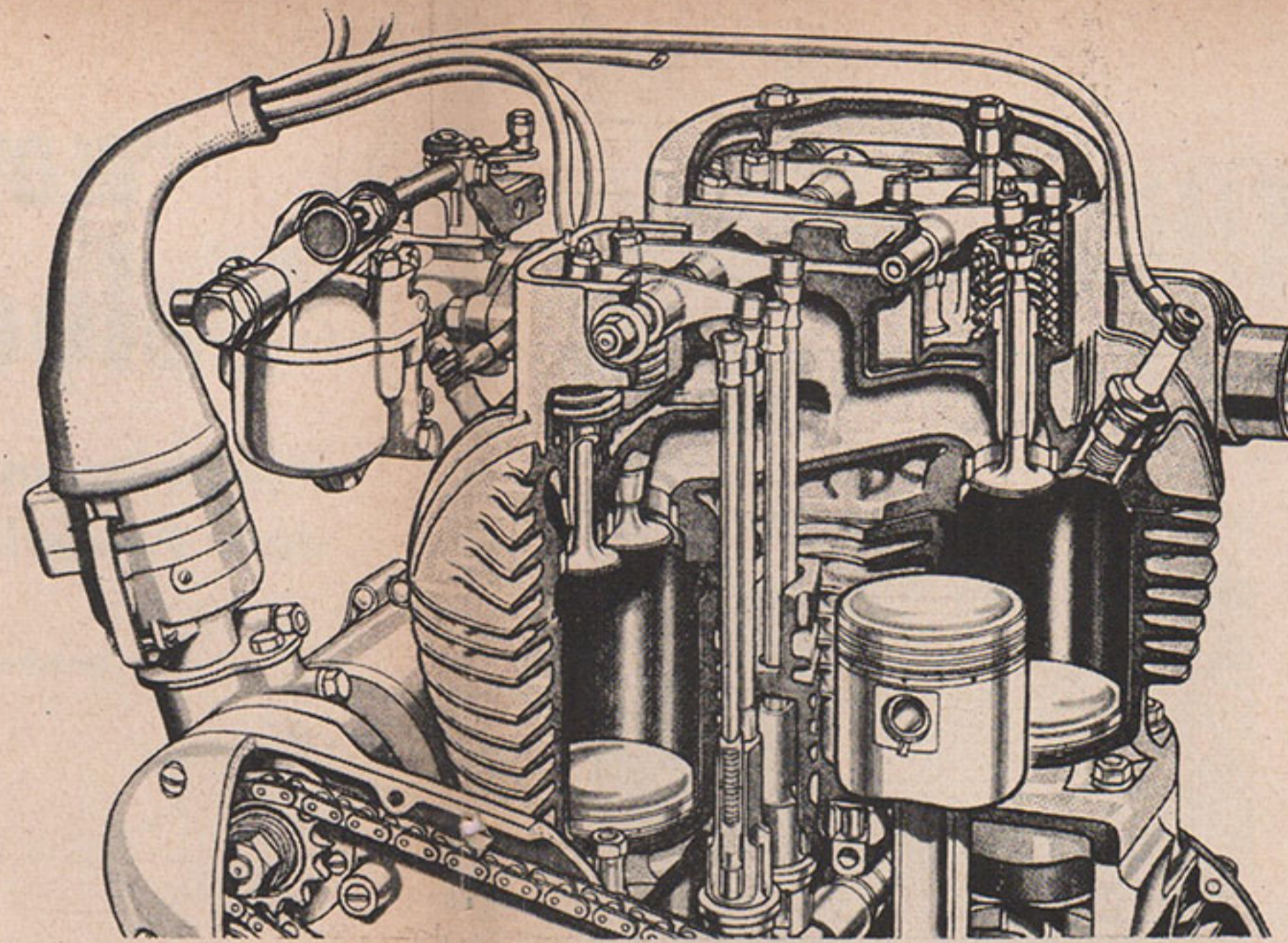
Other features of this intriguing bike are its BSA teledraulic forks which replaced the Velo girders, its neat Mustang gas tank, downswept bars and pillion pad seat, these latter to enable the rider to assume the wind defeating crouch necessary on straightaway runs. The product of much mechanical ingenuity and advanced technical thinking, this bike can be counted on to provide keen competition in straightaway trials.





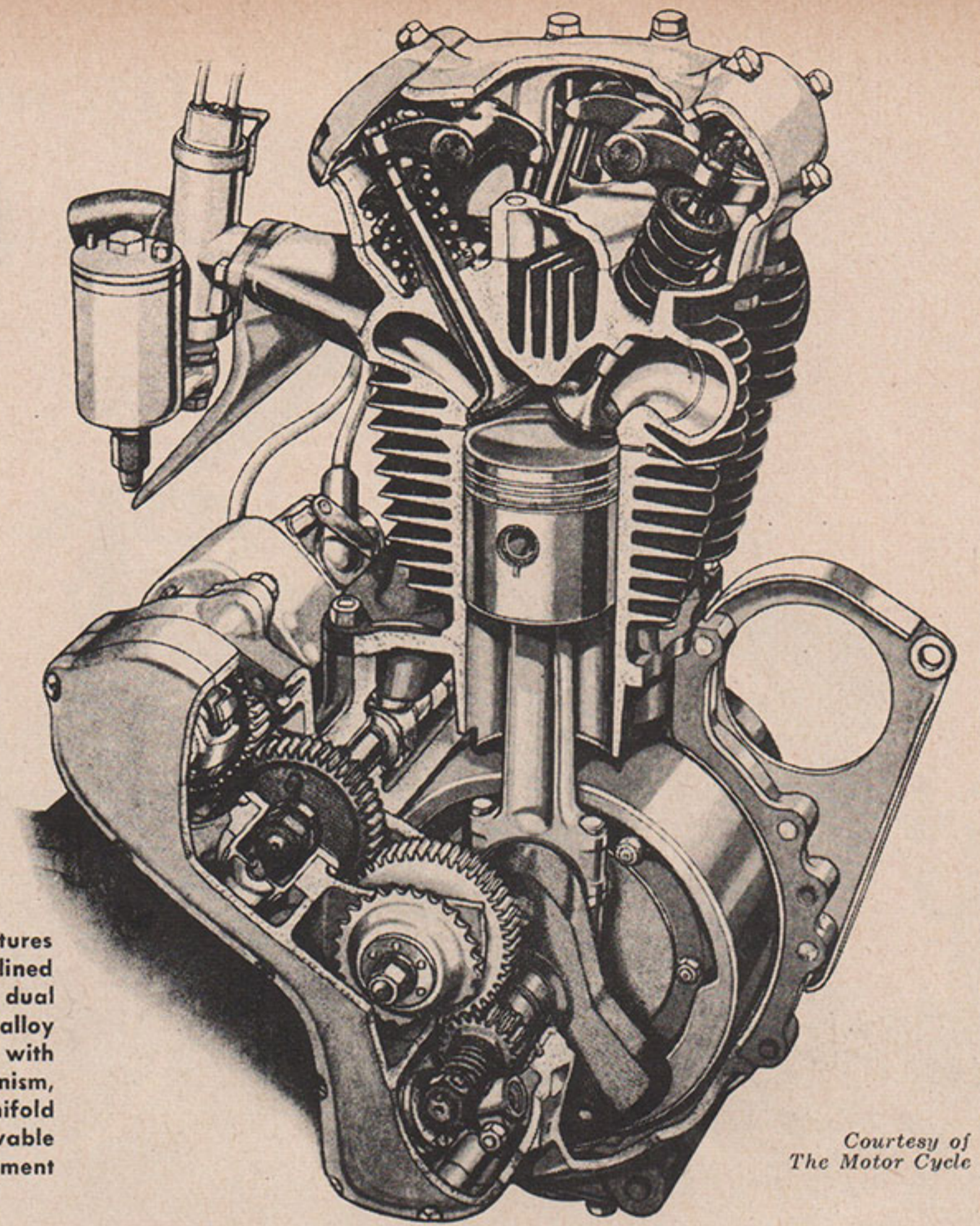
Courtesy of The Motor Cycle

LEFT—The latest model of the Royal Enfield line, a 500 cc vertical twin, employs separate cylinders and heads, of aluminum alloy. Pressed-in steel cylinder sleeves extend well into crankcase. Domed pistons, light alloy rods, one-piece crankshaft, two camshafts, heavy duty main-shaft roller bearings, one-to-one rocker arms, and double row engine sprocket are noted. Dual valve springs are fitted to the tulip-type valves



Courtesy of The Motor Cycle

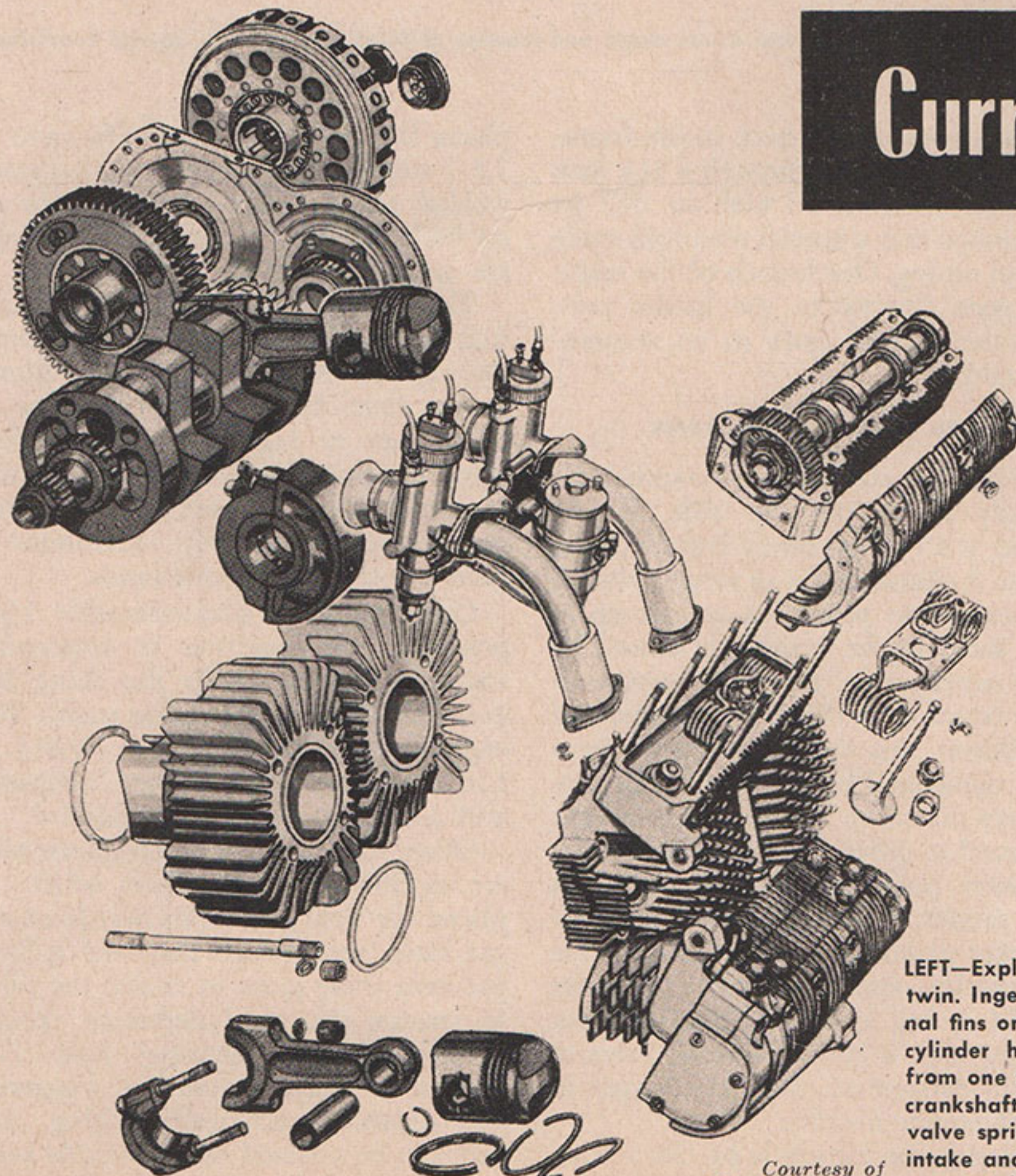
ABOVE—Phantom view of the 1000 cc Ariel Square Four engine, the only engine in the motorcycle world offering four cylinders in unique "square" layout. Valves are not inclined, are pushrod operated. Central camshaft actuates all eight valves. Two crankshafts are used, geared together. Battery ignition and automobile-type carburetor are featured. Modern Ariel Four models have alloy cylinder blocks, heads



Courtesy of The Motor Cycle

RIGHT—BSA 650 cc vertical twin engine features single camshaft (at rear of cylinders), inclined valve pushrods, one-to-one rocker arms, dual valve springs, solid skirt pistons, light alloy connecting rods, rear-mounted magneto with automatic advance and retard mechanism, bolted-on central flywheel, and intake manifold cast integrally with cylinder head. Removable rocker box covers permit easy valve adjustment

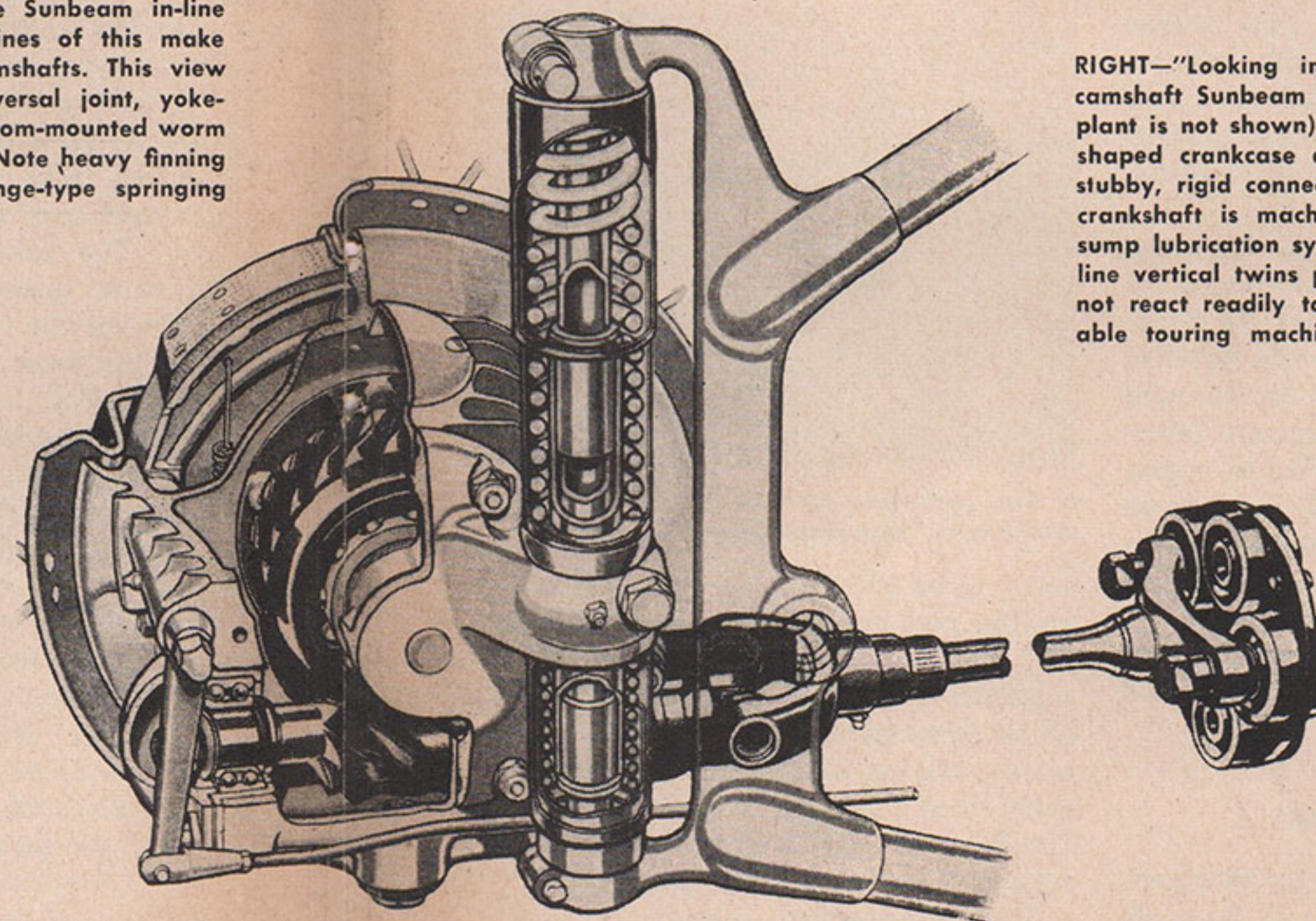
## Current British Motorcycle Engineering Designs...



Courtesy of The Motor Cycle

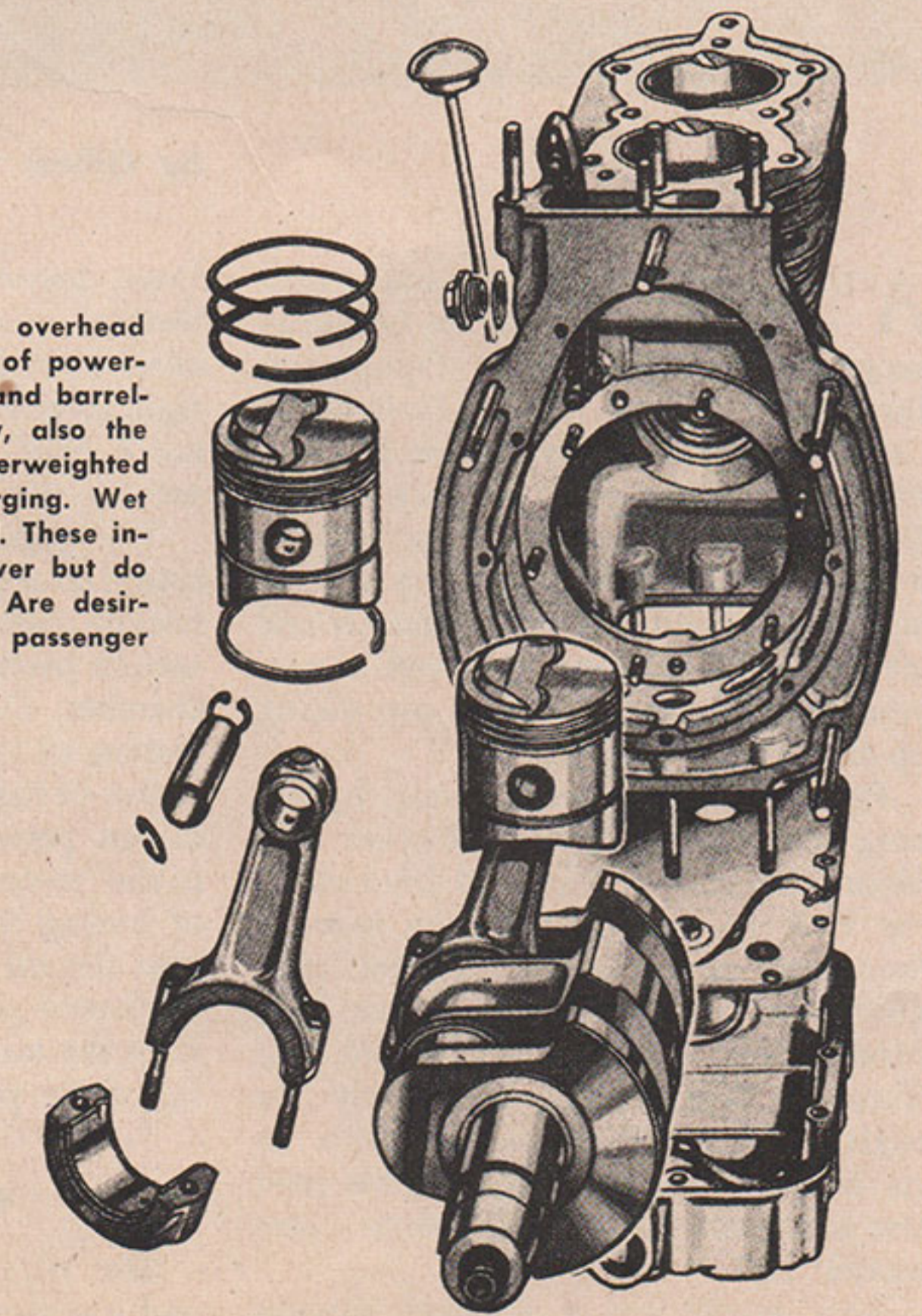
LEFT—Exploded view of the 498 cc racing AJS twin. Ingenious design permits use of longitudinal fins on cylinder barrels, "spike" fins on the cylinder head, two Amal carburetors feeding from one float bowl, one-piece counterweighted crankshaft, short and rigid con rods, hairpin valve springs, and separate overhead cams for intake and exhaust valves. Camshafts are each supported by five bearings, spur-gear driven

BELOW—Details of the simple and rugged shaft-drive assembly used on the Sunbeam in-line vertical twin machines. Engines of this make feature single overhead camshafts. This view displays pot-type front universal joint, yoke-type rear universal joint, bottom-mounted worm gear, and large drive gear. Note heavy finning of rear hub assembly, plunge-type springing



Courtesy of The Motor Cycle

RIGHT—"Looking into" the 495 cc overhead camshaft Sunbeam engine (top half of power-plant is not shown). Cylinder block and barrel-shaped crankcase are of light alloy, also the stubby, rigid connecting rods. Counterweighted crankshaft is machined from a forging. Wet sump lubrication system is employed. These in-line vertical twins produce silky power but do not react readily to "hopping up." Are desirable touring machines for solo or passenger



Courtesy of The Motor Cycle

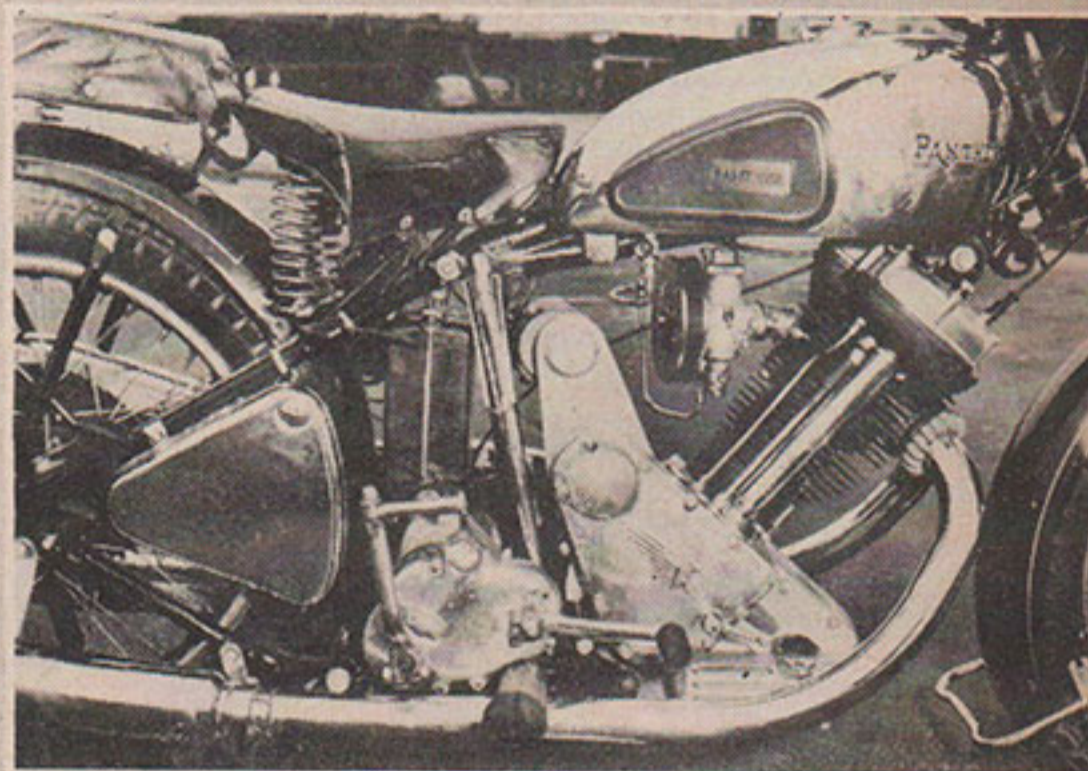
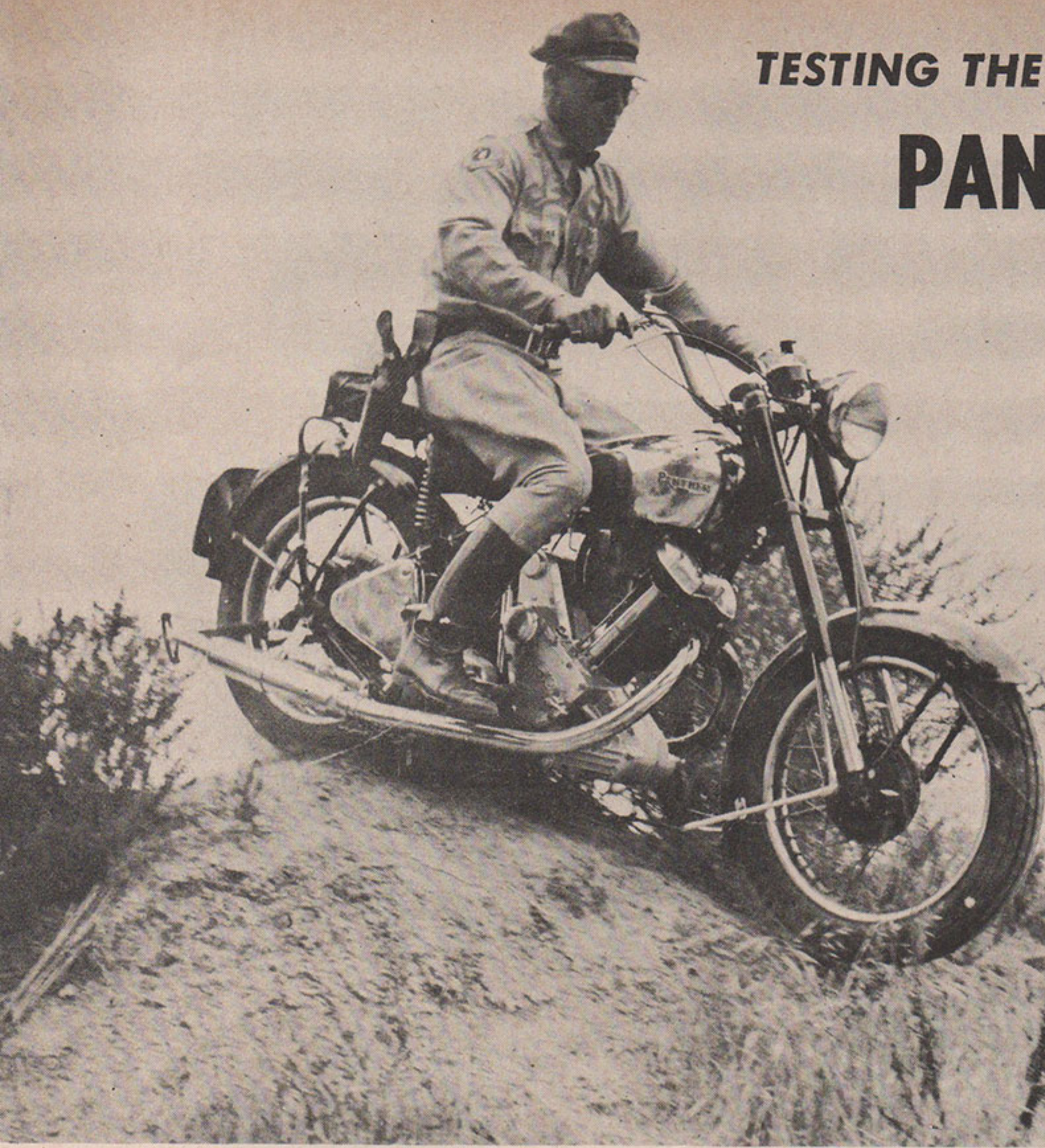


TESTING THE

# PANTHER



## MODEL "100"



By Officer H. Filker—Alhambra P.D.

Photos by Thomas J. Medley

AFTER completing this test and returning the Panther "100" to Lou Ellis, proprietor of Motors and Equipment, Inc., 5950 Sunset Blvd., Hollywood, Calif., I felt like departing for England right away. Ellis pays the fare on the *Queen Mary* (one way) for anyone wishing to take factory delivery on any new model Panther. Only my family and my Police Department job, and several other hindrances, prevented my taking up Ellis on his proposal.

Panther motorcycles are built by the long established firm of Phelon and Moore, Cleckheaton, England. Once called the P & M, the modern line features four single cylinder models: Model "100" (37½ cu. in.), Model "75" (21 cu. in.), Model "65" (15 cu. in.), and the "Stroud" model, built exclusively for trials riding and fitted with either a 15 cu. in. or 21 cu. in. engine. This road test was made on the "big fellow"—the model "100."

This model has a forward sloping cylinder, dispensing with the regulation

front frame down tube. The unique method used of securing the cylinder head to the steering lug makes for a very rigid engine mounting but still permits quick head removal for coke cleaning, valving, etc.

The engine is of the semi-dry-sump type (no separate oil tank is fitted), the heavily ribbed crankcase has the front section partitioned off from the flywheel chamber. Oil is carried in the forward section of the base, full pressure lubrication of the engine is handled by a gear driven pressure pump. Oil is returned to the "reservoir" by the automatic action of having the flywheel rims, which dip into the oil as it returns by gravity to the lowest point of the flywheel housing, fling the oil up and over the top of the lip of the partition piece.

### HAS BRUTE POWER

The engine features large flywheels and a massive connecting rod. As a result the engine performance has a ten-

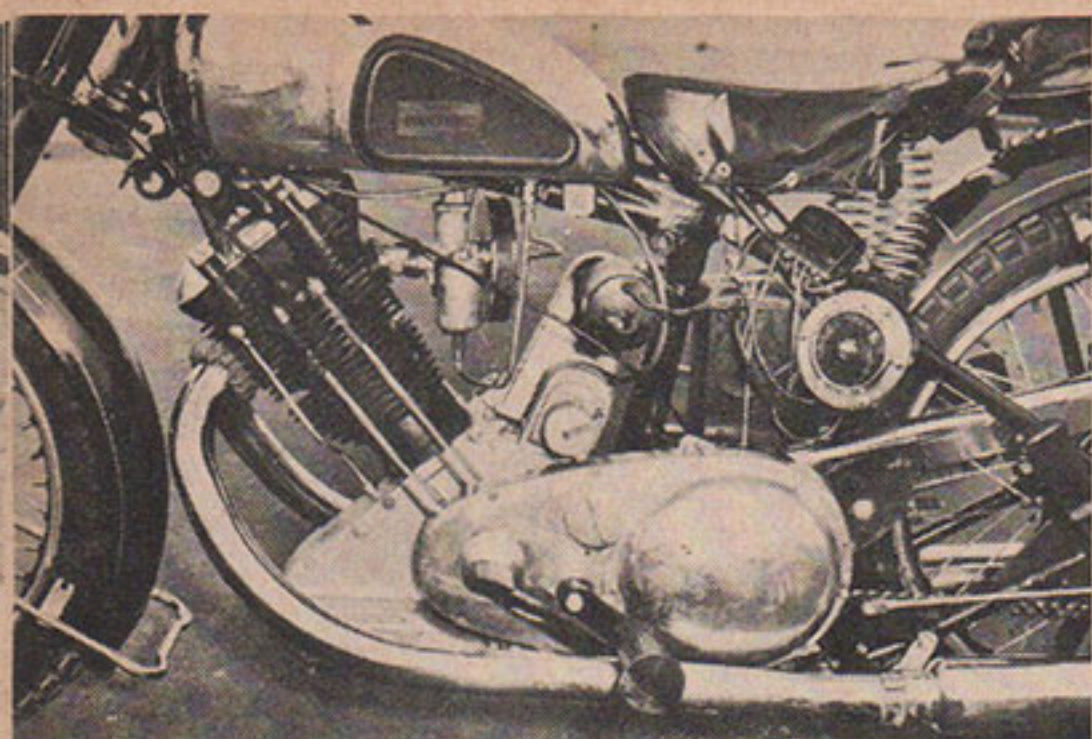


A fast right-hand turn affords Officer Filker chance to test high speed handling characteristics

dency to be a little sluggish but for hard pulling and brute horsepower the Panther "100" is an ideal machine. It is a perfect design for use with a side car. Its acceleration in the gears is not noteworthy but its acceleration in high gear, even from 25 mph, is really amazing. The Panther "100" is truly a big "thumper" and when it "thumps" one jumps.

The compression release, necessary when kick-starting a big single, is foot-





ABOVE—Left side view of inclined engine. Note long cylinder head hold-down thru studs

Left—Compactness yet ease of maintenance are revealed in right side view of Panther engine

operated. I found this feature very desirable. A hand release is also fitted, on the left handlebar, but in practice the foot release seemed more suitable.

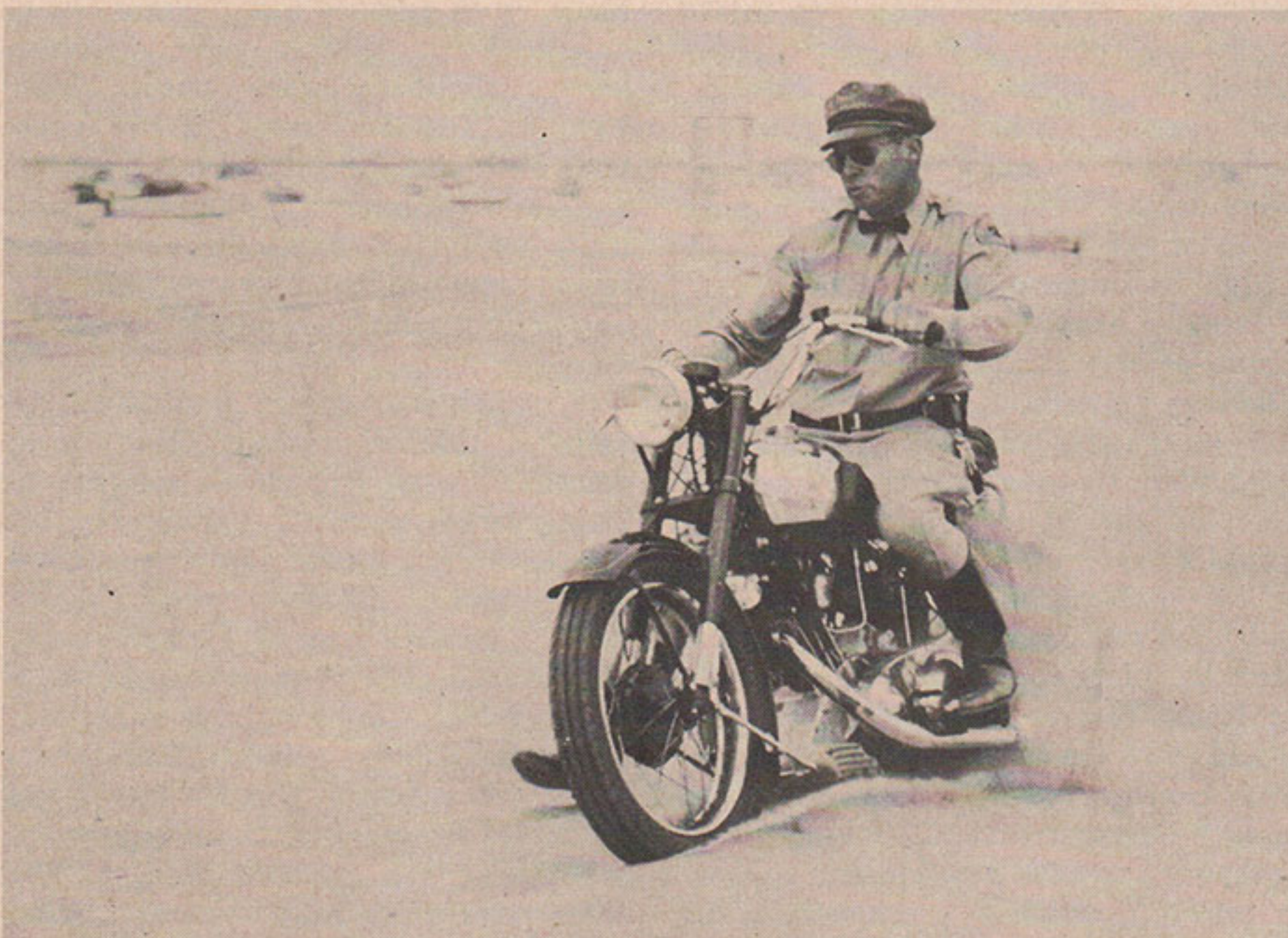
Other interesting features include: a semi-downdraft Amal carburetor, a chain-driven generator, a fully automatic advance and retard magneto, compression plates for altering compression ratios from standard 6.5:1 up to 8:1, neoprene clutch inserts, automatic rear chain oiler, Dowty Oleomatic telescopic front forks (cushioning element is air), roll-up style rear stand, 8" rear brake, 7" front brake, and 3¼ gallon gas tank.

On pavement the machine handled very well except that the rear stand legs would drag a little if the machine was laid way over on a fast turn. In the "rough" the lugging characteristics of the engine were very noticeable, per-

Filker tries "The Big Cat" in deep beach sand

mitted slow speed riding in deep sand. Above 60 mph a period of vibration was noticeable that was rather objectionable but no vibration was noticed below 58 mph or above 73 mph. Brakes were very powerful and the Dowty forks did not "top" or "bottom" on the severest of jumps or chuck-holes.

The Panther "100" is not a racing model but does provide an economical means of personal transportation. On a long trip it would be hard to beat as the riding position is very comfortable and the engine is a slow revver. Finish throughout is pleasing and shows evidences of considerable handwork in many instances.



## PERFORMANCE SUMMARY

### Acceleration

- \* Standing Start to 35 mph—7 sec.
- \*\* Standing Start to 55 mph—11 sec.
- \*\*\* Standing Start to 74 mph—27 sec.
- \* Low gear only
- \*\* Second gear only
- \*\*\* Three gears used

### Braking

- From 25 to stopped, rear brake only—49 feet
- From 25 to stopped, front brake only—41 feet
- From 25 to stopped with both brakes—31 feet

### Slow Running

- High gear without "chain jerk," 18-20 mph

### Speed

- Maximum in low—35 mph
- Maximum in second—55 mph
- Maximum in third—74 mph
- Highest speed obtained—84 mph

## General Specifications

**ENGINE.** 87 mm bore x 100 mm stroke 600 cc ohv. Compression ratio 6.5 to 1. Hepolite slipper piston with two compression rings and oil control ring for improved cold starting. Double row roller big-end. Engine shafts carried on widely spaced ball and roller journals. Valve gear fully enclosed and pressure lubricated. All gear drive to pump and magneto. Gears precision cut in 60 ton nickel chrome steel. Half compression device ensures easy starting. Two-port exhaust gives exceptional quietness and cool running.

**LUBRICATION.** Semi-dry sump incorporated with crankcase ensures quick oil circulation from cold, and external cleanliness. Crankcase adequately ventilated and heavily finned to ensure oil does not overheat. Oil capacity half a gallon.

**FRAME.** Cantilever frame of high carbon steel tubes with forged steel lugs. An unusual feature of this frame is that the engine forms an integral part. Originally introduced by Phelon Moore Ltd. many years ago, this strong and rigid construction has proved capable of standing up to the most arduous conditions and is practically unbreakable.

**FORKS.** Heavy duty Dowty Oleomatic Telescopic giving progressive air springing with oil damping. Individual adjustment to any weight of rider or riding conditions. Adjustable friction type steering damper.

**TRANSMISSION.** Shock absorber built into rear hub. Front chain fully enclosed in oil bath polished aluminum chaincase. Rear chain protected by effective guard. Rear spindle adjusted by twin cams so that correct alignment of the chain drive is maintained under all conditions. Adjustable oil feed to back chain from primary chaincase.

**GEARBOX.** Heavyweight Burman Type BA 4 speed positive stop foot control. Ratios 4.3, 5.8, 7.3 and 11.5 to 1. Footstart and foot change levers fully adjustable. Clutch fitted Neoprene inserts and running in oil.

**ELECTRICAL.** Magneto driven through Panther quickly detachable coupling. 40 Watt Dynamo driven by silent duplex chain fully enclosed automatic advance and retard within timing case.

**TANK.** Streamlined tank fitted two taps, one for reserve, rubber mounted and with

embossed Panther nameplates and knee-grips. Capacity 3¼ gallons.

**WHEELS AND BRAKES.** Heavy duty rims and rustless spokes. Non adjustable journal bearings to hubs. Rear brake 8" diameter. Rod operated. Front brake 7" diameter.

**STANDS.** Roller rear stand and tubular front stand.

**FINISH.** Frame, Mudguards, rear chaincase and forks finished black, gold lined. Wheel Rims chromium plated with black centers lined red. Chromium plated tank with cream panels lined red and black.

**WEIGHT.** 385 lbs.

**WHEELBASE.** 54"

**OVERALL LENGTH.** 83"

**WIDTH OVER HANDLEBARS.** 29"

**GAS CONSUMPTION.** Solo 90 mpg—Sidecar 60 mpg

**OIL CONSUMPTION.** 2,000 mpg

**SPEED.** Solo 95 mph—Sidecar 75 mph



# Tuning the Motorcycle Engine

## IMPROVING THE "BREATHING" PROPERTIES

By Tim Witham

Drawings by Bryce Gillespie

THE HORSEPOWER output and the torque developed by an engine depends principally upon the weight of the air-fuel mixture which can be drawn into the engine during the intake stroke. An engine that can suck in a greater weight of air-fuel mixture per intake stroke will potentially develop greater power. An engine that can "breathe" well (persuade a heavier weight of air-fuel mixture to enter the cylinder) on every intake stroke and under a wide range of R.P.M.'s is considered to have a high "volumetric efficiency."

Imagine an engine cylinder with the piston at rest at Bottom Dead Center. The area between the top of the piston and the cylinder head will be completely filled with air at a normal pressure of 14.7 lbs. per sq. in. Such a condition would represent a volumetric efficiency of 100%. Now, move the piston back and forth rapidly in the cylinder. Measured by proper instruments, it would be found that the volume of air that would reach the cylinder would be somewhat less than 100%, perhaps only 70%. In such circumstances the engine would be claimed to have a volumetric efficiency of 70%, which is about normal for stock engines. We require to increase this percentage to achieve higher power output.

Three main factors determine the volumetric efficiency of an engine: valves (size and shape), valve operation (valve timing and cam design), and

the "flow column" of air-fuel mixture. To increase engine power all three factors must be considered.

Valve diameter (size) and shape are very important. Too large valves or too small valves are both inefficient. Generally, stock engines will respond favorably to an increase in valve diameter, particularly of the intake valve, of about 15% to 20% over standard PROVIDING such alterations can be carried out without weakening the engine mechanically and, also, providing the intake porting and ultimate carburetor size will not present problems which cannot be solved.

Whether your engine is of overhead valve or side valve design, study it to determine what will be encountered in fitting larger diameter valves. For instance, can the intake port cross-section be enlarged to the diameter of a larger valve? Can the throat of the valve ports be enlarged enough to accommodate a larger valve? Can a narrow valve seat be cut for a larger valve without weakening the enlarged port throat? Once the larger valve is installed will it strike the piston, the cylinder head, or the other valve when fully opened?

Once satisfied that larger valves can be fitted and that the porting can be satisfactorily taken care of, proceed to install them. This will require machining out the existing valve seat throats, the cutting of new valve seats, and grinding in the larger valves.

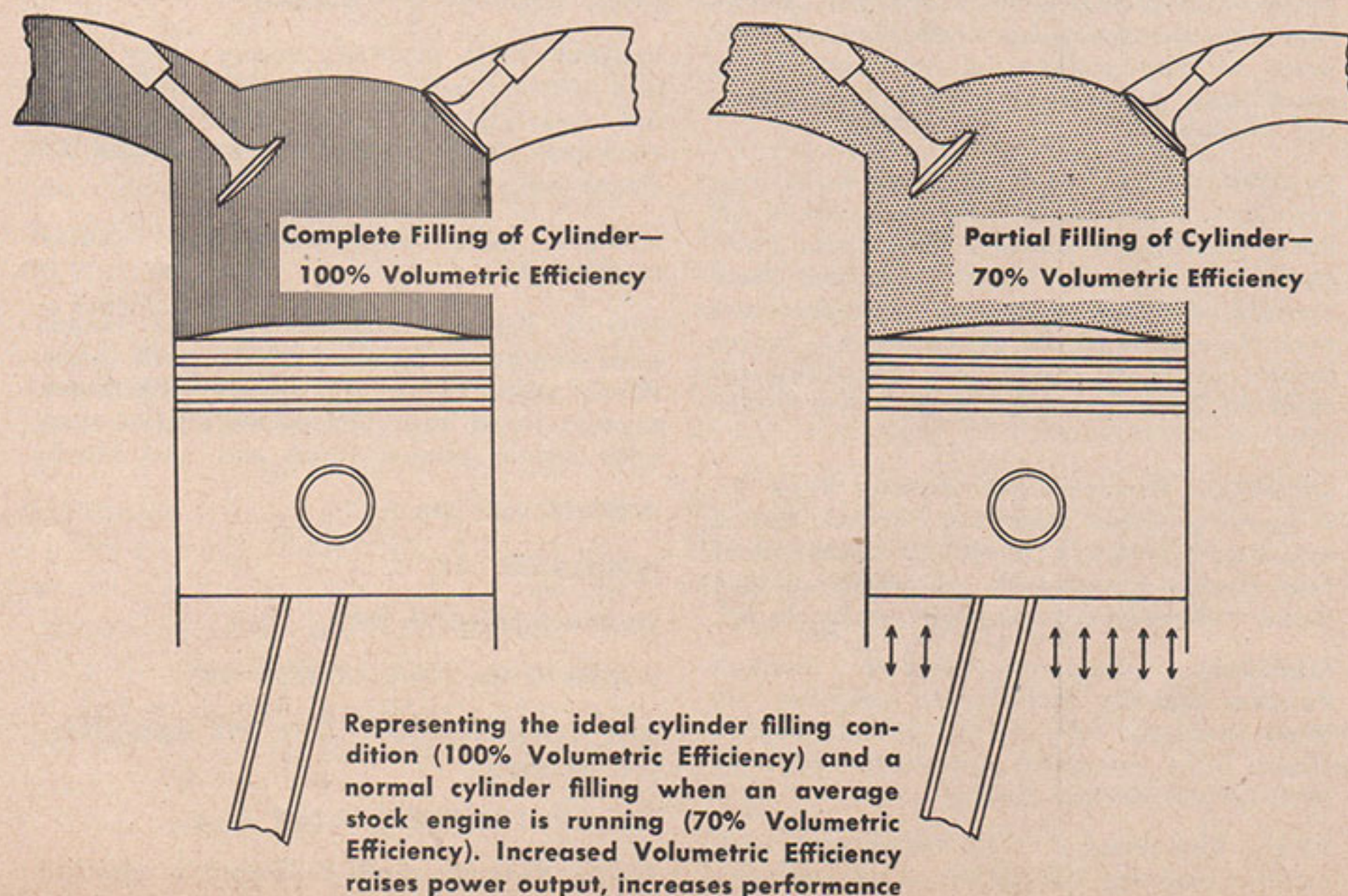
When larger size valves are used be sure that they are of suitable steel to withstand the higher temperatures encountered in an air-cooled engine. Many automobile valves, after altering to proper size, are not suitable for motorcycle operation.

Notice that we are more concerned with increasing the diameter of the intake valve than with the exhaust valve. Increasing the size of the exhaust valve can be helpful but not nearly as much as when the intake valve is increased. This is because the pressure of the exhaust gas is high and can escape through a standard size exhaust valve without too much resistance, plus the facts that: a small diameter valve head requires less power to be raised off its seat at the moment of high exhaust gas pressure which is present in the combustion chamber at the instant that the exhaust cam commences to lift the valve, and that a small diameter exhaust valve head will run at a lower temperature because it offers less area to be heated and consequently will transfer more quickly what heat it does absorb to its seat and guide.

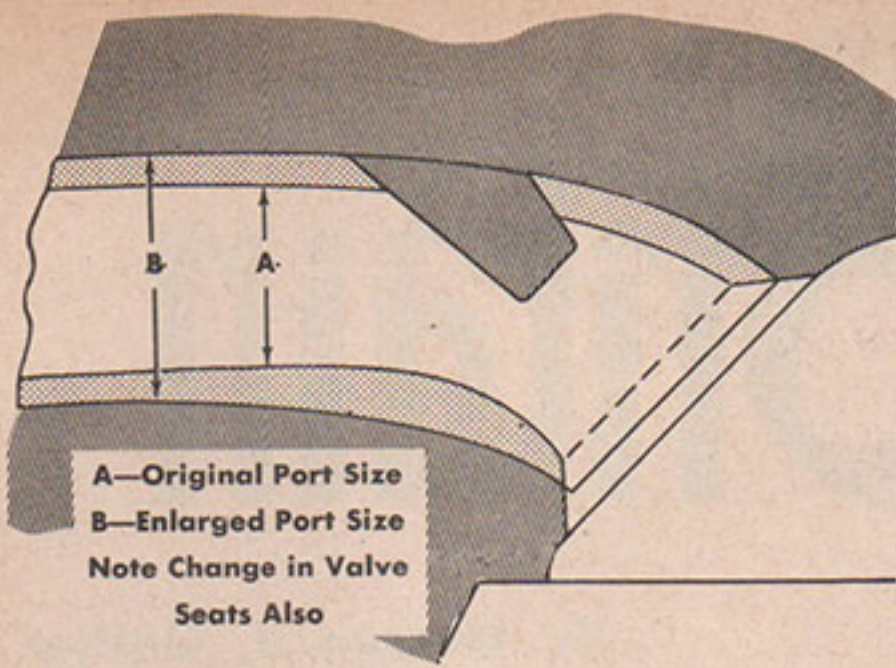
Valve shape is important, too, but most modern valves, for either overhead or side valve engines, have a large radius taper between the valve head and the valve stem. This well-rounded radius causes less resistance to the incoming mixture and is mechanically stronger than old-style valves.

Valve operation is assumed to be done by cams. This portion of the article will disappoint some readers because many people believe that a "hot" cam is THE secret of increased power. A "hot" cam is only ONE of the factors in increasing volumetric efficiency. A cam is merely an eccentric-shaped piece of metal which, when revolved, causes a valve to raise and lower on its seat.

The all-important point is the timing of the valve opening and closing with respect to the position of the piston in the cylinder at any given moment. Valve timing is determined by the contour of the cam. On the intake stroke a piston can only move from Top Dead Center to Bottom Dead Center. This piston movement is caused by revolving the fly-wheel assembly one-half a revolution. Depending upon the length of stroke of an engine, its piston will move through a distance of "X" inches; for example, a







Diagrammatic sketch of altering an intake port to improve engine breathing. Port polishing is final operation, is worthwhile, takes patience

movement or stroke of 4". While the piston is moving through a distance of 4" the intake valve should logically open completely and close again.

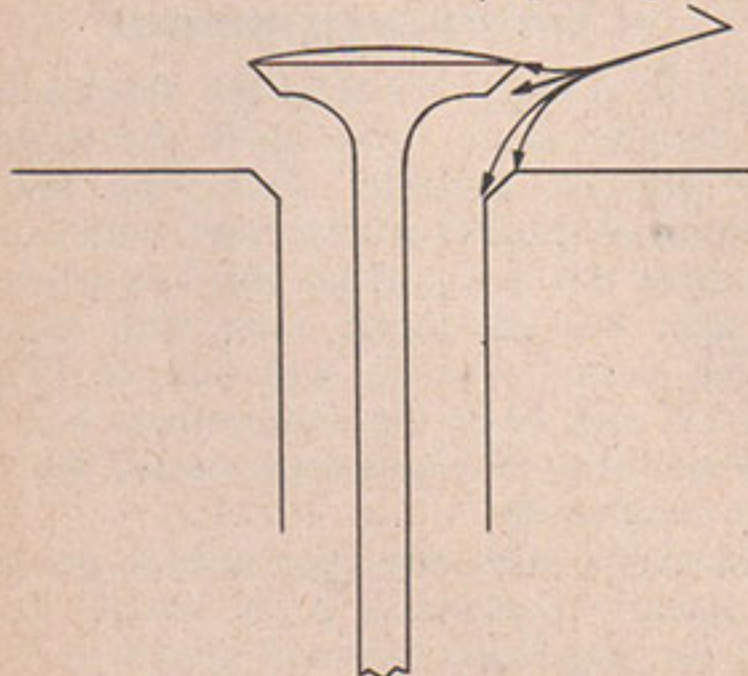
It has been found beneficial in modern high output engines to commence raising a valve off its seat BEFORE the piston starts to descend on the intake stroke and not to allow the valve to fully close until AFTER the piston has started to move upward on the compression stroke. Also, the exhaust valve is caused to open BEFORE the piston has reached B.D.C. on the power stroke and is held open a fraction of a second AFTER the intake valve has begun to lift, with the piston descending on the next intake stroke. Such valve timing is referred to as "overlap valve timing"—a very desirable feature for high power output but very critical so far as low speed carburetion is concerned.

Since stock cams can usually be re-ground by cam specialists to meet various engine requirements, I suggest that you consult a cam grinding firm. Advise them what results you desire from your engine. They will quiz you about certain other features and then regrind your stock cam to meet your requirements.

Several motorcycle manufacturers make special cams suitable for their machines. Consult your dealer or contact the manufacturer direct to see what is available before you regrind your stock cam. Such inquiry may save you time and money.

The third factor which affects volu-  
(Continued on Page 34)

Break These Sharp Edges  
By Light Filing.

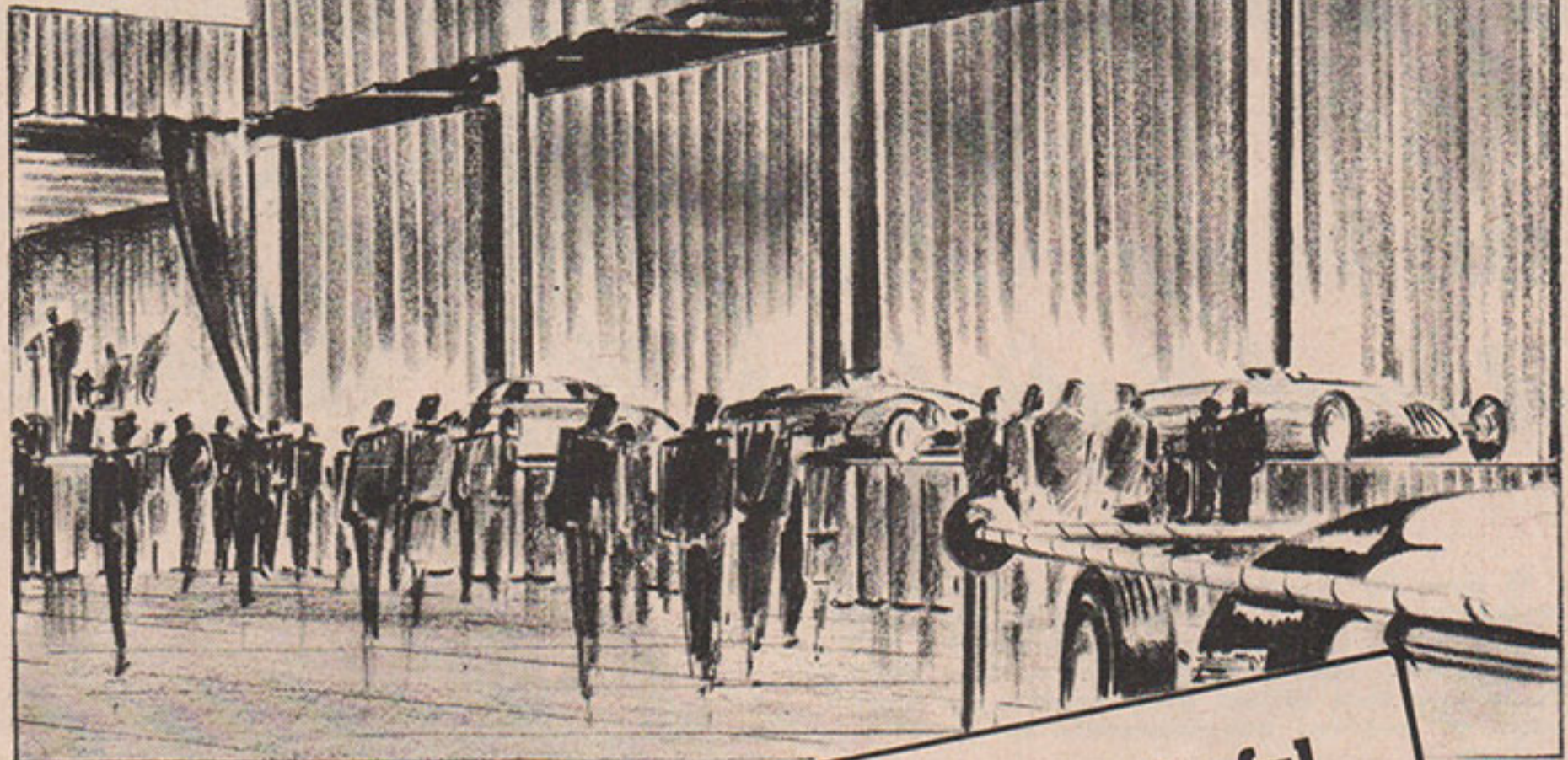


A refinement—radiusing off all sharp edges of valves and seats. Provides better flow of air

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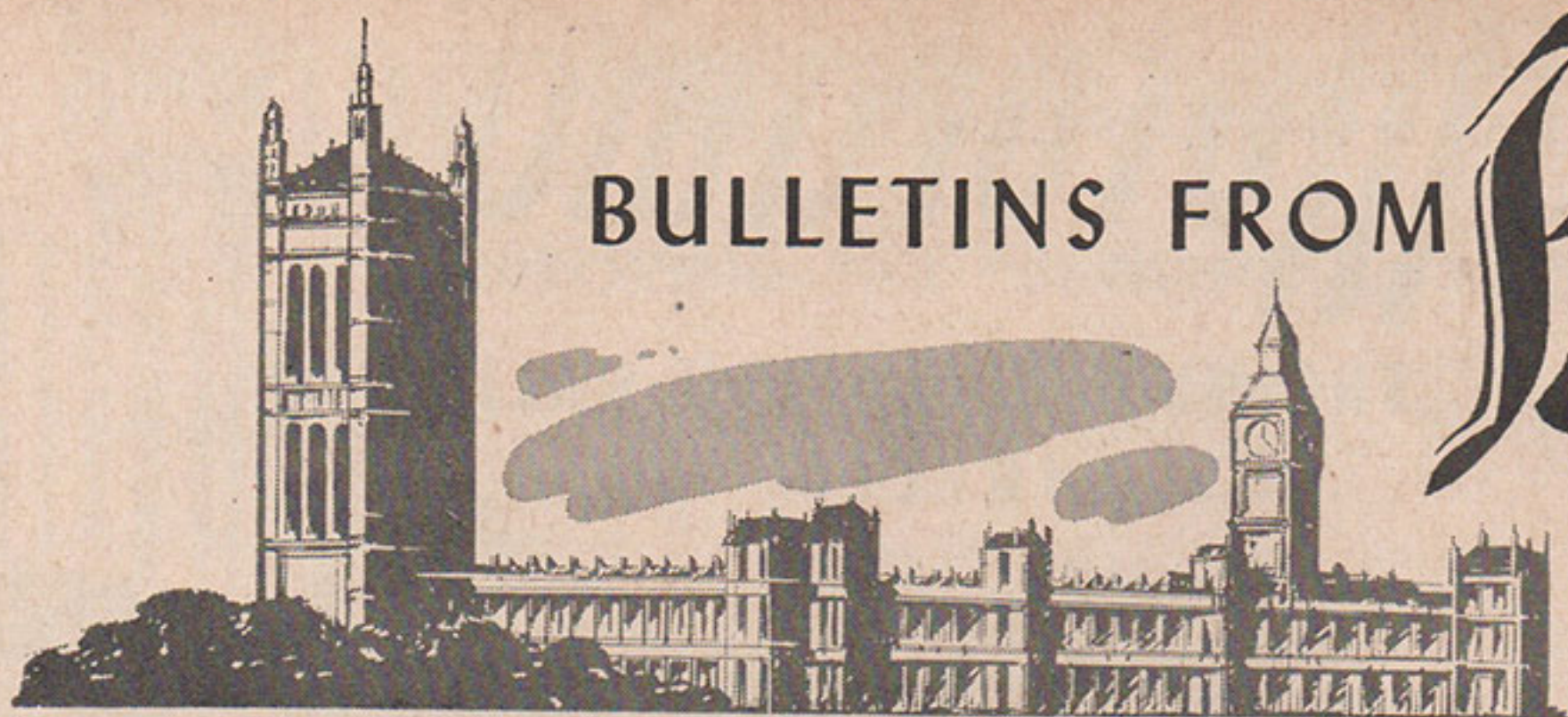
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BULLETINS FROM

# Britain

By William H. Onslow

## HISTORY of FAMOUS BRITISH Motorcycles *Royal Enfield*

(I proudly hand over this edition of the series on the History of Famous British Motorcycles to Mr. R. A. Wilson-Jones, A.C.G.I., B.Sc., M.I.Mech.E., Technical Advisor to The Enfield Cycle Co., that others may imbibe his knowledge of general developments in motorcycle history.)

THE PUNDITS seem uncertain whether this year of 1950 is the first year of the second half of the century or the last year of the first half. In either case it is not a bad time to pause and look back to see what has been achieved in motorcycle design during the past fifty years. Not that I claim personal acquaintance with the products of the first ten years of the Twentieth Century—my grey hairs are due to worry rather than to extreme old age! Machines made in nineteen-O-something, and even earlier, are to be seen by all who care to attend the annual Pioneer Run from London to Brighton, and a study of them, lined up in chronological order at the end of the run, can be extremely interesting.

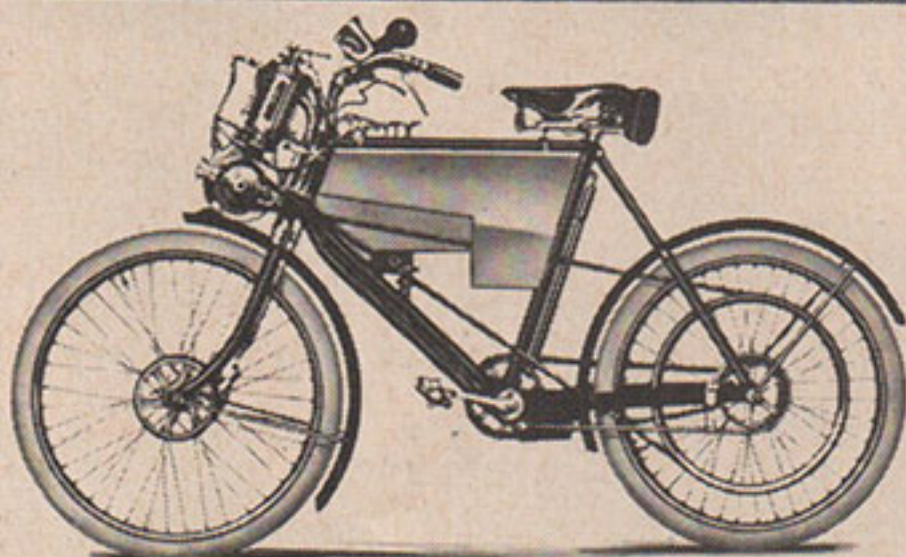
What are the fundamental differences between these old veterans and the gleaming thoroughbreds now coming off the assembly lines to be shipped to the ends of the earth?

### THE JET CARBURETOR

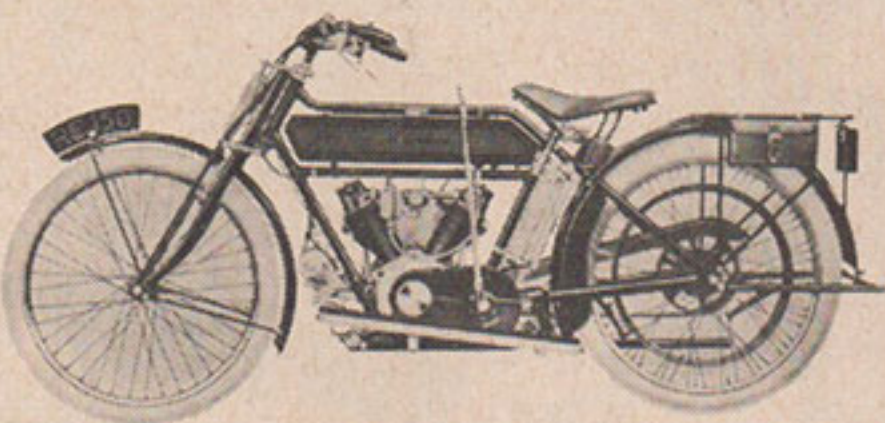
This device originated very early in the present century and was continuously improved until the early twenties, when the AMAC and B & H firms both produced the easily tuned, nearly automatic instrument known today as the Amal needle type carburetor.

### THE MECHANICALLY OPERATED INLET VALVE

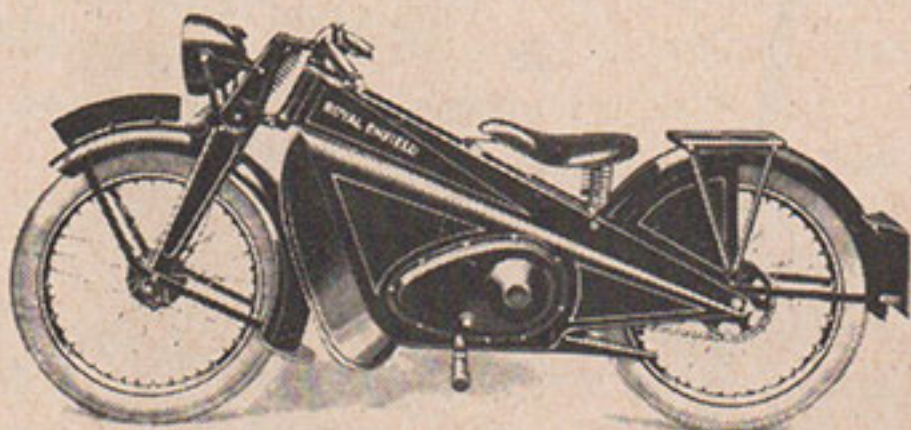
This I consider to be the first step forward in the search for increased power from engines of moderate size. I am indebted to IXION of *The Motor Cycle* for the date, which he gives as 1904. Before that, all engines had automatic inlet valves. For the benefit of those who have never heard of them I should perhaps explain that an automatic inlet valve is just an ordinary poppet valve with a very light spring and no cam or tappet. It is just sucked open by the descending piston and pushed shut by the gases as the piston comes up on the compression stroke. Delightfully simple, isn't it? When we come to work it out, however, we find



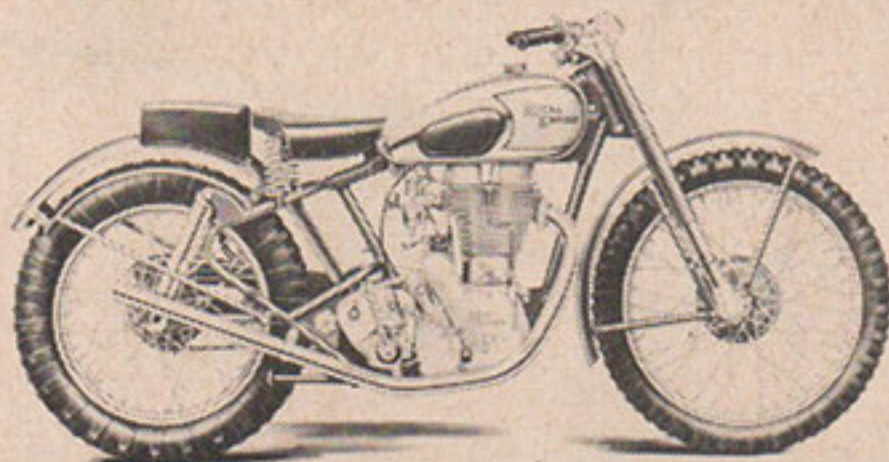
1901



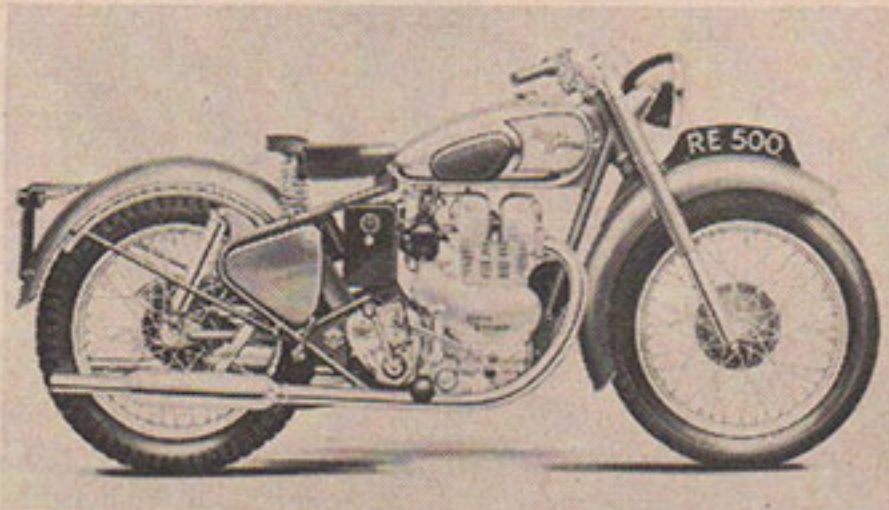
1913



1931



1950



1950

Photos by Boswell &amp; Barrett Ltd.

that we must choose between a large valve with a weak spring which gives good "breathing" but will not operate at high speeds, and a small valve with a stiff spring which will work at high speeds but gives very restricted "breathing." With a mechanically operated valve we can have a large valve with a good lift and a stiff spring to ensure ability to operate at high speeds.

### HIGH TENSION IGNITION

If the mechanical inlet valve was the first step towards increased power, the high tension magneto was the first step towards reliability. Prior to its introduction (dated by IXION as about 1906), engines were fired either by a red hot platinum tube, a sparking plug operated by a coil, or a low tension magneto and sparking plug. The latter was, in effect, a contact breaker inside the cylinder. The mechanical difficulties were tremendous, and as the alternative coil type depended on batteries, more frail than the type used today in portable radio sets and with no means of automatically charging them, it will be readily appreciated that reliability took on a new meaning with the introduction of the high tension magneto.

### THE CUSH DRIVE

If this seems an unimportant detail to include in my list, my reason is that the cush drive made chain drive reliable and so paved the way to the use of a countershaft gearbox. Chain drive had existed from the earliest days but without an adequate cush drive it was extremely unreliable, so that breakages of chains and even frames were common. The alternative to the chain was, of course, belt drive, which was just as liable to break and was almost certain to slip in wet weather. One of the first successful cush drives was the Enfield, invented by the late Mr. R. W. Smith, in 1910 or 1911, when it was standardized with all-chain drive, on Royal Enfield machines. It remains unchanged today.

### THE COUNTERSHAFT GEARBOX

As I have said, I consider the development of a reliable chain drive made the countershaft gearbox possible. True, the earliest countershaft gearboxes were used with a final belt drive but the pull on the belt when in low gear was too much, even with engines of that period (which was that of World War I), and, after the countershaft box became accepted, all-chain drive ousted the belt drive completely.

Associated with the countershaft gearbox, but actually antedating it by several years, were the handlebar-operated clutch and the kickstarter. These are important to list here because between them they eliminated the



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method of "run and jump" start and so made motorcycling possible for both sexes and all ages.

**THE DEVELOPMENT OF RELIABLE BRAKES**

Internal expanding brakes came into general use early in the 1920's. They enabled motorcycles to be driven with safety at the high speeds of which they had become capable. Previously, the usual rear brake was a wedge-shaped block operating in a belt rim. This was, of course, affected by the weather. Front brakes were either of the belt-rim type or pull-up cycle-type styrops. They were almost universally useless.

**THE DEVELOPMENT OF RELIABLE LUBRICATION SYSTEMS**

Mechanical lubrication of engines came into general use in the early 1920's, followed by dry sump in the early 30's. Previously, the rider had to remember to operate a hand pump every so often. Under this general heading one could include also the enclosure and lubrication of the valve gear and primary drives which has enabled us to almost forget these items instead of having to adjust them every few hundred miles as used to be the case.

**ELECTRIC LIGHTING**

Electric lighting was not standardized on British motorcycles until the early thirties. Its use has made long night rides a reasonable proposition.

**IMPROVED SUSPENSION**

The suspension system has improved out of all knowledge—in fact, the very early machines had none at all. Unlike the other systems I have listed, however, the suspension system has developed spasmodically throughout the half century and it has not been a case of an improvement immediately, or even gradually, displacing earlier designs. The first stage was a kind of rocking tip on the fork ends. Then followed all sorts of spring forks, including a telescopic version on the early Scott. I am not sure when rear springing made its appearance, quite early in the century, I suspect. In the early '20s, there was a whole crop of rear suspension systems such as the A.B.C., Beardmore Precision, and Coulson B, all of which vanished by the early '30s. B.M.W.'s reintroduced the telescopic front fork, with the addition of hydraulic damping, shortly before the last war, and now it has been taken up by almost every manufacturer throughout the world. The improvement to front suspension has drawn attention to the rear, and I think that before long rear springing will be as common as, say, the counter-shaft gearbox.

Other beneficial improvements, not included in my list, are, in my opinion, only improvements in manufacturing details and are not fundamental. Larger tires, improved materials, and chromium plating I would class under this heading. Other features of modern motorcycles, such as multicylinders, are not new at all but have been with us from the earliest days, while yet others in the list I do not consider to be improvements at all.

It is worth noting that every one of the fundamental improvements has added some degree of complication and, in most cases, has added weight to the machines. In every case, too, the improved design must originally have cost more than the one it supplanted. Whilst the virtues of simplicity, lightness and low first cost are indisputable there is food for thought as to what would have happened to the motorcycle industry if designers had turned aside from the fundamental improvements because they added to the number of parts, weight, or cost, of their machines.

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## YOUTHFUL STARS

(Continued from Page 14)

Petrol was not to be had and most private vehicles were, by Government orders, immobilized.

Applying to join the Royal Signals, it was pointed out that, being on the staff of the Post Office Engineers, he should think himself lucky to be in a Reserved occupation. He could not be a dispatch rider.

At this time, Mr. Graham Walker, editor of *Motor Cycling*, printed application forms for enlistment in the "Sigs" as Dispatch Riders. Geoff, not to be put off so easily, wrote to Mr. Walker asking, or rather pleading, that his case be taken up for special consideration. With this assistance, he was allowed to join up as an instrument mechanic. But not many months were to pass before "the powers that be" realized that a good soldier is a happy soldier and Geoff was transferred to the Don R's—wartime slang for Dispatch Riders.

This progressive move was soon to gain him his first stripe and place him in contact with his senior N.C.O., none other than Hugh Viney of Scrambles and Trials fame. It is not surprising that Geoff soon became an apt pupil in the game of riding in the rough. The late Charles Markham, who was also on the staff at Catterich Camp, took the lad on the road as his aide, and from this experience Geoff learned to ride hard and fast over long distances.

Enthusiased about the art of Trials and Scrambles riding, Geoff next persuaded his Commanding Officer to start a motorcycle club in the Regiment. Geoff himself soon became Competitions Secretary. Following the cessation of hostilities, but while still in the service, he entered most of the larger Trials in 1946, riding an M20 BSA, and while he did not exactly reach the top flight position, he did manage a "First" in the Travers Trophy.

His handling of a two-wheeler ultimately became near perfect and he became a member of the Royal Signals Motorcycle Display Team, and, as such, the last few weeks of his army days were spent at the Royal Tournament at Olympia.

His mustering-out pay enabled him to purchase a B32 BSA and, having done quite well in Trials, and with a word from the great Bert Perrigo, he was offered a position in the BSA factory as a regular employee.

He competed in all the 1947 Open Trials and became, at last, a top-flight rider. During the Scott Trial he greatly impressed Artie Bell, the Norton racing star, who was on the lookout for fresh talent for Bracebridge Street. A few words from Bell to Joe Craig soon resulted in Geoff joining the Nortons as a "rough stuff" rider.

Geoff just could not get going with the 500 cc Norton and did not do so well. Even so, he was good enough to represent his country in the International Moto Cross held in Belgium that year.

The 1948 Manx Grand Prix saw his first attempt at real road racing. Unattached to a team, he took his own racer to the Isle of Man for the race. After doing much practice riding on the course with a Trials machine, and even walking the corner approach lines he intended to take during the race, he ultimately retired on the 4th lap with a split oil tank while leading the 50 cc field. Shortly afterwards he fell in the Irish "Skerries 100," breaking a leg.

His next important races were the 1949 Manx Grand Prix series, in which he won the Senior and was second in the Junior. These successes earned him a place on the Norton racing team. The results of this final scaling of the heights are well known.

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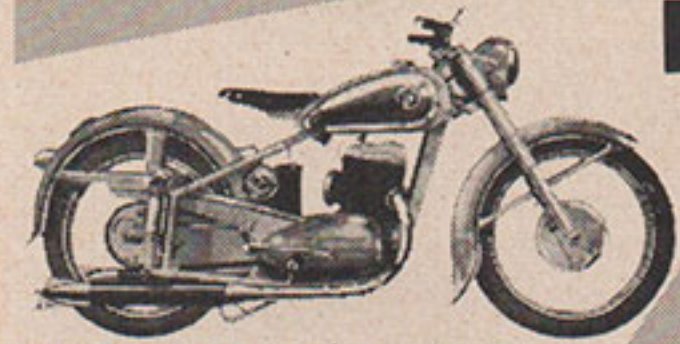
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**200 MPH**

(Continued from Page 15)

$$\text{Thrust} = \frac{78 \times 550}{227}$$

= 188 lbs.

- 15 lbs. for rolling resistance  
= 173 lbs.

The frontal area of Berry's machine, being partly streamlined, such as Fernihough's, produces a mathematical calculation of:

$$\text{Resistance} = 4.5 \times .00075 \times 227^2 = 173 \text{ lbs.}$$

Power delivered to the rear wheel, called over-all transmission efficiency, has not been taken into account in any of these calculations, but in each case would be approximately the same for all machines. I believe the figures set out above state fairly accurately the capabilities of these contenders so far as engine hp, streamlining, and "Drag Co-efficient" are concerned.

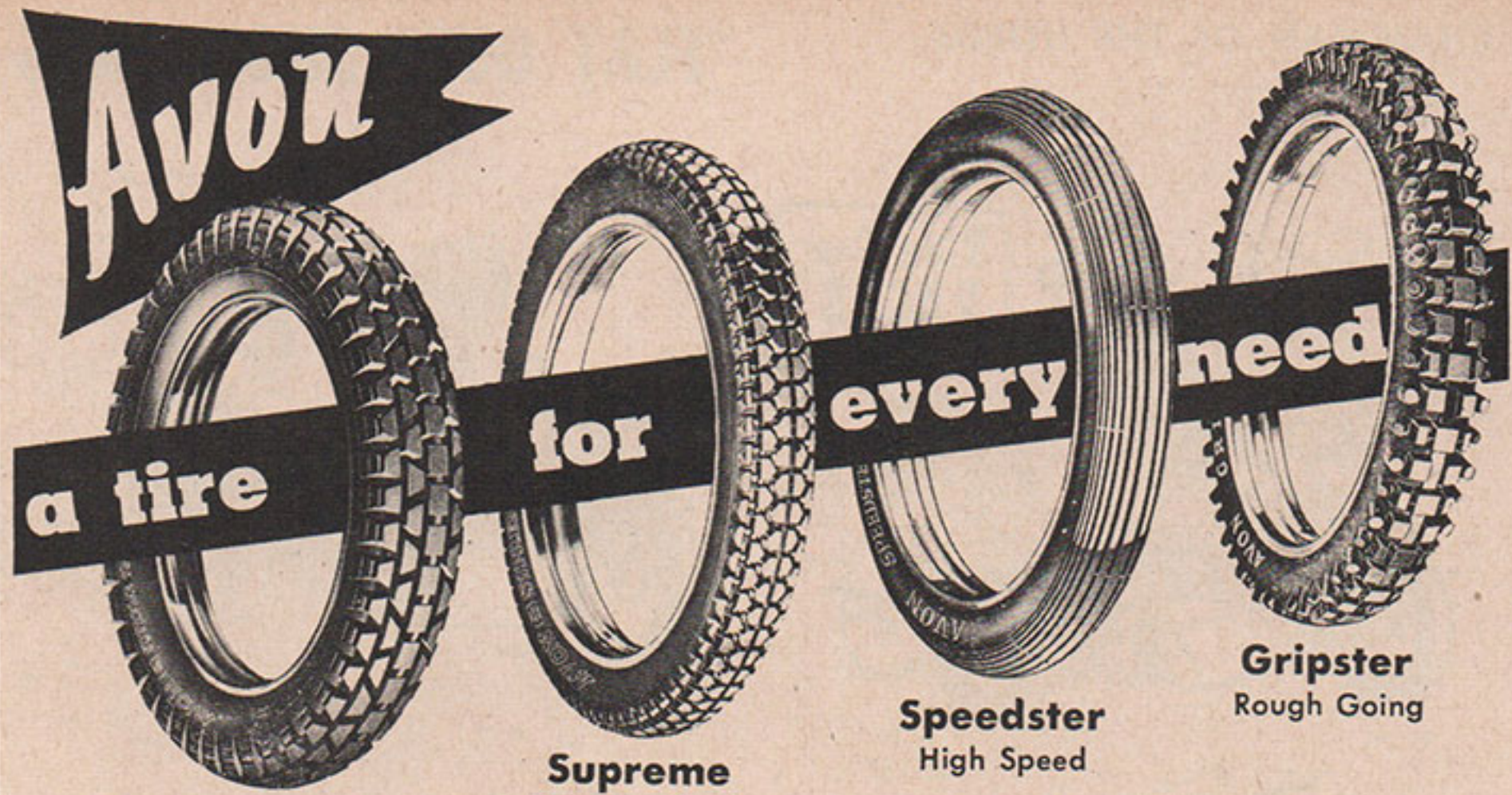
The latest 8/80 JAP engine is now producing closer to 90 bhp than to 80 bhp; the Vincent HRD produces nearly 80 bhp; and I understand that Bus Schaller is now realizing something over 78 bhp. So, at the moment there are apparently three machines which, if correctly streamlined, could break Henne's record, using an unsupercharged engine.

The greatest problem as I see it, however, is not so much the matter of how much sheer bhp is required, but one of stabilizing the machine when fully streamlined. My spot of bother last year at Bonneville resulted from lack of machine stability at speed, but I feel as though the problem has been satisfactorily solved, and I am looking forward to again returning to the Salt Flats for another "bash."

AS YOU read this, your newspaper may have already carried the details of Rollie Free's successful attack on the magical 200 MPH record, long sought after by motorcycle riders. His scheduled attempt was set for September 4, 1950.

Long a figure in the motorcycle world; dealer, race rider, holder of many Class "C" records, and the American motorcycle speed record holder (1948—150.13 mph), Free has also gained great recognition for his car racing ability. As an example of his agelessness, he competed at Indianapolis in 1930, let 17 years elapse, and again competed in 1947.

Free is very secretive but quite successful by nature. After long months of preparation for his coming experience, with the job of readying the Vincent (unblown 1000 cc) kept entirely under cover, he suddenly announced, through his sponsor (General Petroleum Corp., producers of Mobilgas and Mobiloil), that he was ready for September 4th.



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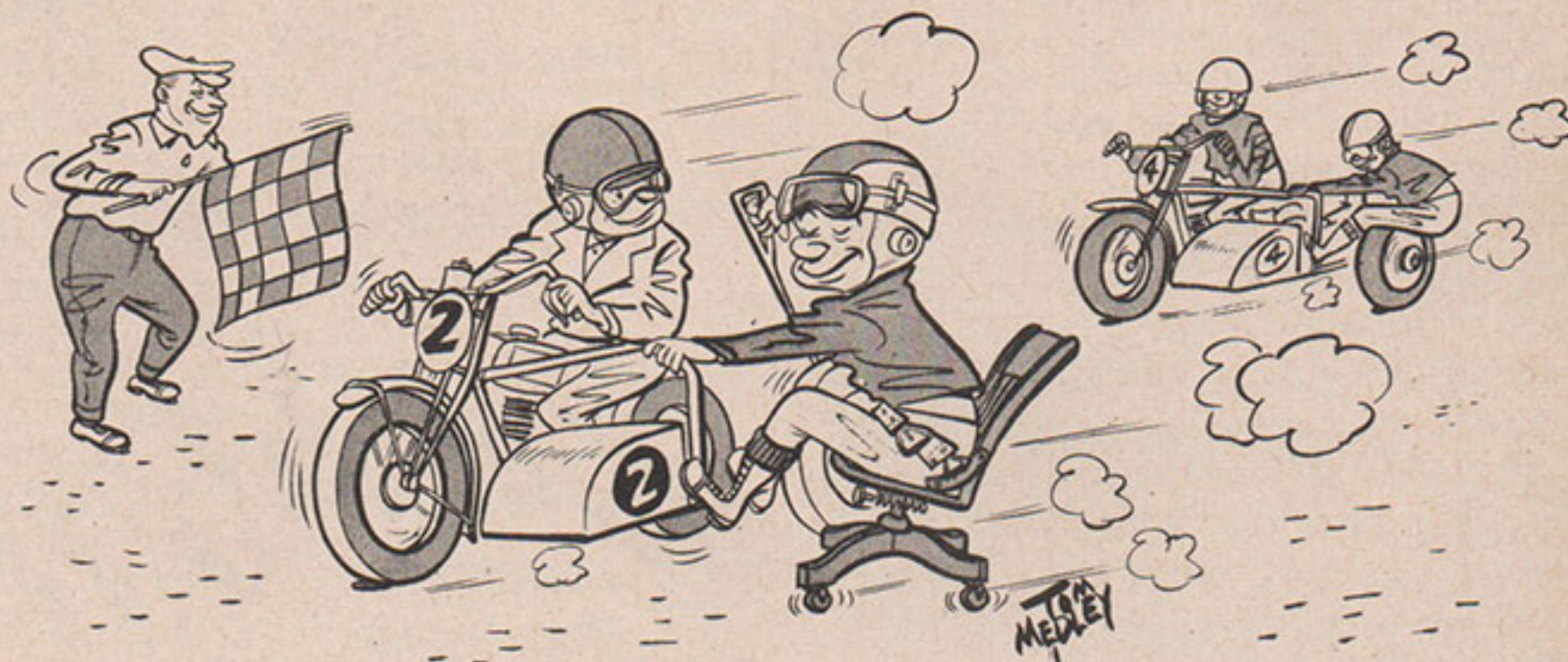
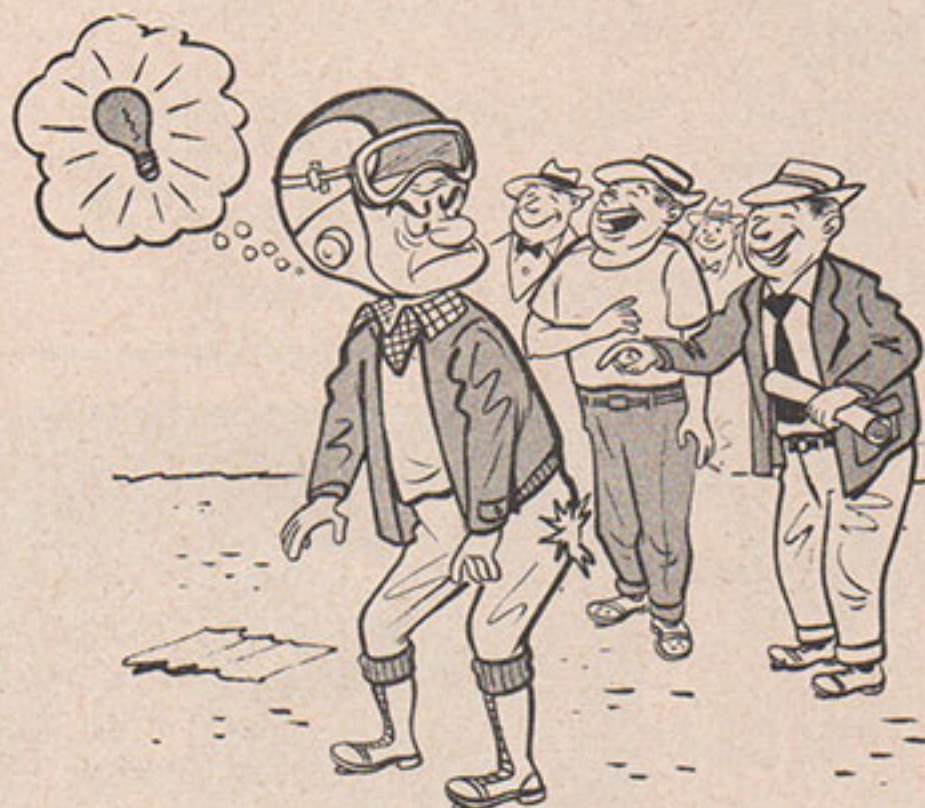
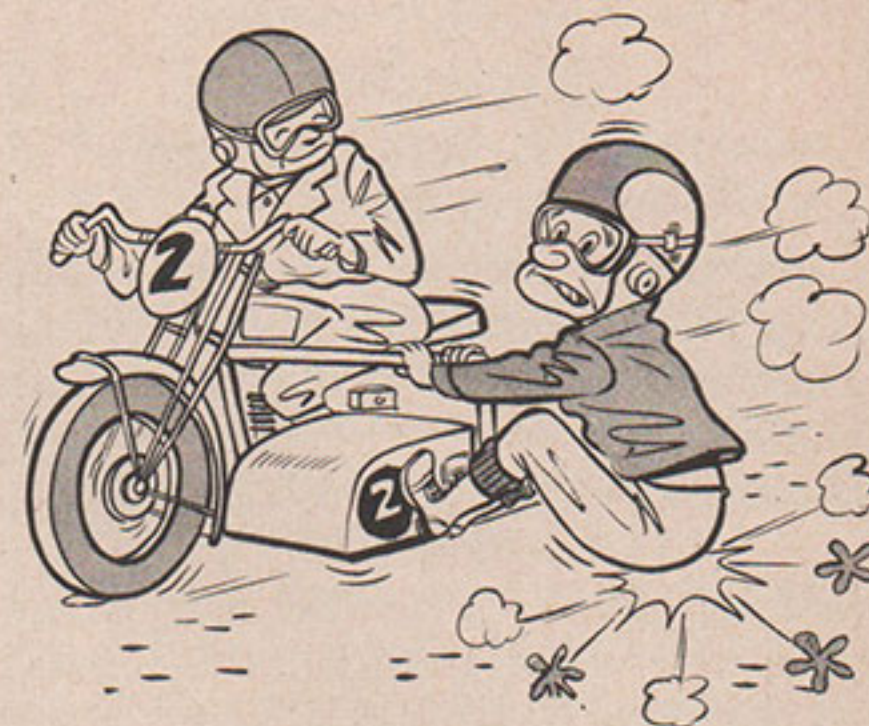
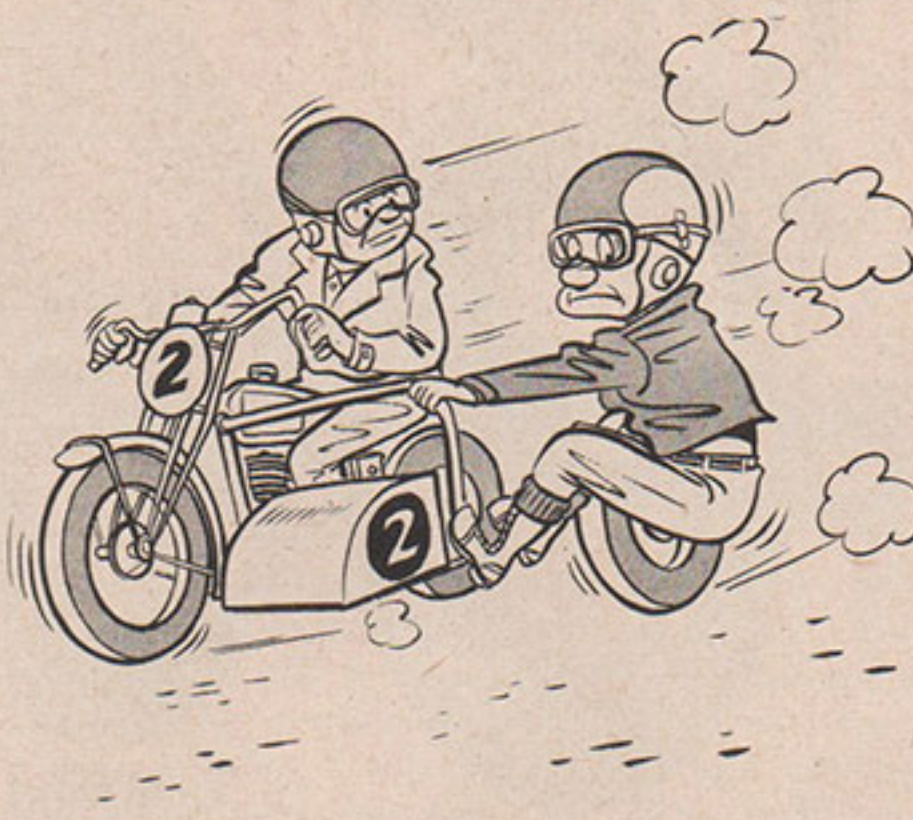
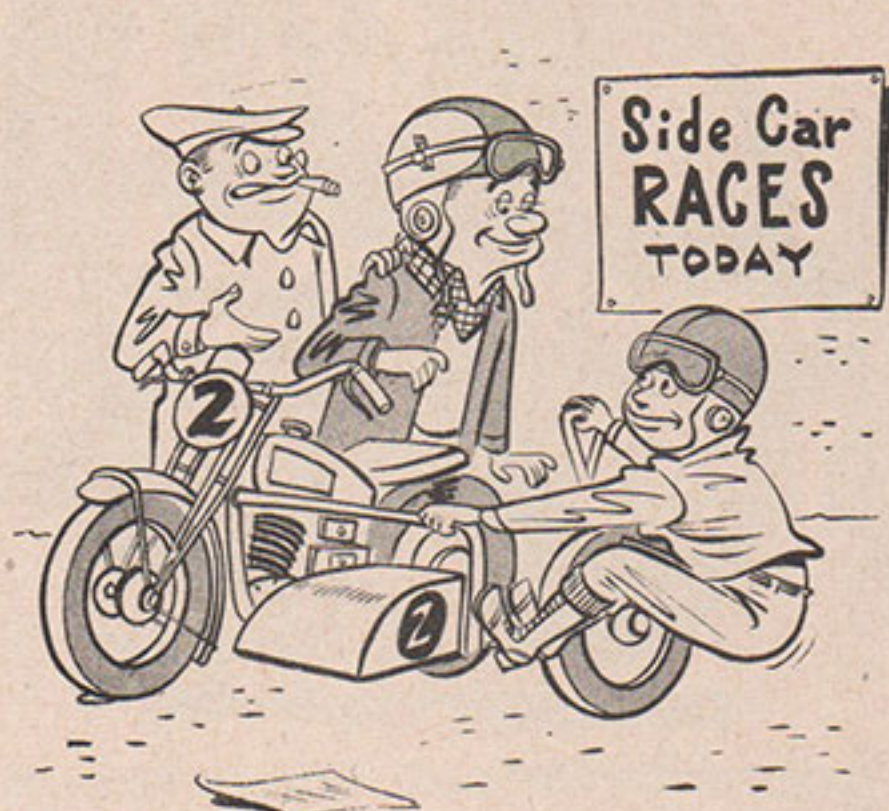
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## BEAUTY SEES AMERICA

Photos by Felix Zelenka



Just "Toni"

AT TWENTY-FOUR, Miss "Toni" Henly of Cheltenham, England, puts most men in the shade when it comes to varied experiences. Her beauty is outstanding, too.

Leaving Vancouver, B. C., on July 31st, "Toni" commenced a touring jour-

ney through the U. S. From Vancouver south to San Diego, east to Miami, Florida, north to New York, and west again to Vancouver. It is no stunt, it's "Toni's" answer to an urge to see America.

During the war, in England, she was a member of the Women's Royal Naval Service—a WREN. As a WREN she taught herself how to ride a motorcycle. "It was a beastly big Norton," she said, "that took some managing. I couldn't start it at first and enlisted the help of men motorcyclists to kick it over but in due time I gained the knack."

For the last two years she has resided in Canada. Income has been derived from employment as dancing instructor in a chain dance studio, doing general chores on a dude ranch (she is an accomplished horsewoman), bronco busting at local rodeos in the hinterlands, driver of new car caravans across Canada, personal chauffeur for a blind business executive, receptionist at a national Canadian convention, deckhand on a private yacht, featured motorcycle stunt rider with the Canadian Death Dodgers, racing against men (yes, men!) riders on ½ mile tracks, using a borrowed Manx Norton, and other types of unusual jobs.

Several weeks before starting her present junket she competed in a 300-mile enduro over the famed Caribou Trail

against a field of over 75 riders. She was one of only four girl entrants. SHE WON THE ENDURO!

For you young, unattached, virile motorcycle riders, here is a suggestion. Try to figure out the route along which "Toni" will be traveling on her touring trip. Riding a 500 cc BSA, the one shown herewith, she'll very likely stop at BSA agencies enroute. When you find her, if you do, challenge her for a "rough stuff ride."

She is a very daring damsel and refuses to back down from a challenge. But before you tackle the rough going with her be certain you have along a spare pair of socks. Reason? "Toni" will very probably beat the socks off you—so be prepared.





**DUTCH T.T.**

(Continued from Page 16)

men and machines when the amber light flicked to green, but trouble, of a quite harmless nature, was afoot. Ted Frend, AJS Porky twin, while in the act of pushing off his charger, was fouled by the rider behind him. At the instant that his engine fired he was inadvertently knocked off balance. Instinct to preserve his own bodily poise caused him to slacken his grasp upon the handlebars. Being as yet unmounted, he quickly regained his own equilibrium and just in time to see his Porky charging off down the road absolutely riderless. With its throttle closed the Ajay just ambled slowly along to crash into the roadside ditch. Instantly, Frend rescued his mount, received willing aid from bystanders to regain the road, mounted the beast and blasted toward the disappearing field rather hectically. His act was personally very disturbing to him, but the gay crowd roared at the basic humor of it all.

For five laps the lead positions were not too clearly defined. At times Les Graham, or Pagani, or Duke, or Bandirola were reported to be in front. Clearly the Gilera 4's had the legs of the remainder of the field for sheer speed but the doggedness of Graham and Duke warmed my heart as they strove so desperately to give the leaders a fight.

Suddenly, the British challenge was dead. The Nortons and Ajays of the "hot" riders straggled into the pits, one by one, to retire. Each of the Britishers, Daniell, Graham, Duke, Foster, Dale and Lockett, retired, or were called in by their pit crews. Reason: rear tire treads were disintegrating at speed. The first notice anyone had of the difficulties was the arrival of Foster with his back in great pain. He had been beaten unmercifully by his flailing, failing rear tread. Not a single Britisher was "out" because of mechanical failure or personal misjudgment of the riding techniques required but, nevertheless, the Britishers were defeated.

This tire disintegration changed the entire complexion of the race. After the pit confusion had died down, it was plain to see that Gileras had consolidated their position most admirably. Three of the "fours" filled the One-Two-Three spots, with Australian Harry Hinton, Norton, valiantly holding on to fourth position. Hinton's lesser speed apparently preserved his rear tire as he lay nearly three minutes in arrears of the Gilera trio.

Three laps from "Home" Hinton succeeded in sneaking past Bandirola to break up the expected 1-2-3 Gilera field day. Great cheers all round the course signalled the crowd's pleasure at this smart tactic, and Hinton remained in front of the Gilera till the finish, to earn a marvelous third. Masetti, winner of the "Belgian," towed teammate Pagani across the finish line to repeat the finishing order of the previous week at Spa, Belgium.

Masetti thus has 16 points toward the World's 500 cc Championship (each win gains 8 points) with Geoff Duke's Isle of Man win affording him 8 points. The remaining four meetings of the Championship series should prove very exciting and interesting.

**Summary of Events**

U. Masetti	Gilera
N. Pagani	Gilera
H. Hinton	Norton
C. Bandirola	Gilera
E. McPherson	Norton
S. Jensen	AJS

Masetti's race average speed was 91.88 mph, while Bandirola set the fastest lap speed at 95.56 mph.

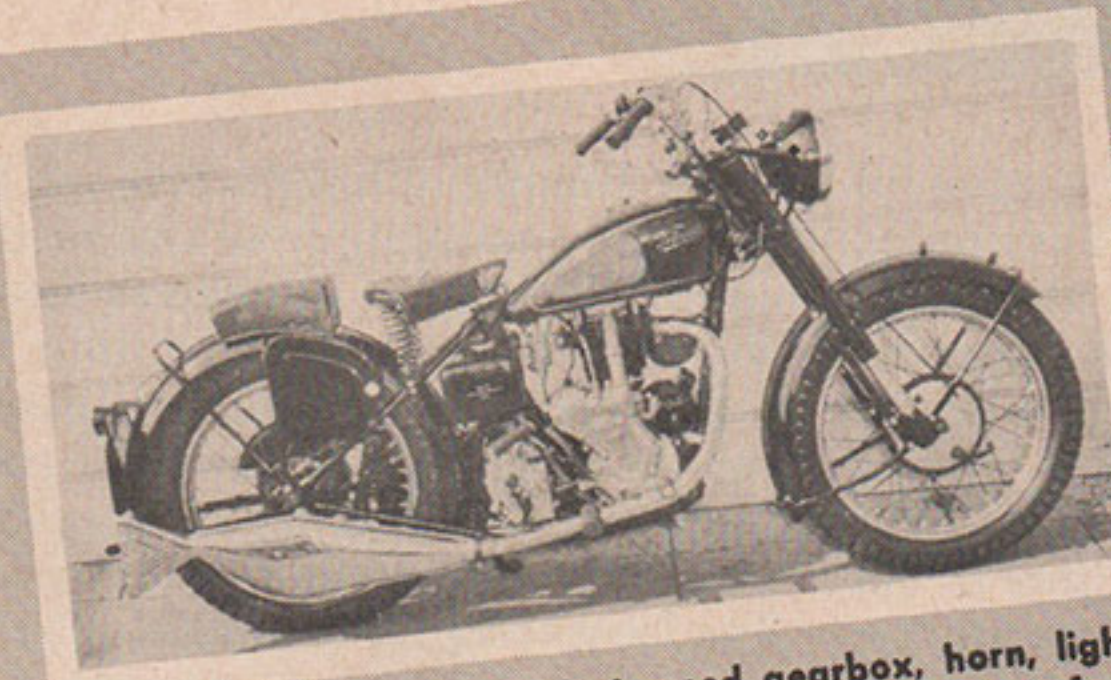
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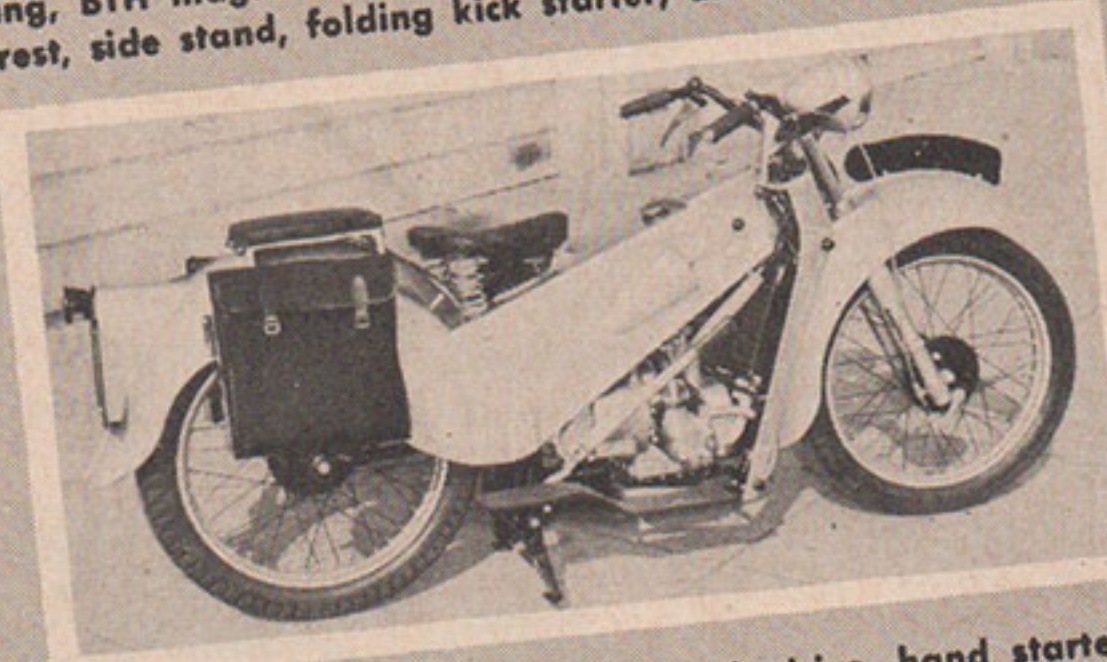
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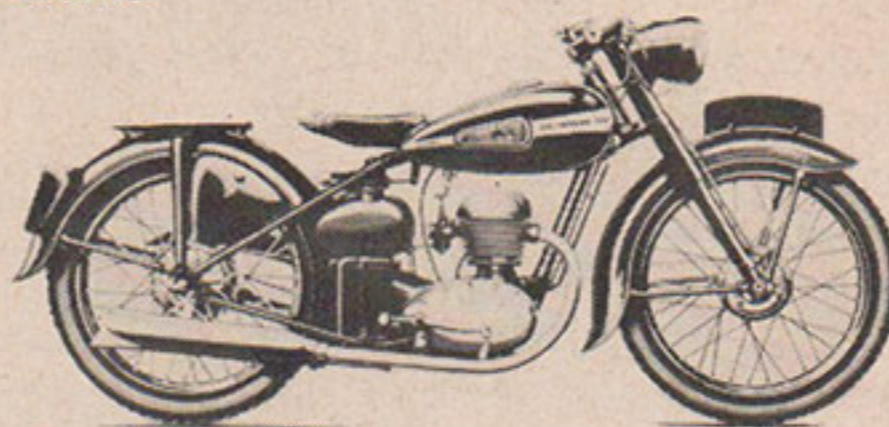
# CONTINENTAL NEWSLETTER

by Dino Lancia

Speaking of machinery: In spite of the sweeping Norton T.T. victories, with their implication that the single still has a lot of fight left, it's the multi-cylindered jobs that everyone is watching. The Gilera Four and M.V. Agusta Four are good examples of the high-bred, many-barreled machine, but they're not the ultimate. The trend in racing car design is toward vast numbers of cylinders (the 16 cylinder, 91.5 cu. in. BRM car, for example), and now theoreticians are coming forward with designs for 8 cylinder, 500 cc (30.5 cu. in.) racing bikes. Fours are expected to become as prevalent in the 350 cc class as they are now steadily becoming in the 500 cc class. We're speaking of racing machines, remember; only their immense value in terms of international advertising can justify the expense of developing multi-cylinder machines. The rotary valve, with its compactness and its total absence of reciprocating weight, is being seriously considered in this connection. Last month we mentioned this trend in Italy; now it's being reawakened in England, too. . . . The Gilera Four is the hot 500 cc machine. Its engine layout is utterly unlike anything known in the U.S.: the four barrels are vertical, placed side by side and inclined about 15° forward, forming an in-line engine with the crankshaft at right angles to the frame. The lined cylinders are cast as a unit with the light-alloy block, fins are cut through between the barrels for cooling. The 90°-inclined valves are operated by two overhead camshafts which are gear-driven at their centers. The light-alloy head is a one-piece, deeply finned unit held down by sixteen studs. The crankcase is large and deeply ribbed, two carbs are used, final drive is by chain, and rear springing is by friction-damped swinging arms. . . . Last month's report was that engineer Remor, who created the Gilera Four, had been hired by the firm Meccanica Verghera, his assignment being to design and build a more "going" four than the Gilera. The new job made its debut in the recent Belgian G.P., and experienced expected teething troubles. Its engine layout is basically the same

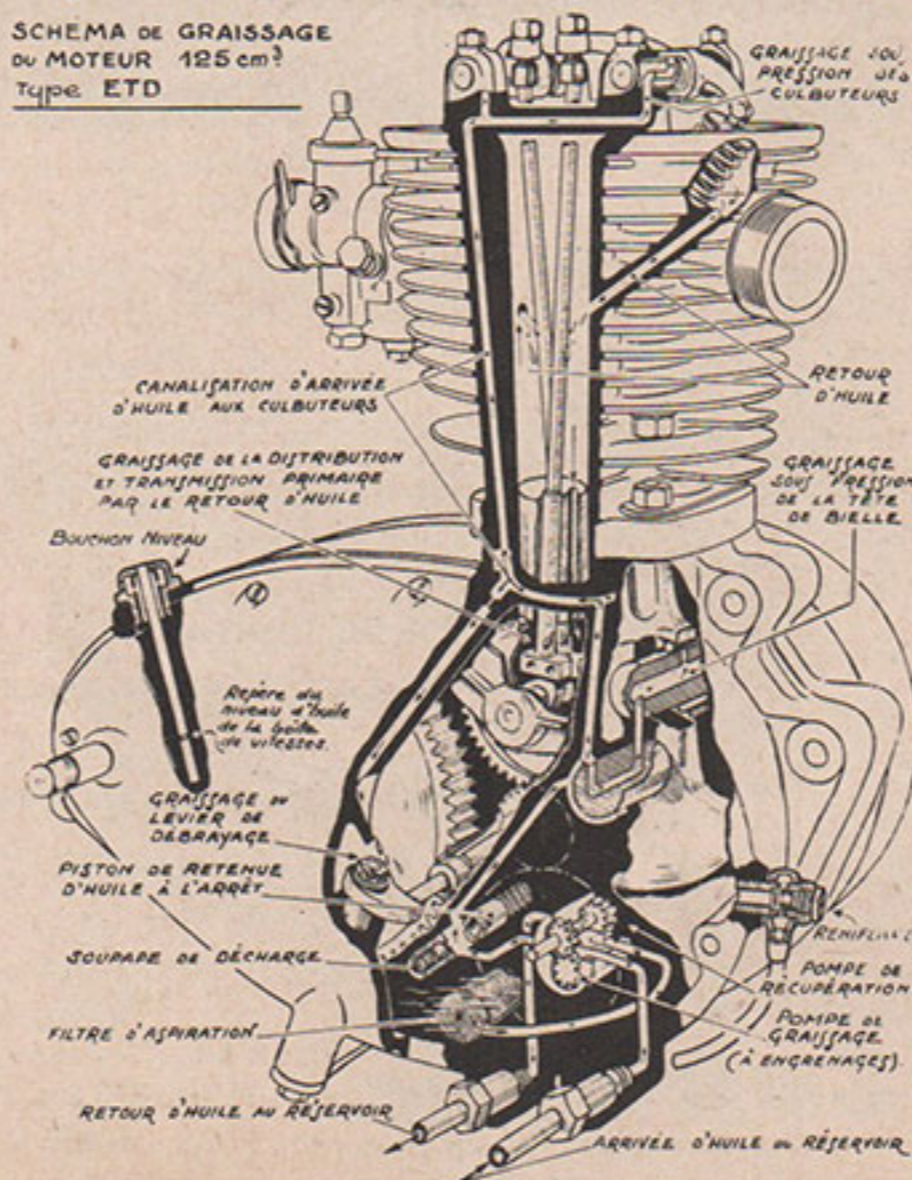
as the Gilera's, although there are slight changes in camshaft drive and the crankcase. The biggest differences between Remor's two brain children lie in drive and suspension: the M.V. "Agusta" is sprung at the rear by means of parallel forks linked to the wheel spindle and torsion-bar-secured at the forward end. The front forks are of parallel ruler type, eliminating the old Gilera-type center-line coil spring by use of torsion bar spindles.

HOLLAND: The ubiquitous Villers engine has found a new home: the Dutch Sparta machine. It's being made in two lightweight forms, 122 and 197 cc, and is done up luxuriously with hydraulically damped front forks, rugged plunger rear-springing, six-inch brake drums.



ABOVE—The ohv 7½ cu. in. Terrot 125, one of the best-selling French machines. Has clean lines

BELOW—Cutaway drawing of the Terrot 125 cc engine. Sorry, we can't read French either!



GERMANY: For decades the German "Tempo" factory has been developing the scarcely tapped possibilities of the motorcycle engine in three-wheelers of every description. They now make a wide variety of station wagons, trucks, and small buses, all selling at rock-bottom prices, all using chain drive to the single front wheel from a two-stroke Ilo single-cylinder mill mounted over the wheel. 24½ cubic inches produce 14 bhp and fuel consumption is in the 55 mpg range. Best economy is in the fantastically low prices of these machines: a three-wheel pickup truck sells for about \$600.

SWITZERLAND: The first "concours d'elegance" invaded the motorcycle sport in September. Held in Lausanne, the event was keyed to the theme "A crusade of silence." Awards were made on many counts, including splendor of machines and riders' dress.

ITALY: The Jubilee Rally held in Rome was a staggeringly huge affair: thousands upon thousands of cyclists from all parts of Italy and Europe attended the big meet, which coincided with the annual conclave of the Italian Motorcycling Federation. The Pope gave his blessing to the mounted thousands who jammed the vast plaza of St. Peter's. Gilera presented the Pope with one of their 125s, which was smilingly accepted and turned over to the missions. The rally drew cyclists of every description, from babes in arms to old people in sidecars. . . . Italy is sprinkled with Harley clubs, the make being a much-admired one and considered most luxurious. The Gruppo Amici Harleysti in Turin recently held a rally in which 21 Harleys with 39 passengers participated.

FRANCE: It seems to take hard times and stiff competition to bring out designs that really give the buyer his money's worth. One of these is Terrot's beautiful and solid 4-stroke 125cc model. It has overhead valves, push-rod operated, and fully enclosed for pressure lubrication. Oil is delivered by a duplex gear-pump capable of ejecting about six gallons an hour. The bike weighs just 165 pounds, has super-comfort telescopic front suspension. Four-speed transmis-



sion extends the range of the machine.

**IN GENERAL:** How does the other half live? According to *Moto Revue* (Paris), octane ratings of fuels now available in various countries are: Argentina 75 (city) and 62 (country); Belgium 82 maximum; Denmark and Finland 70; France 68 standard and 78 maximum; Mexico 65 standard; Spain 74 maximum; Sweden 73 standard; Switzerland 76; England 70; Italy 64 standard and 73 maximum.

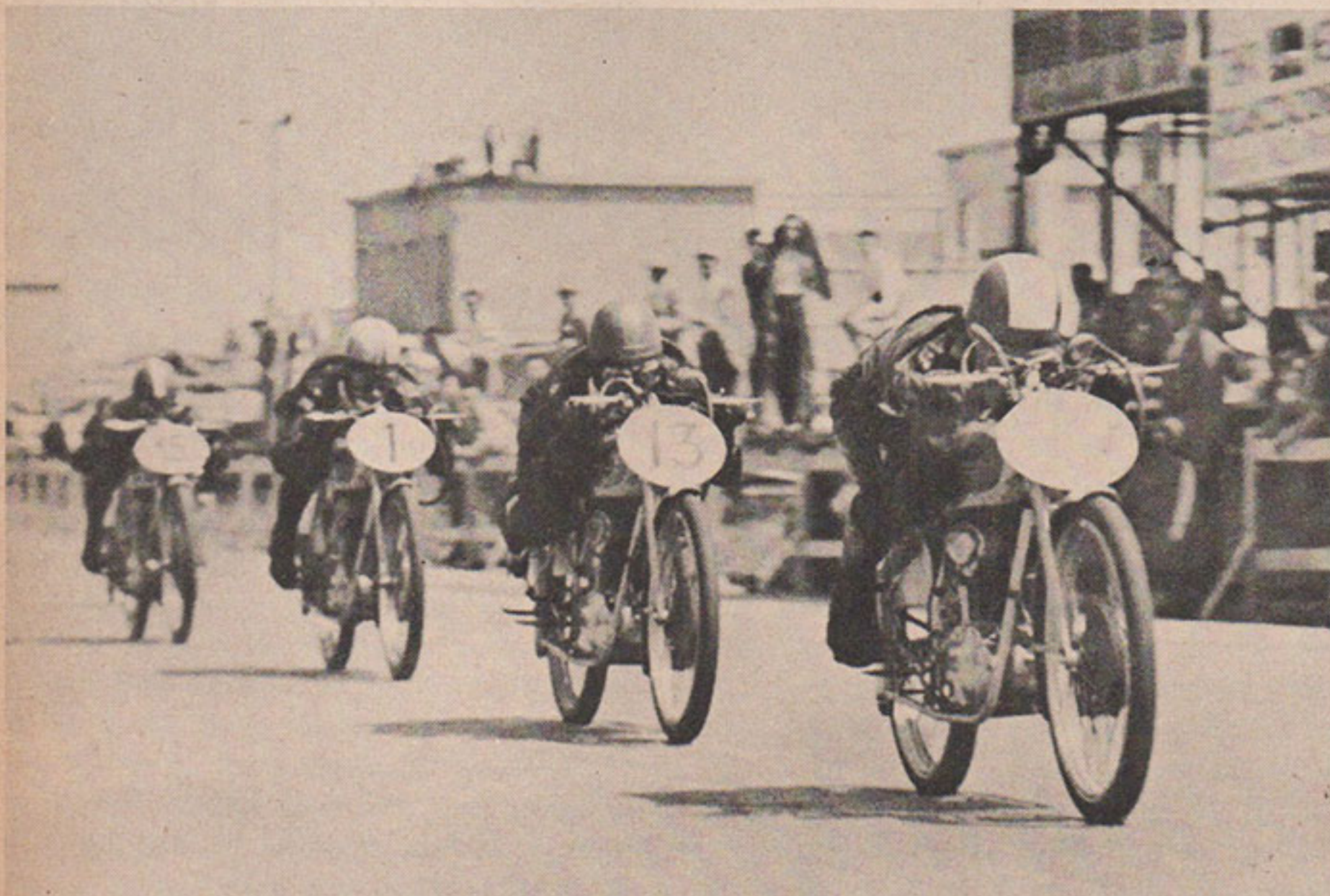
**RACING** is the big item this month as news of the international championship Grand Prix season rolls in. There are at present seven classic events in which points can be won toward the international title: Isle of Man T.T., the Belgian G.P. at Spa-Francorchamps, Holland's G.P. at Assen, Switzerland's at Geneva, France's at Comminges, Ireland's G.P. of Ulster at Belfast, and the Italian G.P. at Monza. August's CYCLE featured the IOM story, a Norton walk-away. Second top event of the year and curtain-raiser for the Continental Circus was the Belgian G.P. at Spa, reported elsewhere in this issue of CYCLE.

Entrants from thirteen countries appeared at the second classic of the season. The new M.V. "Agustas" ran for the first time against their immediate ancestors, the Gilera Fours, and Nortons and A.J.S. twins offered stiff competition in the 500 cc class. The 350 cc event was a 99-miler, taken by A. R. Foster, Velocette-mounted, at an average of 97.28 mph; the Nortons of Bell and Duke took second and third. In the sidecar class it was Norton, Gilera, Norton, with the winner's average at 82.65 mph. There were 40 starters in the 126-mile main event, including all the biggest names. It was a furiously fought struggle in which many good men crashed and such riders as Lockett and



10,000th 1950 German DKW leaves factory

Duke lost their rear tire treads. Perelli rubber and four sweetly banging barrels brought Gilera Four riders Masetti and Pagani home, the winning average 101.18 mph for the fast circuit. Geoff Duke (Norton) made the best lap at 103.89. . . . This year's Dutch G.P. celebrated 25 years of racing at the Circuit van Drenthe at Assen, a 10¼-mile road racing course. The 350 cc event was a repetition of Spa, with Foster and Duke first and second. Foster's winning average was 88.54 mph, his fastest lap was 89.96 mph, and he was clocked at 109 mph on the straightaway. The race for 125 cc machines was a triumph for the beautiful little Mondial twin overhead cam jobs piloted by Ruffo and Leoni. Ruffo's fastest lap was 75.92 mph—not bad for 7½ cubic inches! The 500 cc event was, of course, the payoff. Only 12 of the 38 starters finished the 18-lap, 185-mile grind. Speeds were pretty furious, running close to 125 mph on the straights, with tire treads peeling abundantly. Even the inexhaustible Geoff Duke lost control of his Norton at high speed and crashed, fortunately unhurt. The Gilera Fours made a wonderful showing, taking first, second, and fourth, with Masetti, Pagani, and Bandirola in their respective saddles. Third money went to Hinton on a factory Norton. Bandirola made the fastest lap, 95.56 mph on the twisting road course.



Gamberini Photo

View of the finishing order of the 125 cc Mondial team in the race for the Italian 125 cc Championship. Rider leading this "parade of poppers" is Ubbiali. Mondial machines have proven to be the fastest of all 125 cc bikes now competing on the Continent but Moto Morini machines are threats

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Larry Headrick, Harley-Davidson, won the 25-Mile National Championship recently at Springfield, Illinois. This victory practically assures Headrick the 1950 Class "C" Championship.



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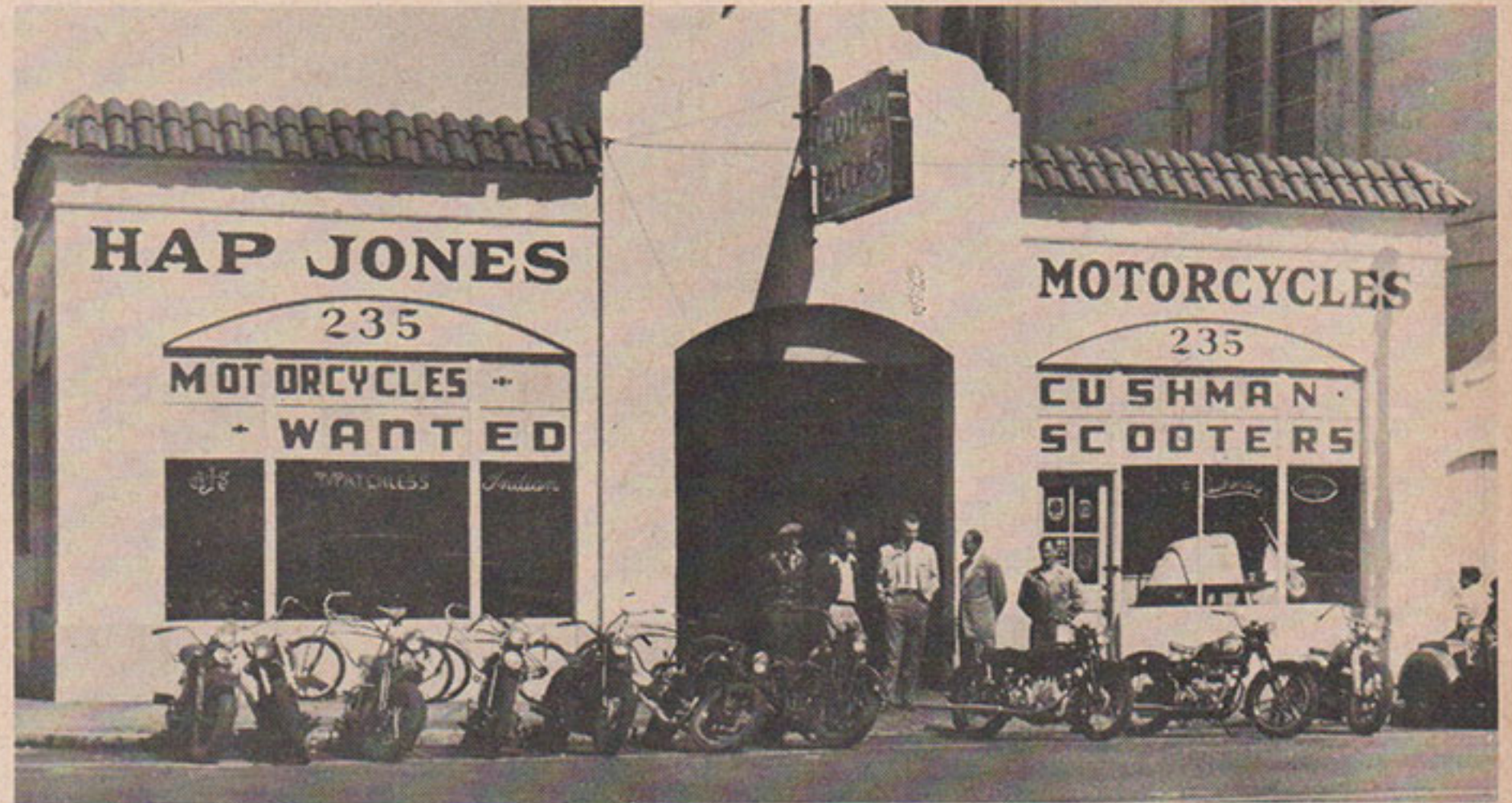
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# Dealer Doings



## HAP JONES' BIRTHDAY PARTY



**AUGUST 6** was this year's date for one of the traditional 'cycling events of the San Francisco area—Hap Jones' Birthday Party. These "everybody-welcome clambakes" have been going on for seventeen years without a break, during which time Hap has passed out well over two hundred trophies, several tons of free hot dogs, and a small sea of good strong coffee.

For the benefit of those who're asking which of the Jones Boys stages these blowouts, Hap has been one of S. F.'s best-known bike dealers since '33. Deleting the tales of struggle and hard-earned success, Hap's career goes like

this: He was born in Lorraine, Illinois, in 1905, lost his dad right after the family moved to California two years later. Hap's mother took her young 'un to Spokane, which was Home until '23. It was in this year that he bought his first motor and rode it down to San Francisco, where he's been ever since.

Hap entered the competition field in '26, picking up experience in every endurance run and hill climb he could enter. In '35 he decided he was ripe for the tracks, went out and won his first three races, including a National Championship meet at Waco, Texas. After that, success was steady. First and second



spots were commonplace until his retirement from competition in '40. That he was both skillful and lucky is proved by the fact that he never got hurt.

All the time he was racing, Hap was building up a motorcycle business, making his passion his livelihood as well. The business started as a used bike shop on San Francisco's Valencia Street in '33 and grew rapidly through those lean years, thanks to the owner's easy-going shrewdness and fair dealing. He took on the S. F. Indian agency in '37, held it till '46 when he went over to Limeys. This summer of 1950, however, Hap re-established himself as S. F.'s Indian agent, also handling Vincent, A.J.S., Matchless, Ambassador, and Douglas machines. He's national distributor for Avon tires, President of the British Motorcycle Dealers' Assn. of the U. S., past president and past road captain of the S.F.M.C., member of the S. F. Old Timers' Club (for riders with more than twenty years in the saddle).

Hundreds of riders and spectators turned up for this year's installment, held on the fine grounds of the Hayward M. C. While Hap kept busy feeding music to the P. A. and announcing and scoring the events, almost a hundred machines competed in stake races, barrel-rolls, dog-fights, and wienie-eating contests. There were heats for each class of event, with finals at the end of the afternoon, culminating in the handing out of twelve swell trophies.

Griffith Borgeson

**M**ACK HELLINGS, Burbank, California manufacturer of the famed Hellings handlebars for motorcycles, recently did the unusual. Mack is an old motor racer from away back, having specialized in Short Track racing and Hare and Hound events, who graduated to the four-wheel game.

He phoned us the other day to personally extend his appreciation of our stating that Hellings handlebars were used on the Model MAC Velocette shown in the centerspread in our September issue. Not many people would have been so thoughtful.

**J**ACK HORN, winner of the 100 mile Amateur race at Daytona in 1947, returned to Ed Kretz' shop as mechanic. Kretz reported that his repair business picked up right away—such is hero worship!

Riding a Grand Prix model Triumph in the 1949 Daytona 200 Miler, Jack led the race from about the 25 mile mark up to the 160 mile mark. A magneto lead caused his retirement. It was his biggest disappointment.

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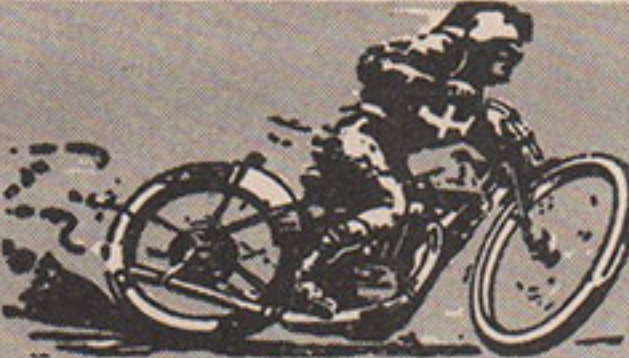
## MOTORCYCLE COMPETITION TROPHIES

By the makers of the motion picture "OSCAR"

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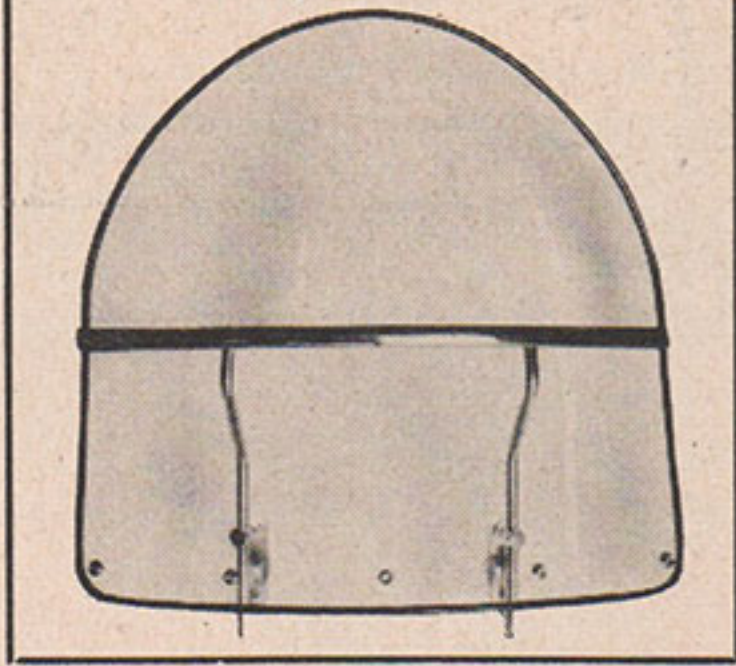
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Sirs:

Have just finished another trip through your August issue and want to thank you for a swell magazine.

My second reason for writing is to ask questions regarding the dress of motorcycle riders throughout this country. I will agree that a well-uniformed outfit looks very nice riding down a highway or doing parade at a meet. Vic McLaughlin's outfit can match anything I have seen.

Let's take a look at so many of the Sunday riders that the general public sees. They are dusty and mud-spattered riders who ride on highways and the general public says one thing, "What a dirty bunch of guys and gals. And look at those machines!" Little do they realize that this group has more than likely just emerged from some river bed or available cow paths. The big point is, would one Midwest or Eastern rider take his fancy dress and machine through what we do? I seriously doubt it. Cleaning bills on uniforms are prohibitive enough. There is no real beef between the West and other parts of our country. The type of dress naturally goes with the type of riding. Even horseback riding draws different dress in the East than in the West.

So please let's stop the lip-flapping back and forth. Clean levis and boots look very nice to me and stand up much better through sage brush, willows, and sand than any uniform I know of. Pipes? It isn't the type of head on the motor that causes the noise, but the flatness of the head on the guy or gal turning the throttle.

Again I say thanks for such a wonderful magazine.

Bob Walker  
El Monte, California

(Reader Walker speaks out for levis and boots—ED.)

Sirs:

I have received my first two issues of CYCLE. Congratulations for a very interesting magazine.

I would like to know what is the record speed for a motorcycle. What make motor was it? Who was the rider? When and where was the record set?

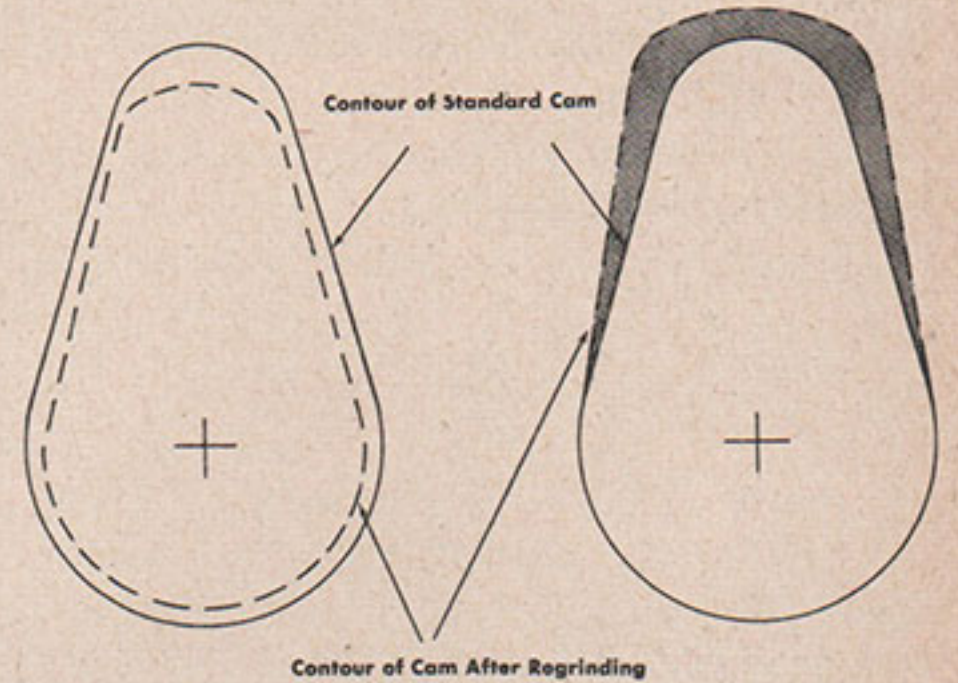
Bud Welles  
Fleet Post Office, New York  
(World's record—174 mph, German BMW blown 500 cc (30½ cu. in.) twin. Ernest Henne rode it on a German autobahn (super highway) in 1937—ED.)

## TUNING

(Continued from Page 23)

metric efficiency is the "flow column" of the air-fuel mixture. From the time incoming air enters the carburetor until it reaches the cylinder it is caused to flow through a "tunnel" made by the throat of the carburetor, the intake port, and the intake valve throat. It can be visualized that the incoming air is in the form of a column flowing into the cylinder.

Obviously, any obstructions which are placed in the intake "tunnel" will tend to slow down, distort, and change the column flow. Certain obstructions are required because of the mechanical construction of the engine: carburetor choke shaft and butterfly, throttle slide or throttle shaft and butterfly, valve guide, valve stem, and the underneath part of the valve head. Other restrictions, such as poorly aligned carburetor and intake port flanges, irregular cross-sectional area of the intake port, reduced valve port area below the valve seat, and the "shrouding" of the valve head by the exhaust valve, cylinder head, or piston crown when the intake valve is partially or fully opened.



Examples of cam regrinding. Cam on right has been "built up" before regrinding as indicated

Little can be done to alter the "required" obstructions. Much improved "breathing," higher volumetric efficiency, can be gained by carefully mating the carburetor and intake port flanges, care being taken to see that the gasket between the flanges does not partially extend into the opening; grinding and polishing the intake port to reduce sidewall friction within the "tunnel," proper blending of the contour of the intake port to the underneath portion of the valve port, and making certain that the intake valve head does not come dangerously close to the exhaust valve head if "overlap" valve timing is used.

Contouring of the exhaust port is desirable for peak efficiency but, as explained above, the relative high pressure of the exhaust gases accomplishes quite satisfactory emptying of the cylinder when the stock exhaust valve and port are left practically unaltered.





*Moto-Flash*  
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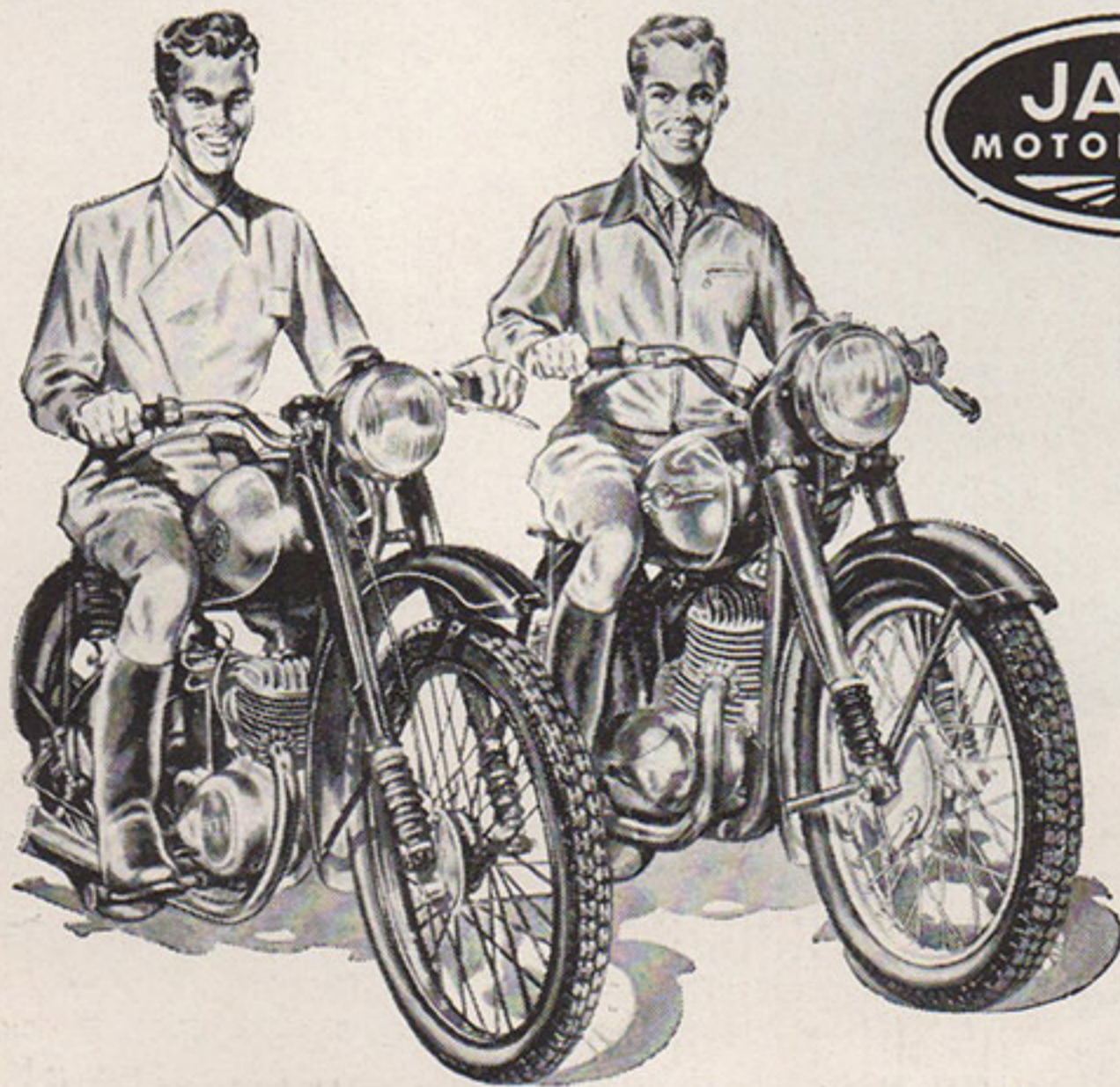
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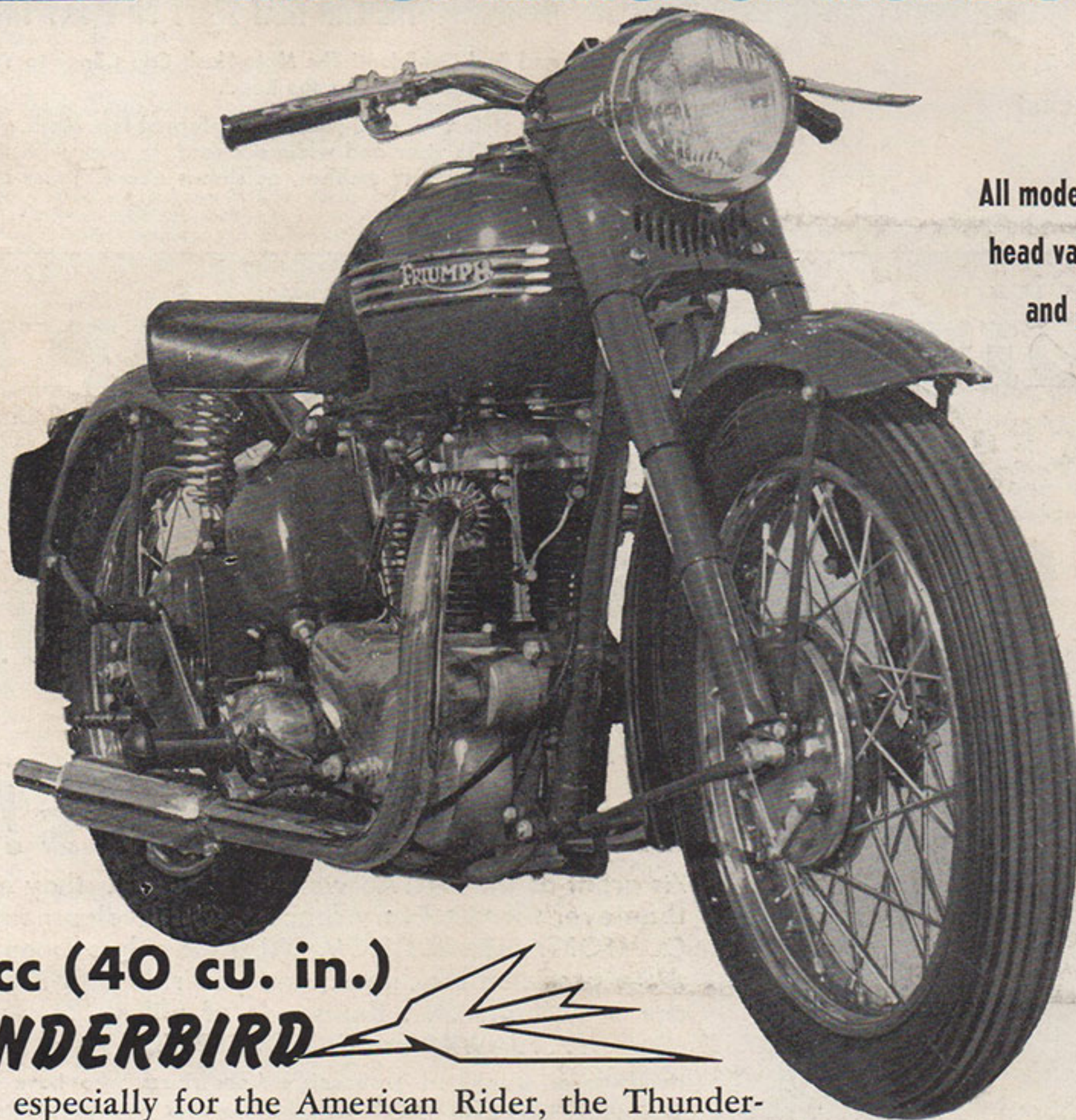


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