HEAT—AND ITS EFFECT ON YOU page 10

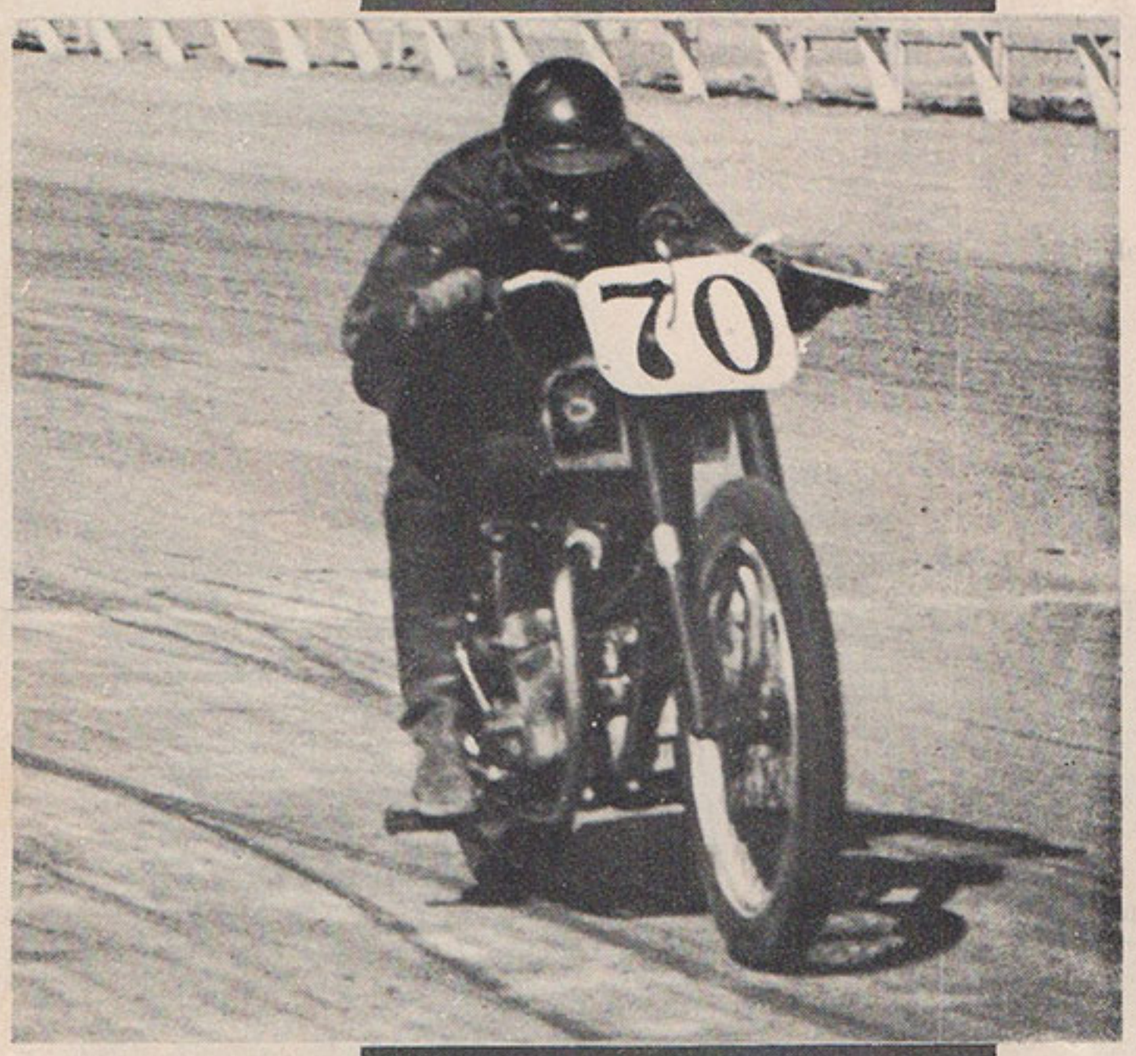
JUNE 1952
35c

CYCLE

"World's Largest Monthly Motorcycle Circulation"

Putting the Indian Sign on the THUNDERBIRD
TRIUMPH ROAD TEST

PIRATES ON THE LOOSE



Seventy-Seven Percent!

BSA "STAR TWIN"

And at Daytona! SEVENTY SEVEN PER CENT—or ten out of the thirteen BSA "Star Twins" entered in the 200 mile National Championship race finished—six of them among the twenty boys who took home the folding money. Sixty-one of the one hundred and two machines of nine different American and European makes failed to finish, which indicates the severity of the test.

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rider writings

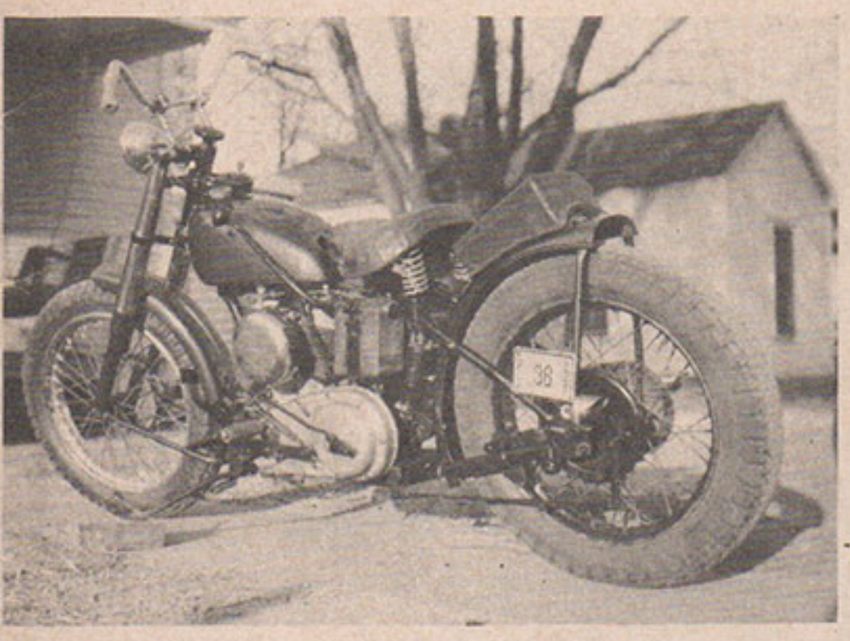
Dear Mr. Greene: Last week I received sanction for my marathon attempt. To date the AMA has no record of any girl cyclist riding a marathon, so any record I set will be considered a national record for girl cyclists.

I will not be riding according to AMA rules on non stop contest (page 64 in the 1952 Rules for Competition Manual). Instead I will ride strictly marathon style, *i.e.,* the motorcycle will be moving at all times. All repairs, fueling, oil changes, eating, etc., will be done while I'm riding with no "pit stops" at all.

I will ride my Triumph Thunderbird with Swallow Jet 80 sidecar for easier refueling.

Alice (Al) Hakojarvi, Painesville, Ohio

Dear Sirs: In your February issue, you had a cartoon entitled "Gow Fiend." I guess that is what you could call me. Enclosed you will find a picture of my motorcycle, which I



built in my spare time. It has a Scout 45 engine and center frame, 30.07 rear frame, Ariel forks and front wheel, James gas tank and throttle, and Triumph oil tank.

PFC Mickey Eaves, Sumpter, South Carolina

Dear Sir: Now that paved road racing has been embraced by the riders as well as the sport fans, I think that some thought should be given to prospective sidecar outfit participants. It's very likely that a special event for a sidecar race could be put on at the forthcoming Torrey Pines race this summer if six or eight machines could be readied for this race as well as other events that are no doubt planned elsewhere on the West Coast.

Why not have any likely candidates that have suitable equipment write to the editor listing the kind of machine and sidecar outfit they possess and whether they would be interested in this type of racing? Incidentally, our next paved road race will be at Torrey Pines again on June 29 in conjunction with a big sports car racing program.

Al Papp, Hollywood, California

Dear CYCLE: I'm very interested in your road test series and regard this as one of the best features of your "out on its own" magazine. However, a gripe. All English machines are tested under conditions that allow them to reach their stock maximum—minus accessories. Yet, the 61 and 74 Harleys you tested had windshield, saddlebags, crash bars, bumpers, fire extinguisher, air cleaner, etc., while the 74 was not even run in and had to do its stuff on a very unfavorable surface. If the big boy can clock 100 in 3rd, then true 4th gear maximum must be well past 102.88, while there seems something screwy about only 88 mph for a 61. The extra weight and wind resistance of accessories makes the bike's time drag. Yet we are asked to believe that a 15 mph tail wind had no effect on Shadow performance, where a simple run in the other direction would have given the true answer.

Maurice D. Hendry, Christchurch, N. Z.

Dear Bob: The new column "Crossed Up" is very good. I enjoyed your article Gulley King best of all. I have talked with a lot of Germans and they all seem to like BMWs and Nortons best. Here in Germany two-strokers seem to be the thing for travel. I think we Americans could learn a lot from them about riding on the road. They don't hot rod and try to show off like most of us. I am just as guilty as the next one.

Snow has really been on the ground here this winter and I haven't seen one German take a spill yet. They ride them every day and I think if we would confine our riding talent to race tracks and enduros we would have less mishaps.

PFC Delmon B. Wygal, Munich, Germany

Gentlemen: Received my April issue of CYCLE and "this is it." I'm referring to your editorial and the story on the Torrey Pines road race. It makes me want to get up and shout "It's about time!!"

As you know, I have just recently returned from Germany, where real road racing is king, and brother, do I miss it! I would like to bring out a few points that might be of interest to other road racing fans . . .

First, the method of starting goes thus—the machines are dead, and at the flag, the rider pushes his motor (some prefer to have the motor in low, some in second). This itself is an art, and takes much practice. After you have pushed your machine six or eight feet, you mount, sidesaddle. As you come down on the motor, you release the clutch, and off you go, not as in the first picture of the Torrey Pines story, where the rear wheel is the only thing on the ground—I can see Geoff Duke taking off like that!

Second, and very important, from a safety standpoint. Sweaters most certainly are not the thing to be using on a pavement course. Have you ever seen a top road racing man wearing a sweater in a Grand Prix race?

Third, this feet dragging is going to end up with some of our riders in the hospital.

Fourth, these high hook handlebars just don't go with a good road racing machine. Man and machine should be one.

Fifth, the seats—oh gad!!! one seat is all a guy needs. When a fellow plasters a pillion seat on his fender, and has the solo seat to boot, he invites a very uncomfortable riding position, plus a swaying motion every time he shifts position.

Jack McDowell, Ignacio, California

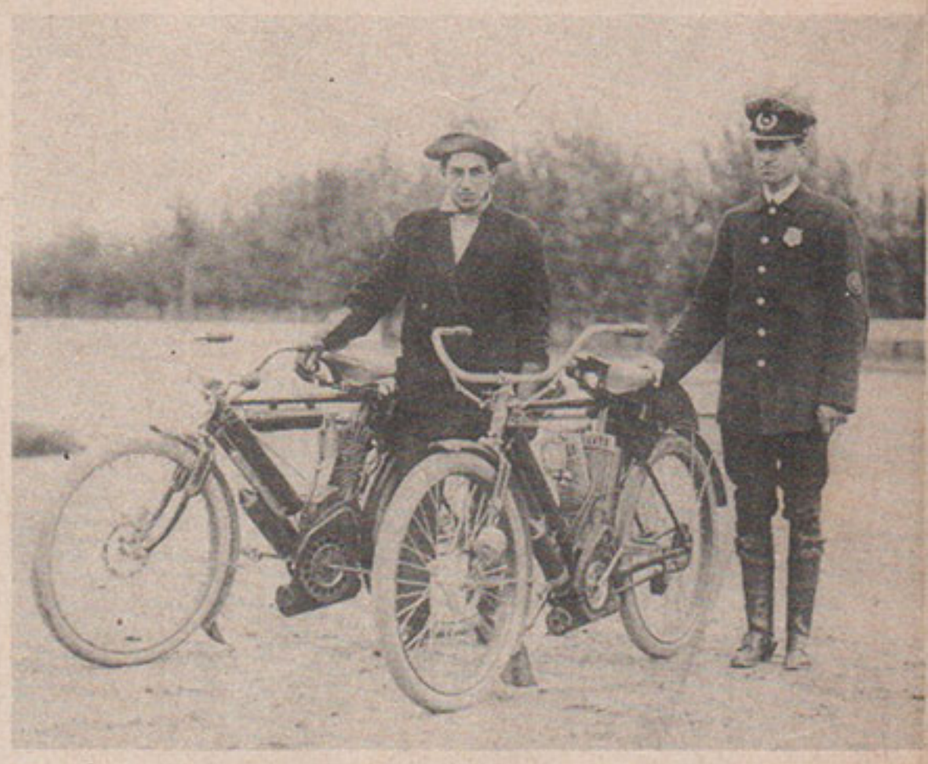
Dear Sir: Just read your account on the BSA B-33 and thought I would drop a few lines in appreciation. You see, I was one of the fellows who asked for it. What I would like to know is, what goes with the gear ratios for this bike? In my instruction manual they are listed as: First, 14.9; Second, 10.3; Third, 6.6; Fourth, 5.0. Please let me know about this. What about more night riding in your tests? Also see if you can squeeze in the road test on the International Norton 30.

Ron Stinski, Menasha, Wisconsin

(You're right. By mistake the 21 cubic inch model gear ratios were inserted instead of the correct B-33 ratios.—ED)

CYCLE: I'm 73 years old and have talked to many of today's motorcycle riders and none of them seem to have ever seen any of the cycles of 40 or 50 years ago.

When you sat in the seat in 1902 your feet were 6 inches off the ground. No gears, no speeds, no free engine—when you stopped, so did the engine. The first two years no clutch, then an automatic clutch that slipped a bit in starting. This saved the chains and rear tire. Ignition was by two dry cells and coil. Twisting the right grip to the right cut off ignition and lifted the exhaust valve. The compression was so high that if the exhaust valve was seated, the rear wheel would not turn. Because of this high compression, these first Indians could out-run and out-climb anything manufactured at that time, hence the first choice of New York City Police. There were two ways to start. One was to sit in the saddle and pedal hard, then twist the right grip to the left, dropping the exhaust valve and turning on the ignition. The other way was run along-side, throw your leg over the saddle, at the same time turning the right grip. These motors were 20 years ahead of automobile engines. The auto industry never had a high compression until Walter P. Chrysler came out with one in 1925. George Hendee who started making these cycles was manufacturing Indian bicycles at the time. He weighed 243 pounds and the Indian was the only machine that would carry him up Cross Hill in Springfield, Massachusetts. These machines had coaster brakes, the same as bicycles, only



larger and stronger, that could lock the rear wheel. They weighed 120 pounds, and the first two years the gas lever was on the top bar of the frame so on a sandy road or steep hill you had to take your hand off the left grip to give more gas, just when you needed both hands most.

After two years the factory connected their gas rod to the left grip and all was joy. Chains were block, no rollers. The single cylinder would do 48 mph, the twin 54 mph.

Lawrence Conly, Ballston Spa., New York

SPEAKING CYCLE

PUFF THAT CHEST out fella, go ahead and strut around a bit. American cyclists have good reason to rise and shine on several counts, one of which your editor had the personal satisfaction of witnessing a few days ago. Remember that story, "Faster Than a Jet" that appeared in the April mag? Well, the basis for that far reaching tag line was taken from facts supplied by those wizards of the slide rule, the aircraft engineers, who revealed that it would take one of the fastest modern jets from 10 to 11 seconds to squirt that first quarter mile.

Well, we were on a deadline at the time (is there any other time?) and so their word was good enough, but knowing the far reaching talents and keen interest of CYCLE'S readers, your staff decided that we'd better have an ace up our sleeve when some of those extra potent letters started pouring in. Your magazine's public relations man did the impossible, made arrangements at Lockheed to stage a drag race between—yep, you guessed it—a jet fighter plane and a motorcycle.

C. B. Clausen and Bud Hood, builders of "The Brute," world's fastest drag bike, nearly lost control when they heard of the proposition and together with their eager little jockey, Louie Castro, were first on the hangar apron the morning of the duel. The contest was to be held on two parallel runways, but it was only after Louie had returned from a trip to the end of his strip that the sad news was known: his runway had a kink in the forward end of the strip that would make it impossible to negotiate at speed.

Nevertheless, the Brute was given a trial run over the available straightaway and it was then that the problem solved itself. The jet test pilots shook their heads, "we're no match for that baby." So in lieu of a jet, a faster accelerating P 51, prop-driven fighter was warmed up and brought out to the line, since it required less take-off space and was able to start from the bend in the runway.

Believe me it was a tense moment as the two stood shivering and revving as they waited for the sign to go. So there could be no possible controversy, the plane was purposely allowed to accelerate an instant before the Brute was gunned and, to us at the other end, it looked as though the day was lost for the first hundred yards. Then it happened, the Brute began to grab traction. Although the bike was only geared for a quarter mile, at the end of a half mile it was a good four plane lengths ahead of the *already airborne* P 51—what a thrill, what a day for the bike boys! In this age of speed in the air we still hold our own!

But wait, you've played a far more personal part in this next bit of news. Actually, it's old stuff to those who are AMA members for the bulletin was received last month. The national governing body's records show that the organized clubs have set a 15-year record in miles covered. Of 1182 clubs reporting, nearly 260 million miles were accounted for as compared to 67,753,000 miles covered in 1937.

If this doesn't rock you, then consider the fact that the accident rate per 100,000 miles was a mere .259, or the equivalent to 10,439 trips around the globe with only one accident every 15th trip! This rate is the second lowest in the AMA's 15-year safety program, which includes an annual free safety check-up for every member by arrangement with the motorcycle dealers across the nation.

Back on the topic of speed again a real accomplishment has been made, this time through the medium of the Pasadena MC. During the past five years their annual Rosamond Dry Lake speed trials has earned the just plaudits of speed merchants and average riders alike. Now, upon special request of the PMC, comes recognition from our national executive secretary, Mr. E. C. Smith, with the promised grant of an official National Speed Trials sanction to this club.

(*Continued on page 27*)

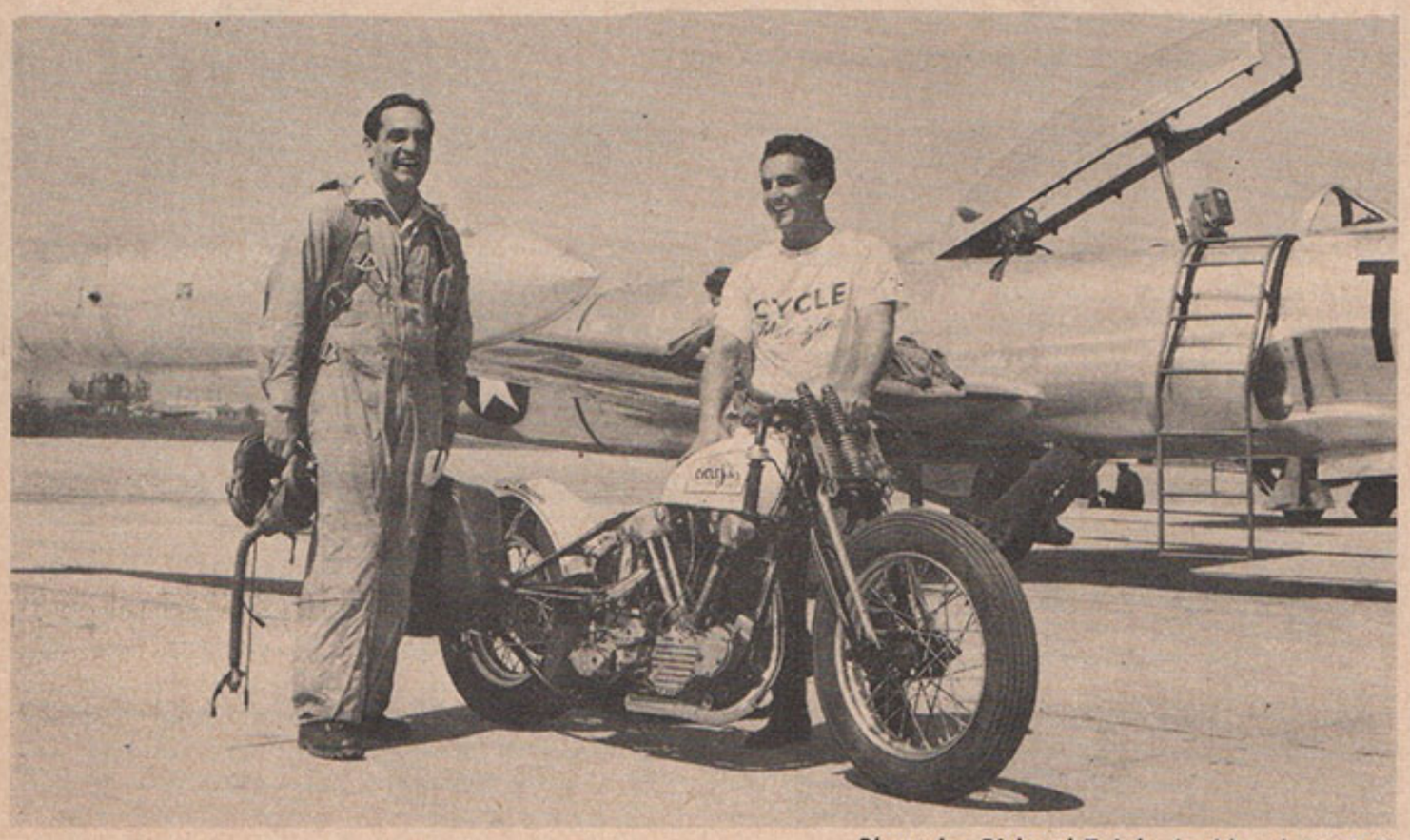


Photo by Richard Tulak—Lockheed Aircraft

To the victor goes the spoils? No, the boys weren't dragging for pink slips but you'd never know it for the intense few seconds that it took the Brute to whip past the speeding plane. Pilot Irvine Prait was convinced, had a hearty laugh when cyclist Louie Castro offered to "take him up piggie back" on the Brute. If you think your crash helmet costs like crazy, look at pilot's $300 derby

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CONTENTS

COVER Determining just how much punishment should be dealt out in each road test is often a problem. In each case two types of torture are inflicted: vibration and impact. Here you see the latter about to take place as the Thunderbird takes to the air.

. . . Photo by Jack Campbell

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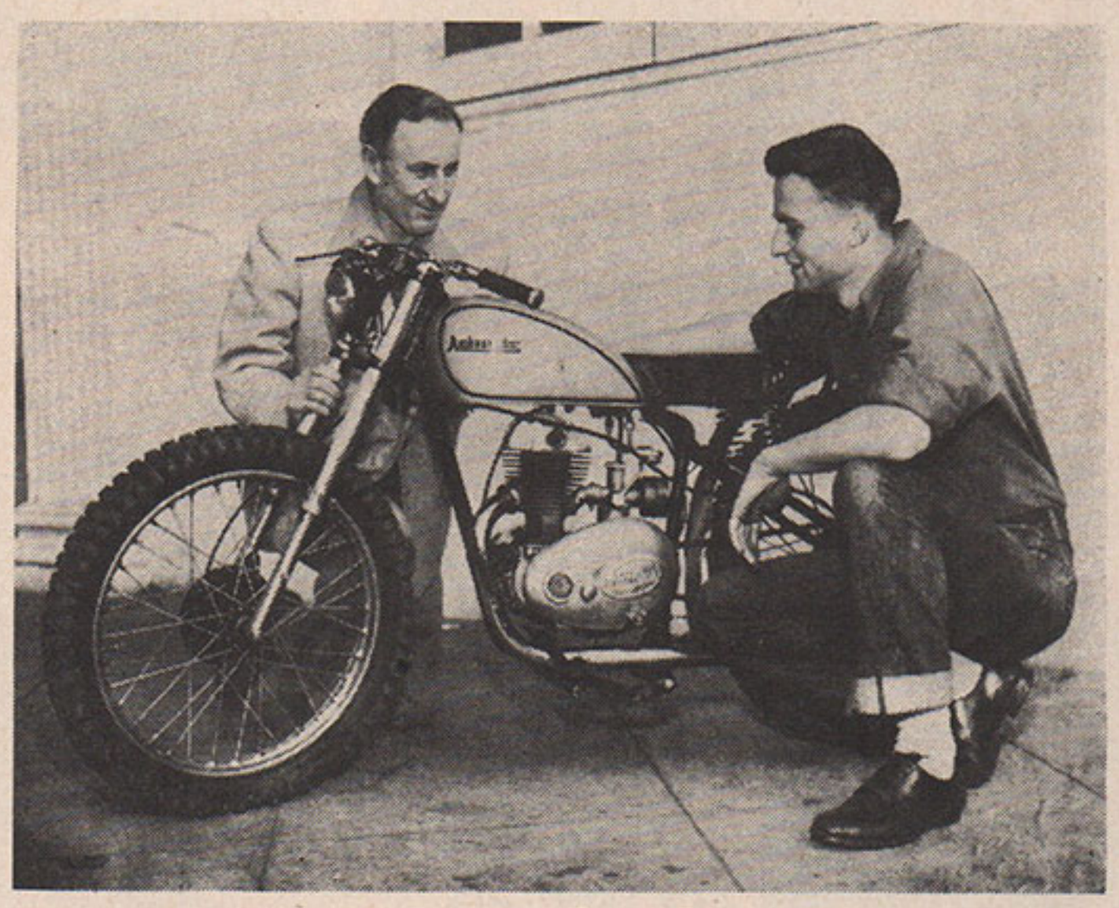
AMBASSADOR—King of the Lightweights



Hap Jones and Bob Hughes

Bob won the tough Big Bear run in the lightweight class on his Embassy Model AMBASSADOR. 80 miles of tough desert and mountains. But you can't beat class—and Bob came in on his AMBASSADOR 20 minutes ahead of second place winner.

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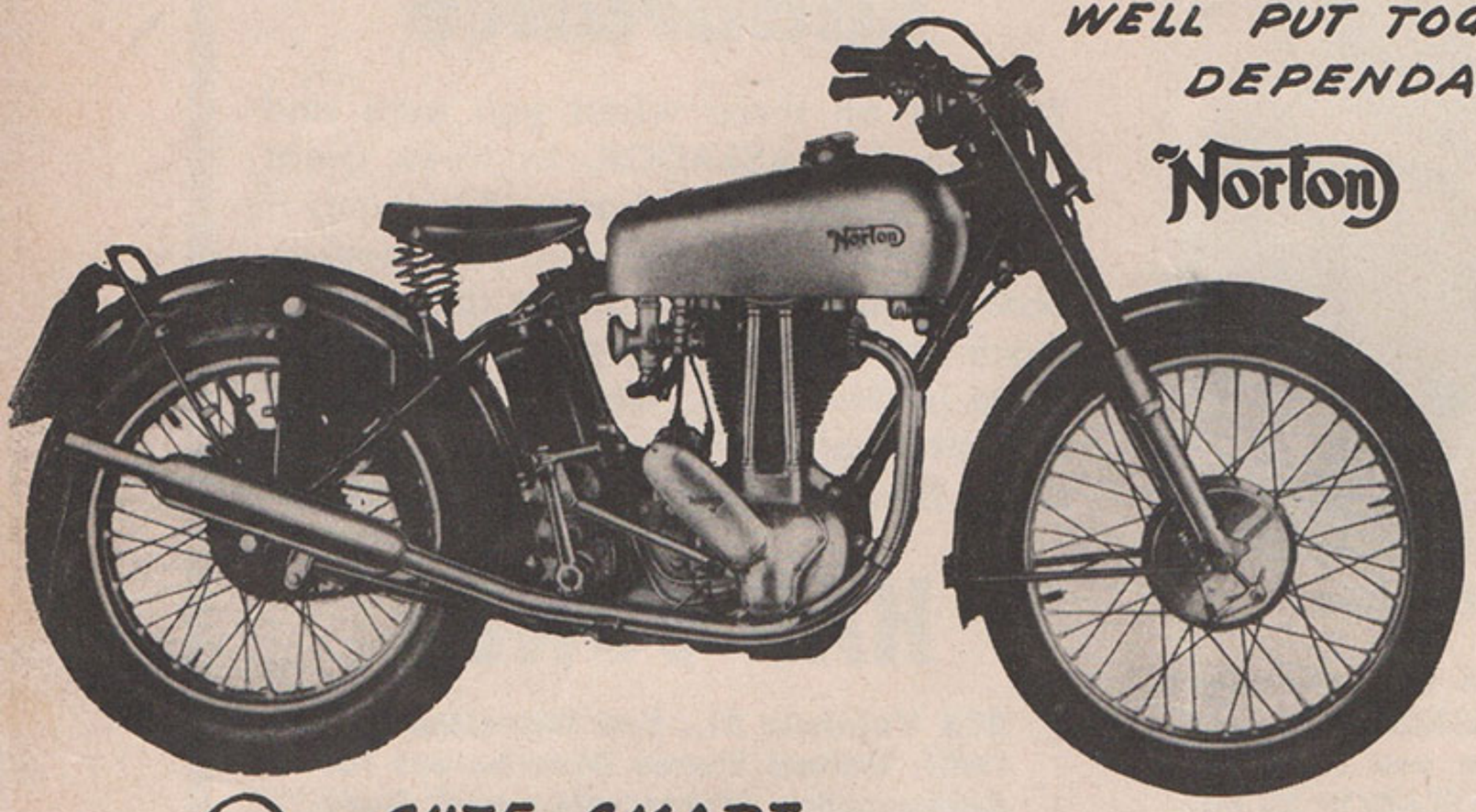
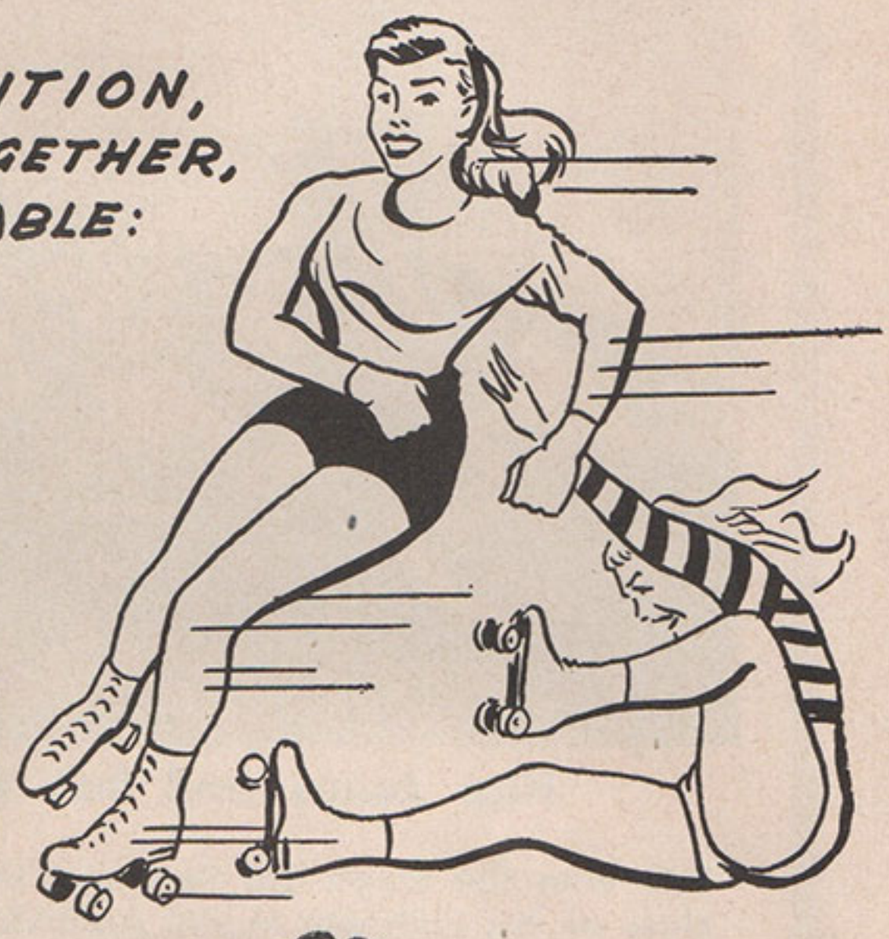
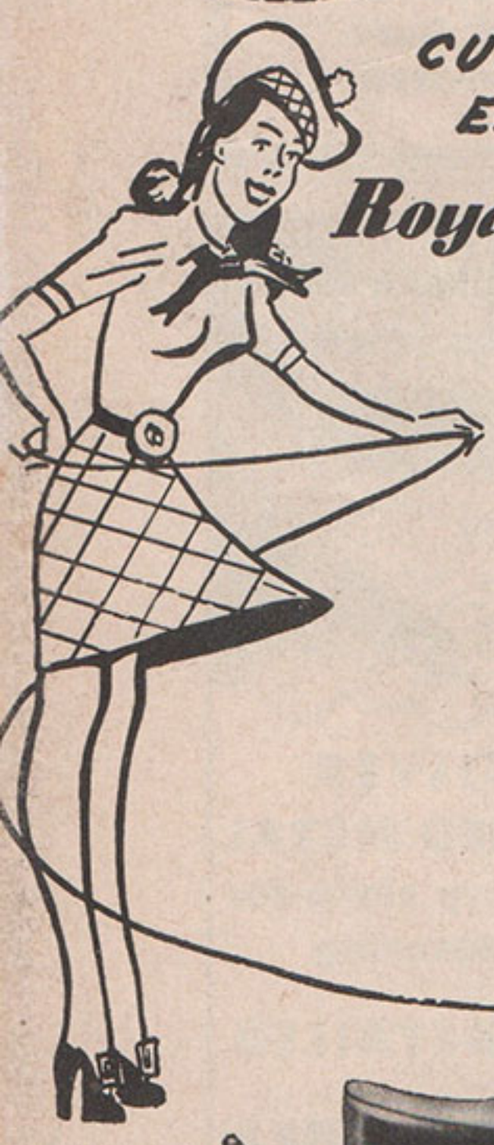
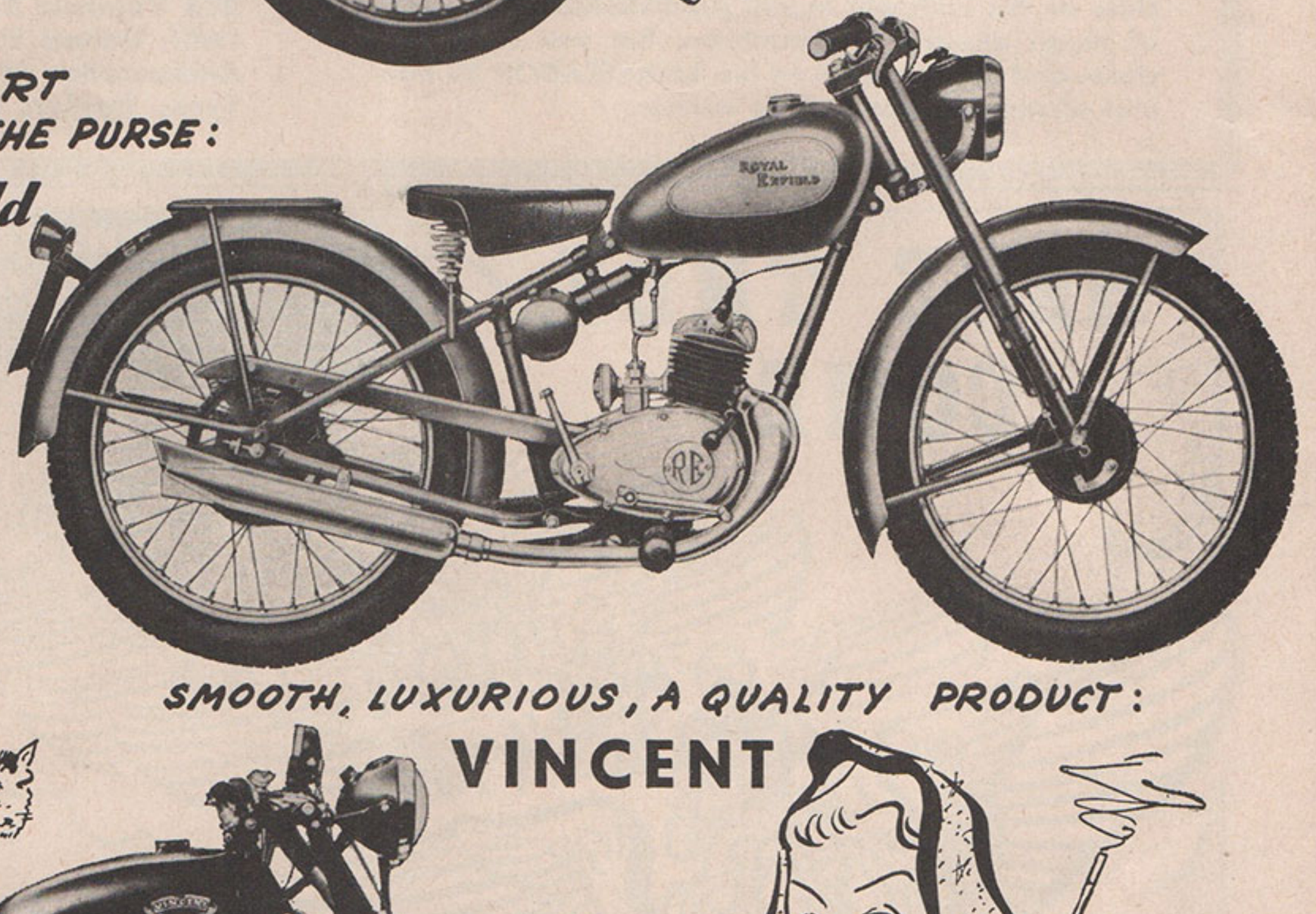




CUTE, SMART
EASY ON THE PURSE:

Royal Enfield





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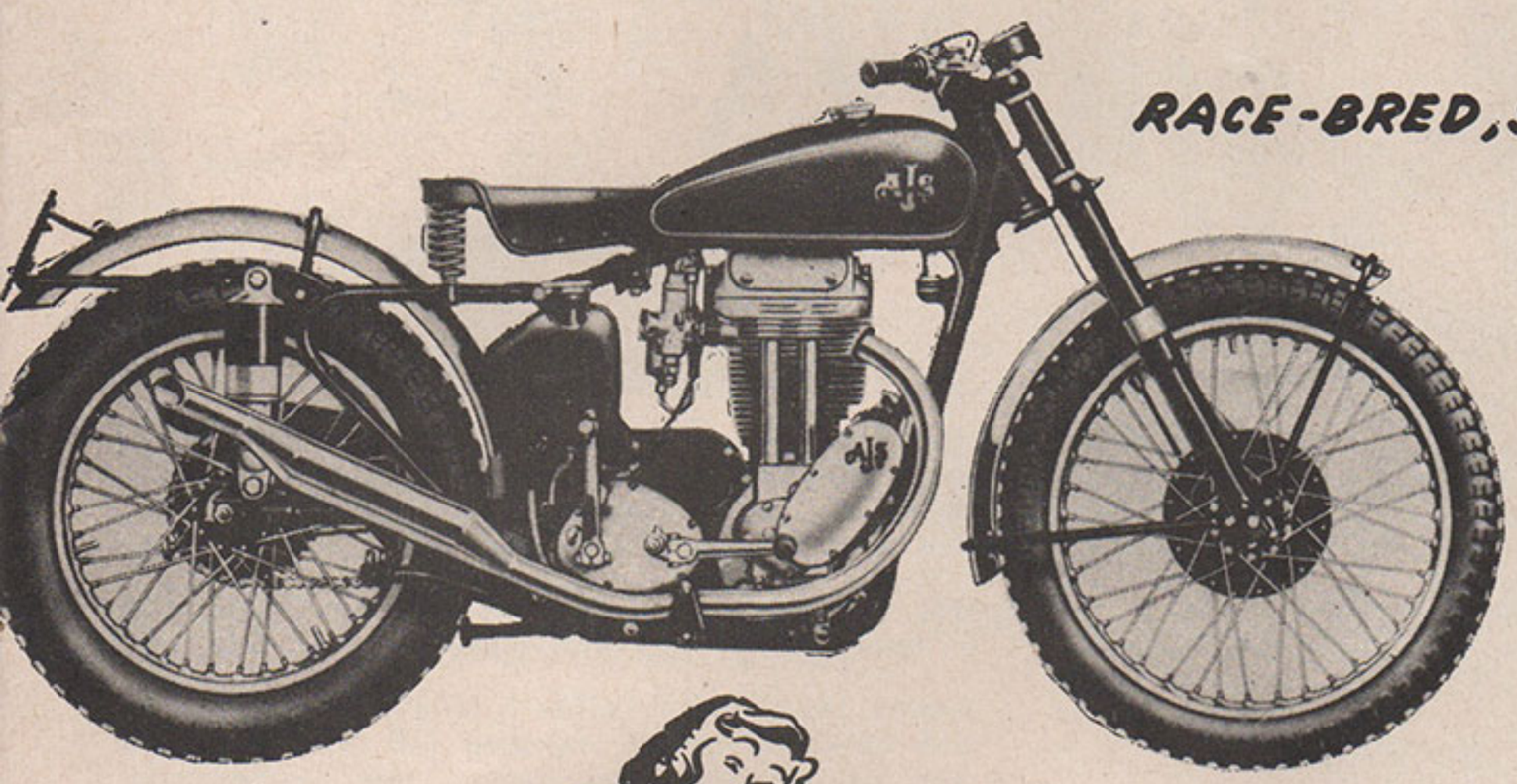
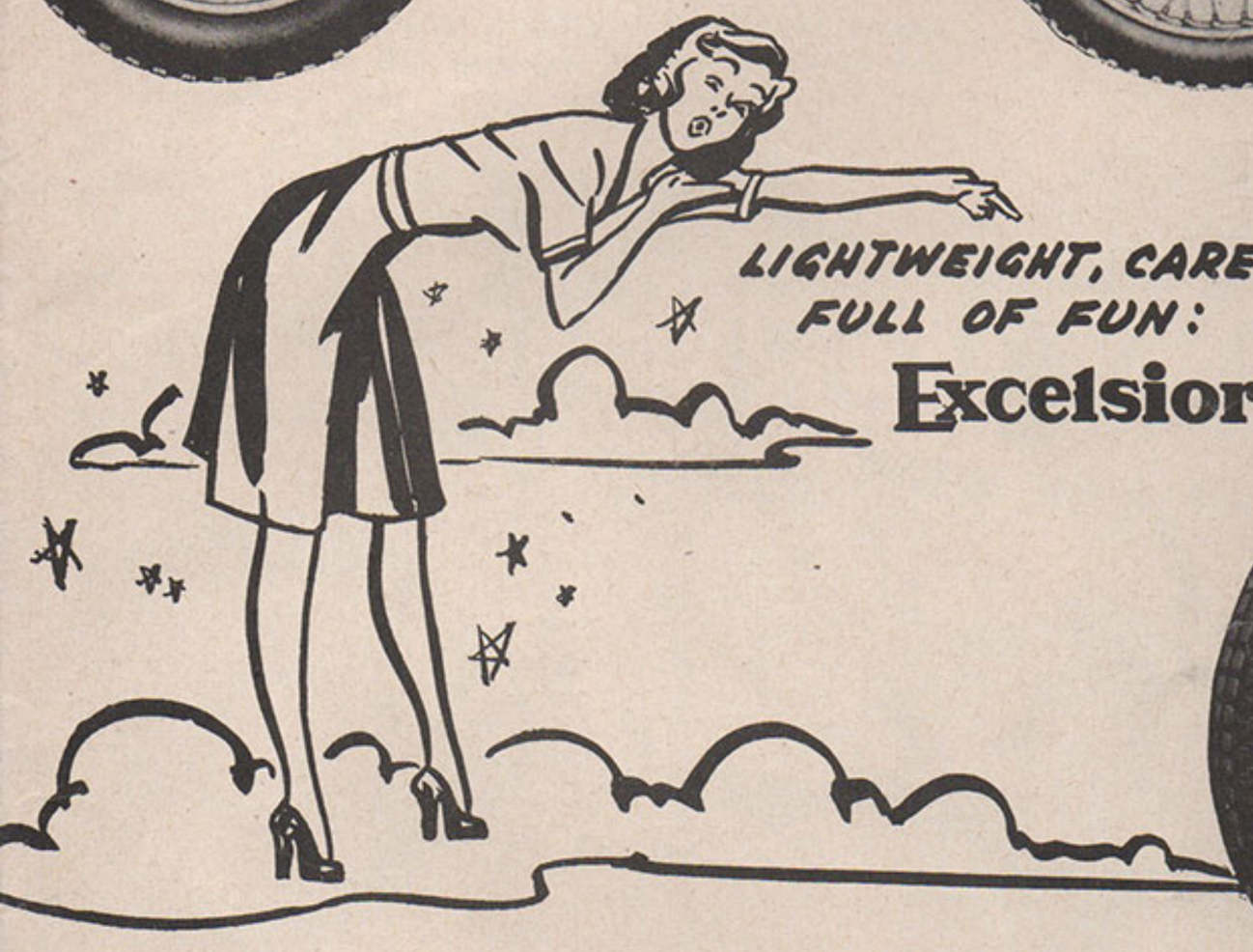


RACE-BRED, SPORTY, SLEEK:

A.J.S



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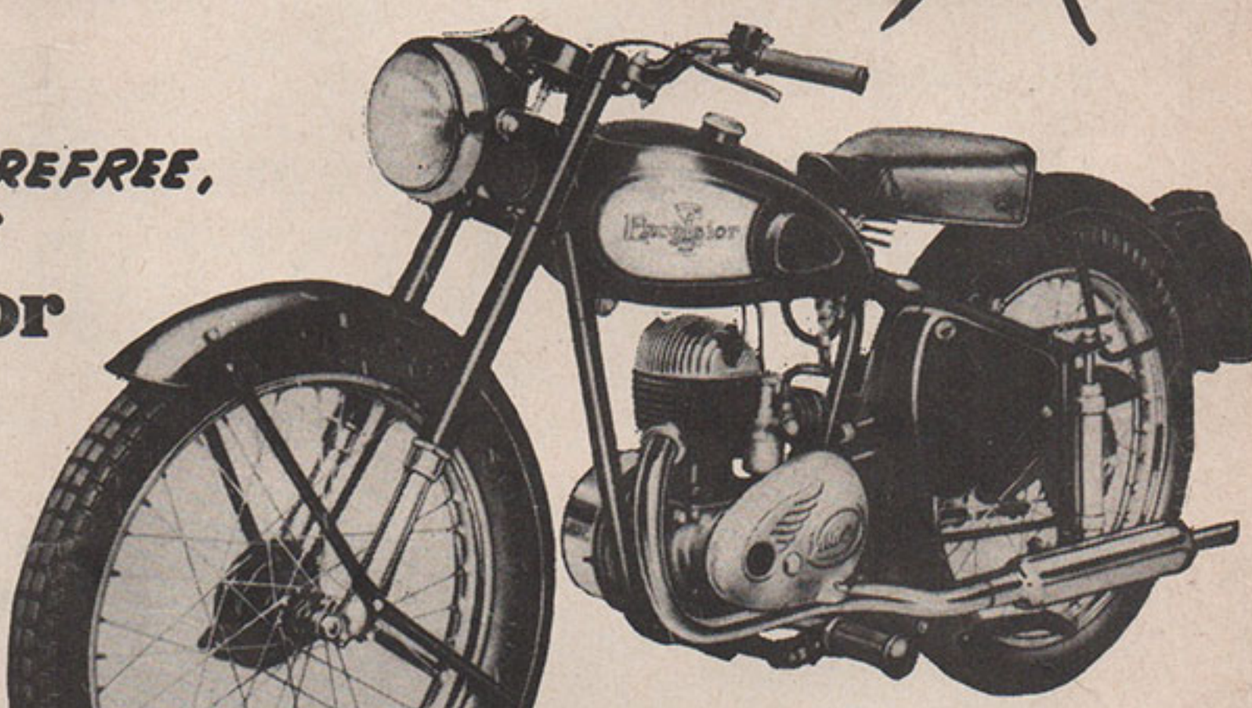

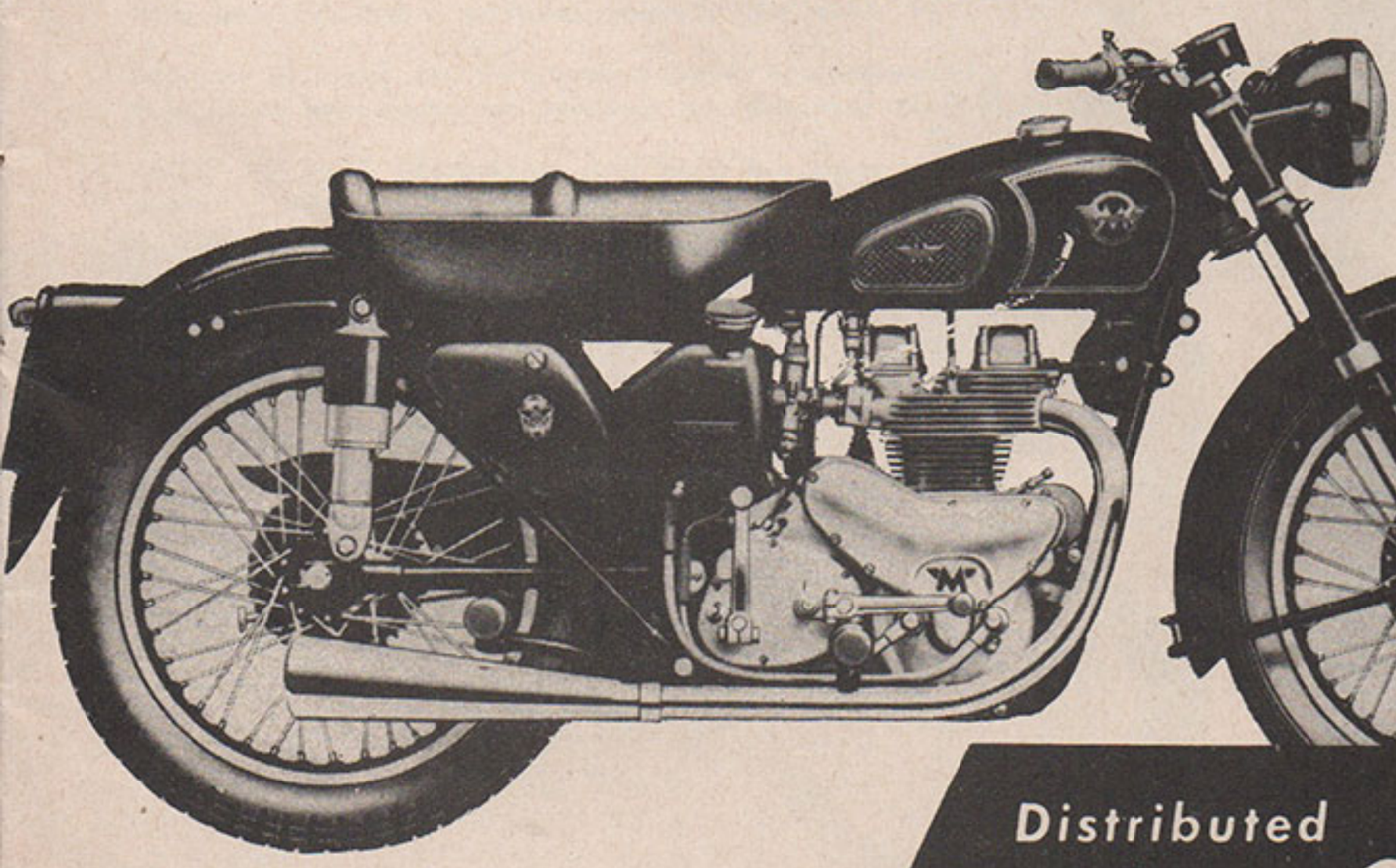

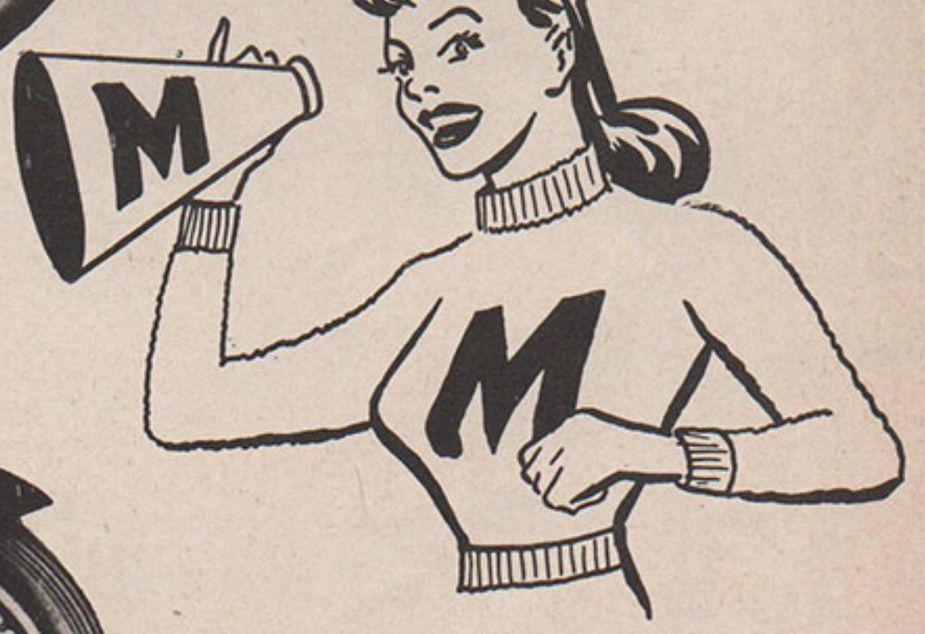

EYE-CATCHER, PEPPY, TOP PERFORMER:

MATCHLESS

E AND PARTS

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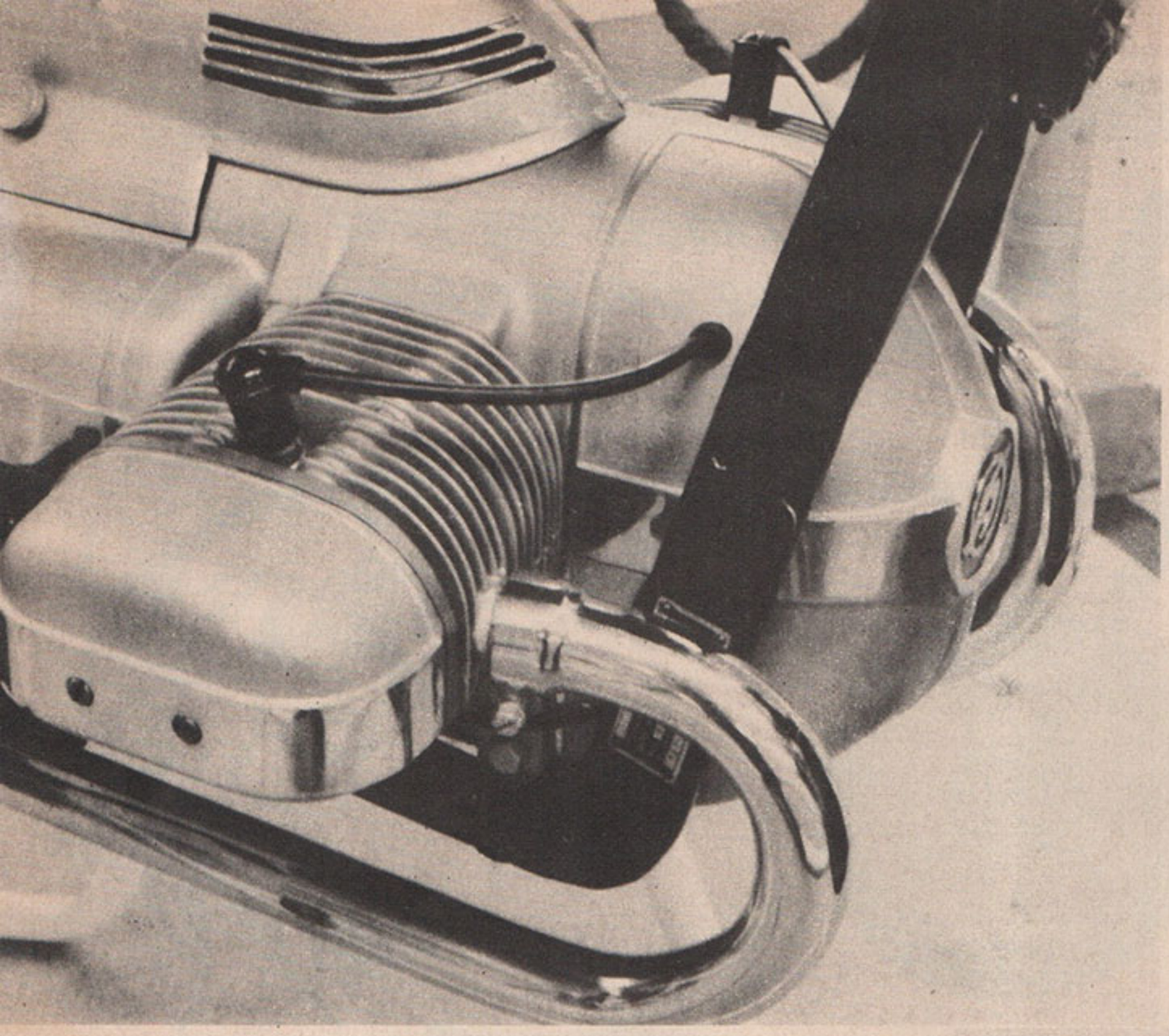
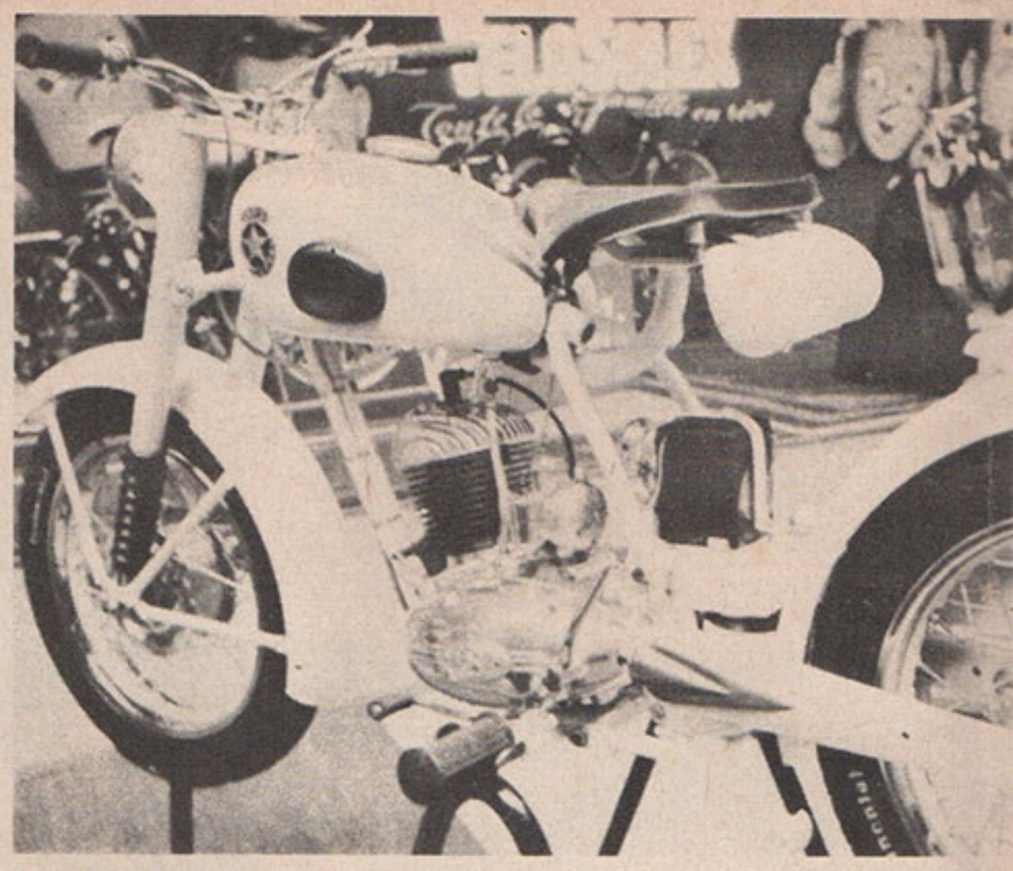




ABOVE, Germany stole the show with bikes such as this Sachs powered 125 cc Mars Stella. Rear suspension is by a single arm working against a large rubber button. Horizontal seat post is also hung on large rubber bands

LEFT, The new Hoffman (builders of Italian Vespa) 250 cc opposed twin with unit construction, 4 speed box

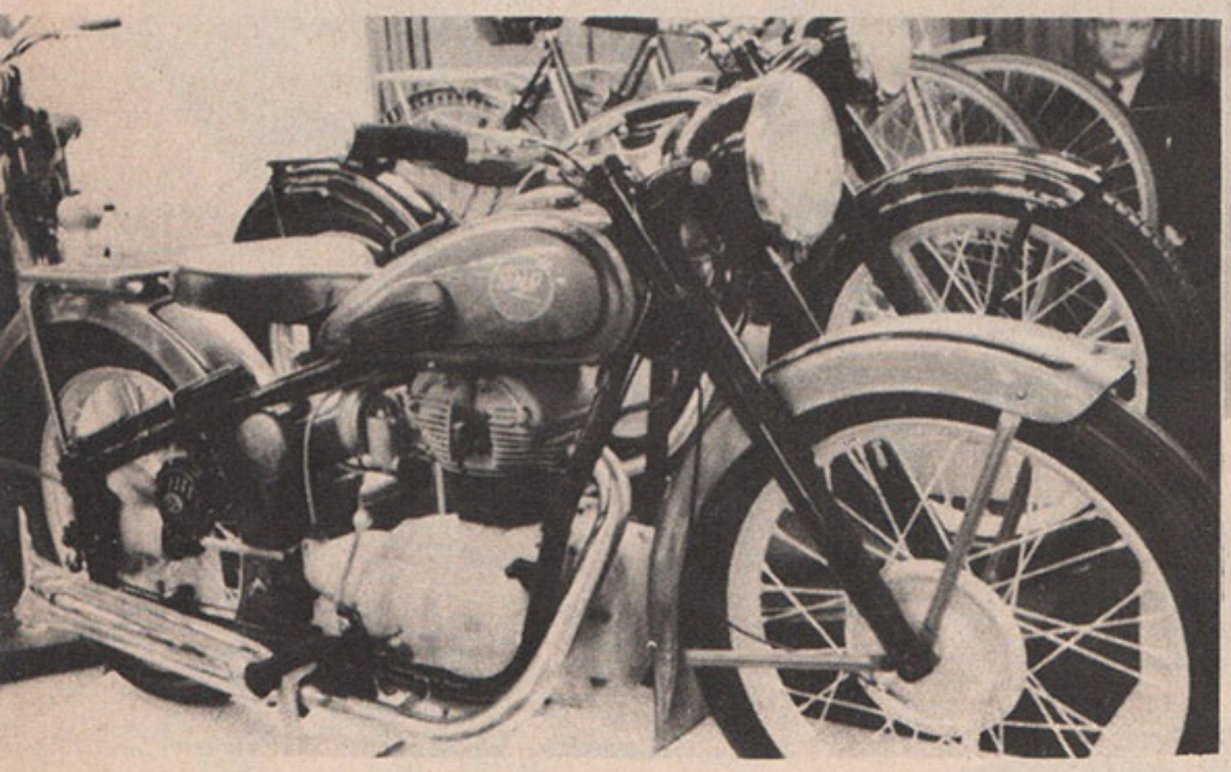
BELOW, 165 cc Motom Delfino is an 8 hp Italian creation with forced air cooling, swinging link forks front and rear, an encased engine and a new design motif

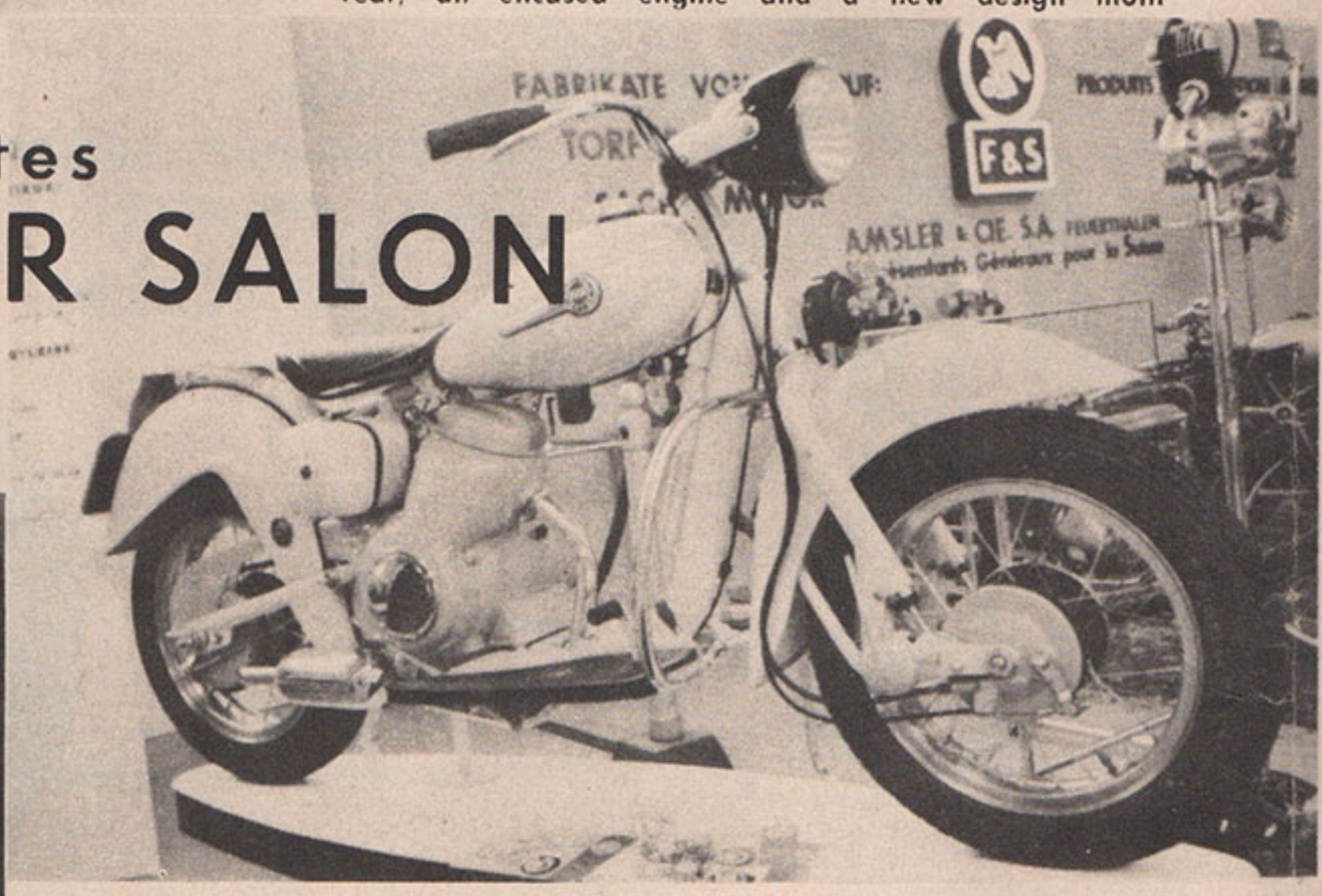
PHOTOS BY RODOLFO MAILANDER

Deutschland Predominates

GENEVA MOTOR SALON

SWISS EXPOSITION ABLAZE WITH GERMAN AND ITALIAN NOVELTY

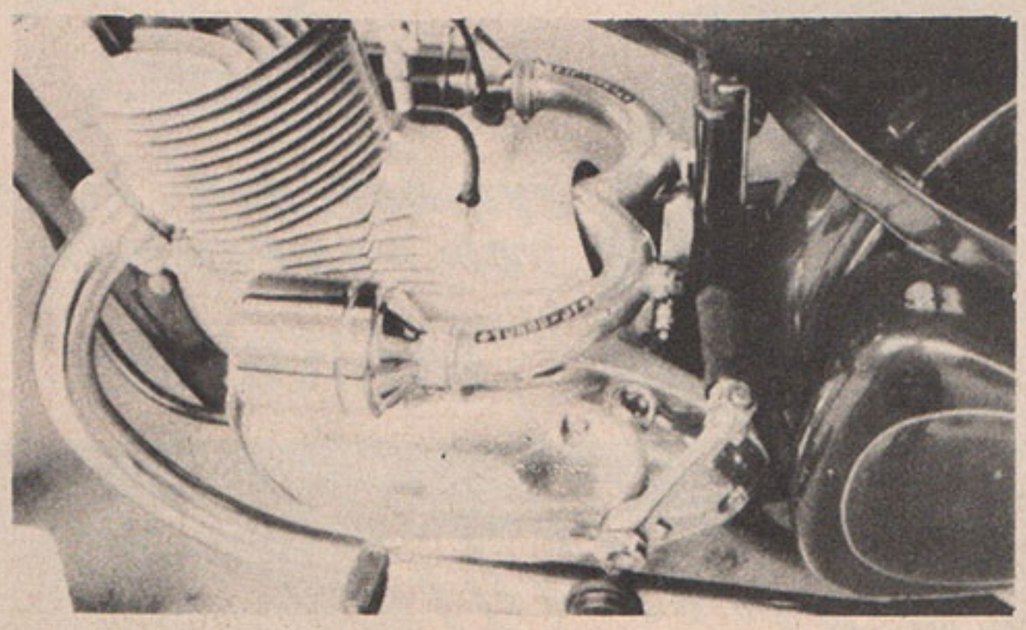


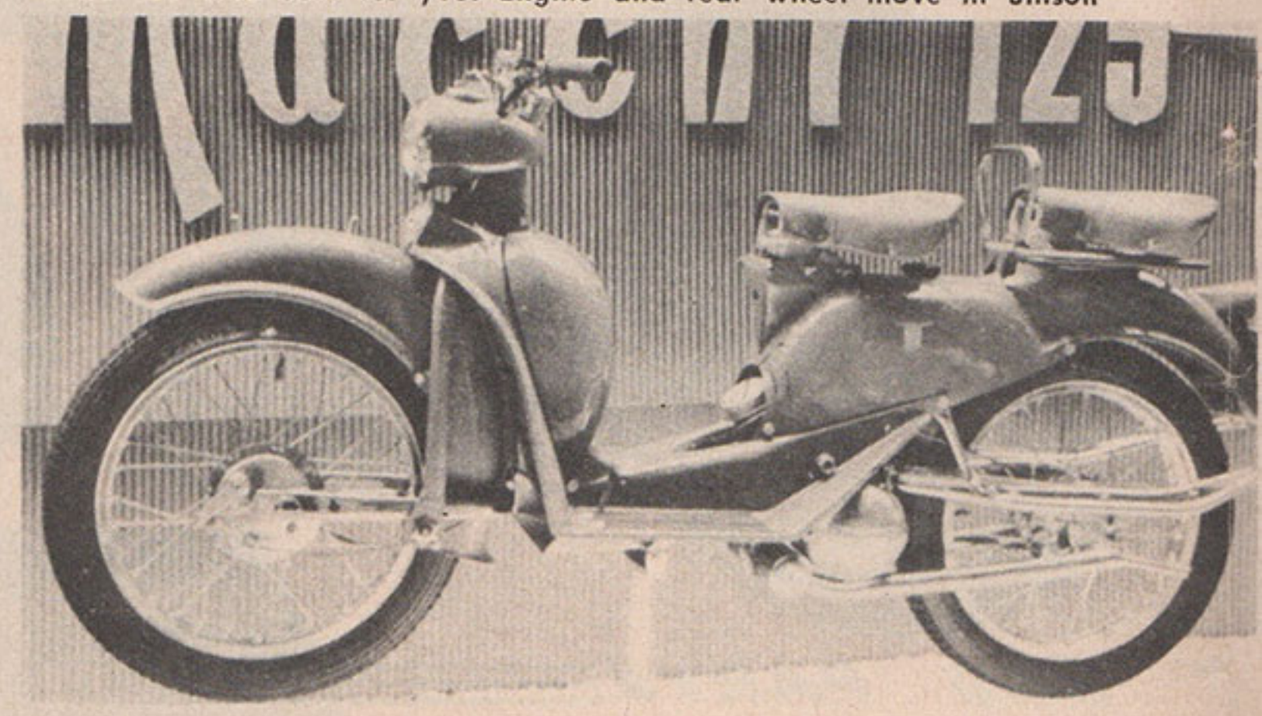


LEFT, Rare Russian zone built 250 cc, 12 hp AWO single is ex-BMW; fore and aft crank, shaft drive with Cardan coupling, auxiliary hand shift

BELOW—LEFT, Czechoslovakian Jawa sported twin air filters to enclosed carburetor, rectangular section frame members, deep cushioned buddy seat

BELOW, Tired of the same old front fork suspension? Then the Italian Macchi 125 was built for you. Engine and rear wheel move in unison





CROSSED UP

BUD HAWKINS

WE ARE SEEING more and tougher Hare and Hounds and Enduros, which is good as long as it isn't overdone. While the entry lists get longer it shows that they are not too tough, but that riders are getting handier and sharper. However, one important aspect is sometimes being neglected, namely the clean-up operation by the sponsoring club after the run is over. It is no fun to push or carry a bike with folded forks or a frozen mill several miles out of rough country to the nearest road. It is even less fun to carry out a pal with a broken wing, or possibly worse. Might it not be a good idea for the lay-out crews to pick a course so that a clean-up jeep and trailer can get within about a quarter mile of the entire track? Actually, from the grief some layout crews have gotten themselves into, such as blind canyons, deep gulleys, etc., it might be smart to send a jeep and 200 feet of tow-line out on the lay-out scouting runs to help the gang get to work on time Monday morning!

FIRE—Have you ever checked what it costs to rebuild a bike after a tankful of gas burned it out? The aluminum cases either melt or distort so badly that everything is out of line in the lower end and gearbox. We saw a small fire start and burn up the plastic gas line whereupon the whole works went up. You are asking for trouble if you have tank seepage, a leaky gas line or a pitted needle valve in the float chamber. If your motor is kept gunked and clean, you can often blow a fire out by taking off quick then getting the shutoff valve closed as soon as you get going fast enough to keep the flame going straight back. Keep going and the fire will blow out or die from lack of fuel, provided you have no leaks to feed it.

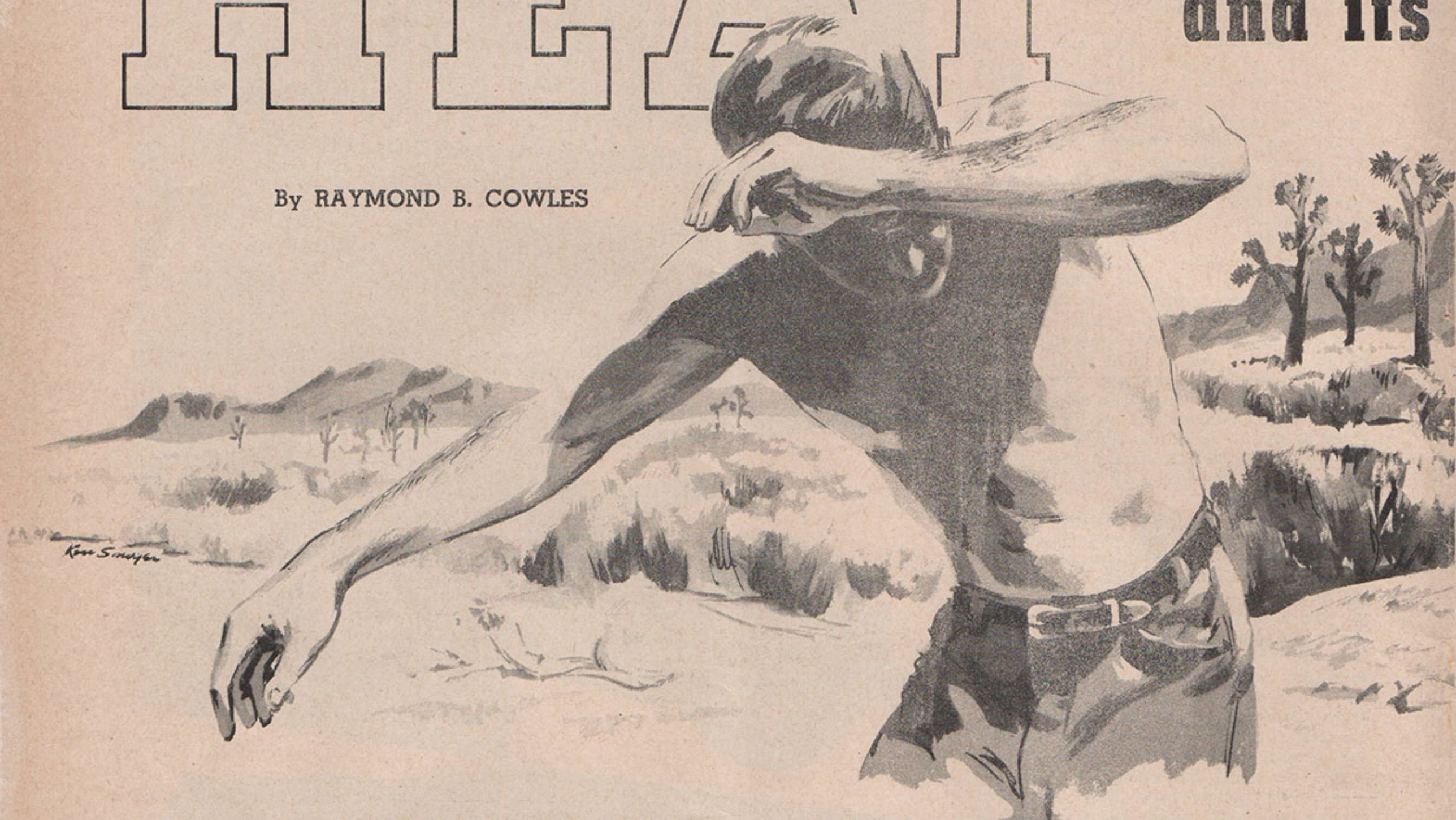
SPRINGERS—How about more ideas on modifying rigid frame bikes into springers? We have seen several rigid Ariels using the Triumph spring hub and Don Pink has a fine spring frame 125 cc Harley. Lammy Lamoreaux has built up a special T-Bird with a McCandless type of spring frame. Another gent by the name of Hutchins designed a spring heel kit which has been installed on several 30.50 rigid bikes, but it is not in production as far as we know. We wonder if some shock absorber manufacturer like Gabriel might not do very well making the elements for a spring frame modification kit? The easier riding is an obvious advantage but the improved rear wheel adhesion also results in better traction and less strain on chains, gears and clutch in rough going.

BRAKES—We wonder why there is so much difference in stopping ability between motorcycles? Not only do road tests of new models show large differences between makes, but we all know that different bikes of the same make and model show large variations too. In addition to the stopping differences there is a wide deviation in the way the brakes feel. Some are smooth, solid and easy to apply while others feel rough, undependable and are noisy. The size of the drum doesn't always seem to be the determining factor. Has anyone a good answer?

ELECTRONIC TIMERS—For some years Otto Crocker has been the master timer of speed events in this country. Recently a company in Palo Alto, California announced their model HP524A Time Counter that measures time intervals up to 1,000 seconds (over 16

(*Continued on page 23*)

HEAT and its



By RAYMOND B. COWLES

(Perhaps you've never been the victim of serious heat prostration and some of the incidents of the following story may seem a bit far fetched. But those of you who have lain absolutely helpless, conscious, but unable to move for an hour or more under the desert's punishing sunlight, will find Mr. Cowles' factual account doubly interesting. A similar experience once put me in very close touch with the great beyond—ED.)

BROTHER, WHETHER you realize it or not, you're boiling a quart of ice water every hour you spend beneath the blazing summer sun. That's the equivalent heat-power your body puts out when you herd that two-wheeled bucket of bolts across the country on a torrid desert trip. In more technical terms, your body is generating 80 calories per hour.

Is it any wonder then that riding comfort is often more difficult to achieve in the summer than it is in cool weather? An important factor to help you keep cool on scorching summer days is to get rid of the very same heat that keeps you warm in the winter.

As the thermometer climbs higher, and the sun beats steadily down on shoulders and back, the problem of keeping cool becomes increasingly difficult. Above the high 70s and below the 90s we can shed our clothing, but after all there are limits to what we can take off and still stay out of the clink. For that matter, aside from the possibility of sunburn, not to mention pavement burn in a spill, there are very good reasons for questioning the advisability of nudist cycling.

For gathering the best information on how to exist in excessively hot weather, we owe our greatest debt of gratitude to the thousands of men who took part in desert war training in the blistering heat of the Coachella Valley and Colorado desert. We also owe special thanks to 11 scientists and their troops who acted as human guinea pigs in these exercises to find out how best to keep healthy in desert environments.

In warm weather, with proper relative humidity, there is real exhilaration in speeding along the highway with a minimum of clothes. However, if one climbs on board and shoves off while still damp with perspiration, the air at first seems cold, a result of rapid evaporation. It is not until the body is dry that the real balminess of the weather is felt.

Above 90° Fahrenheit, with low humidity, somewhat the same sensations follow riding with a damp skin or clothing, but the chilliness is at first much more intense, actually more like an alcohol bath. This is because evaporation rapidly carries off a large amount of heat from the skin. Since the skin heat is not immediately replaced, we become surface-cold. However, this discomfort rapidly gives way to other sensations, and the higher the air temperature, the sooner this happens. The skin passes from cold to hot, and often the whole body surface seems to catch fire. With continued riding we may begin to feel other discomforts and serious symptoms may even appear if warning signals are ignored.

Under ideal conditions the body temperature should not rise above 98.6° nor that of the skin above 92°. This temperature difference is necessary in order to carry off heat that is being produced inside our bodies. This is true even when we are not working, and without this temperature difference we begin to accumulate heat; our temperature begins to rise and at a body temperature of 99° and above, we feel hot and actually become feverish. When the air and objects around us are around 80°, and with skin at its normal 92°, the heat gradient is from skin to the surroundings.

When the temperature gradient from skin to surroundings disappears, the skin becomes less effective as a heat-exchange mechanism. Our body thermostats automatically operate the switch that starts sweat flowing as we pass from radiant-cooling to evaporative-cooling and complications begin.

It is not generally realized that only at air temperatures of around 80° and below can we dispense with sweating and simply radiate heat away (provided we don't start to work, and force our internal furnace). From this level upward we must keep water pouring out onto our body surface. Of course, this means that at temperatures above 80 we work our sweat glands, which get their water from the blood, and that somehow we must replenish the supply of water that is extracted from that vital fluid. There are about 2,000,000 of these glands in the skin of an average individual, simply water-extracting tubules twined among loops of blood vessels. Their water supply comes directly from the blood and while cooling us, the water is permanently lost by evaporation. Sooner or later, and sooner is best, the water must be replaced from the food we eat, but especially from the water we drink. If we

effect on you

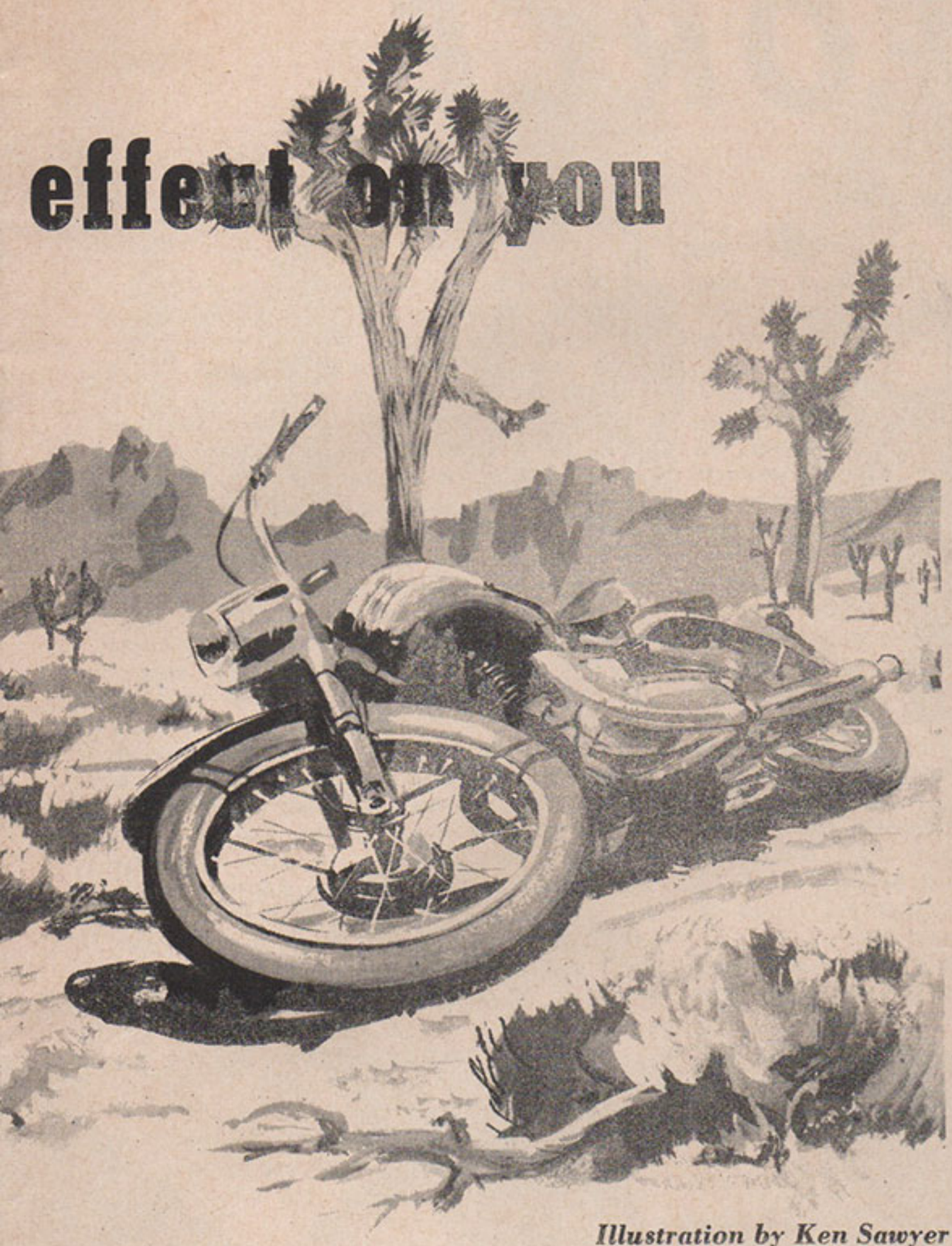


Illustration by Ken Sawyer

don't attend to this detail, the blood becomes less and less effective in a multitude of ways and we suffer increasing discomfort, a feeling of sickness, and if we allow the water deficit to become extreme we may pass out, eventually die.

Fortunately, our normal thirst sensations help us in knowing when and how much we should drink, but there is a peculiar and important quirk in the functioning of these thirst sensations that was first discovered in U.S. Army studies. This quirk must be watched because, while engaged in exercise or any driving stimulus (and this might include cycling), men never drink enough to keep up with their water losses in hot weather. This works out in such a way that it pays a man to force himself to drink more (water that is!) than he may feel like consuming at any one time during stress in hot climates.

This matter of keeping the evaporative cooling system in top working order points to factor number one in maintaining maximum comfort and efficiency in very hot weather. When the air temperature is 90 plus, it requires about five ounces of water to dissipate the normal body heat generated each hour, and 12 to 16 ounces to dissipate the heat absorbed by radiation and conduction from the ground and from the stream of hot air. When out in full sunlight another 12 to 16 ounces are required to get rid of heat from that source. This means that in crossing deserts or riding in very hot weather, while exposed to radiation from sun and re-radiation from adjacent pavement and rocks, and with hot air blowing over the body, at least a quart of water per hour is needed to sustain the body in normal working condition. This does not include the water that will be needed to shed heat that is absorbed by radiation from the engine.

For a time, we can sustain a small water deficit but we should realize that the body will be forced to work progressively harder and less efficiently if we allow the deficits to accumulate. We suffer unnecessary fatigue and eventual danger, because heat stroke or fainting may take place and neither is advisable, especially on a motorcycle! All of this simply means, *watch your drinking*, a new twist to those words, and one that brings up the question of beverages, alcoholic and otherwise.

This is not the place to discuss the questions of alcohol and gasoline mixtures, whether as fuels or riding companions, but for perfectly sound reasons, alcoholic beverages are taboo while riding. Actually, the alcohol content of even mild drinks contributes to the generation of internal heat. So, of course, does food, but minus some of the other effects. Soft drinks, coffee and so forth are advisable, but above all cool, but not ice cold, water (with a little salt* if you are new to high temperatures) is best for keeping your heat-exchange mechanism in working order.

These data and other information mentioned below were obtained in the deserts that must be crossed in a trip to or from California. Let this be a sufficient hint that it's a smart idea to have enough drinking water with you to take care of eventualities in case of a breakdown. Even the time spent in making minor repairs, punctured tires or broken chain, will be less uncomfortable with plenty of water. Don't take off across untraveled dirt roads alone. Remember, when hiking, your water needs rise even higher.

How many miles can you walk per hour, especially hour after hour? That mere 20 miles over a dirt road, made in 20 to 40 minutes on a bike, will take about 10 hours to retrace on foot, and that means, in the hottest weather, nearly five gallons of water. That's a Jeep-can full! Incidentally, if you do get yourself in such a jam, lots of experiments prove that, contrary to all rumors and prospectors' tales, that you should drink as much and as freely as you want to, even if that empties your canteen.

It has been fully demonstrated that it's easier to carry the water inside your body, well distributed and working as it should, and it's more efficient since you will average better total mileage that way than if you deprive yourself and work under a handicap. It's also much better to get into shade and rest during the daytime and do your hiking or even riding at night when it's relatively cool.

The matter of selecting the best clothing to wear in hot weather is fairly simple, because whatever is best at holding heat in will also be best for keeping heat out. It's just as simple as that, and the Indians and Arabs who pull blankets over their shoulders in very hot sunshine discovered the fact long ago. Our main problem is to modify the heavy clothing so that sweat will evaporate and save us the feeling of being uncomfortably sticky, but neither the Arabs' burnoose nor the wrap-around blankets of the Indians make practical clothing for speeds of the open highway. When motorcycling, modern clothing does have a real hot-weather advantage—we can control the amount of hot air that reaches us and regulate it to keep us comfortably dry.

Although we generate a considerable amount of heat in our own bodies, this is often less than that brought to us in the hot air, and both of these are generally less important sources than the radiation heating from the pavement, engine, and especially the sun. Our best point of attack is the exclusion of as much of the radiant heat as possible. This means that whatever we wear as a portable shade should reflect rather than absorb radiation.

Incidentally, bare skin of the whitest will reflect only 45 per cent of the sun's rays, a dark tan skin only 35 per cent, and the skin of a dark negro will reflect a mere 16 per cent. As your own skin darkens through tanning, it becomes a poorer defense against heat absorption. A good white cotton percale covering will reflect over 66 per cent heat and at the same time protect the skin from a free flow of hot air and resulting rapid deposition of heat from this source. At temperatures of 92 and over, you can stay cooler by keeping out wind and sun.

With these simple facts in mind it becomes clear that for summer motorcycling good heat-reflecting clothing is needed. Under the reflecting out-covering there must be a layer of good insulating material that will not conduct heat to the body. This, plus a controllable ventilating system to just barely evaporate the sweat as fast as it flows, gives us the best possible clothing.

Actually, the most practical heat togs would be an aluminized metallic-surfaced suit with a built-in, down-lined underbase, equipped with controllable ventilation to permit the proper amount of evaporation. With such clothing, including helmet, coat and pants, maximum comfort could be achieved in hot weather.

In lieu of this unobtainable garb, a fairly practical approach would be a light-colored, highly reflective, down- or wool-padded jacket. For maximum protection, pants and head gear of the same material should be worn.

A good experiment to try out this summer would be the insertion of an aluminum-foil lining inside the leathers. This should turn back much of the incoming heat and give a 15 per cent increase in relief.

Using some of the above ideas and following the suggestion of regular pit stops for refilling the human radiator and refueling the human motor, long trips in hot weather will prove less tiring and serious difficulties can be avoided.

(Most of the information used in these pages was taken from data to be found in "The Physiology of Man in Deserts" by Adolph and Associates, Interscience Publishers Inc., N.Y. Anyone interested in these problems will find much useful information in this book.)

* *Regular salt tablets also help prevent that waterlogged feeling.*

GALE FORCE

By William Onslow

THE PUBLIC OFTEN takes progress for granted. In paying the purchase price, people feel they have done their duty and generally don't inquire how the product came into being. Research is a never-ending item of great expense in the industrial activities of any organization of repute. It goes on constantly behind the scenes, wrapped in a shroud of mystery. All that most of us see is the changing parade of models from year to year. Are these changes just a trick of the manufacturers to persuade a gullible public to buy something new, something different from last year's item? Not on your life!

What, for instance, lies behind the speeds now being created through motorcycle research? Is it better engine design? Is it new metallurgic processes? Are bigger engines the answer? Maybe—but there is something more. The shape of things to come is increasingly becoming a question of aerodynamics.

Every rider knows that the faster he goes the harder it becomes to squeeze the needle a little higher. He is, in effect, being pushed back by the resistance of the air against which he is moving. This frictional force of air, known as drag, operates when a parachute is opened to stay the hurtling descent of an airman. Try running with an open umbrella held over your shoulder. Drag, then, is that little extra obstacle in the way of speed which often defeats the best laid schemes of the designers of super motorcycles.

Let us now turn to the Moto Guzzi Company of Milan, Italy, its aerodynamic-minded executives and the design and purpose of their famous wind tunnel.

Why a wind tunnel? Though we could probably answer this question as a layman, it was decided to pose the query, together with other scientific points that had us baffled, to a well-qualified person.

R. A. Wilson-Jones, able technical adviser of the Enfield Cycle Company Ltd., quickly assembled the facts: "A wind tunnel can give very valuable information regarding the probable performance of a motorcycle at high speeds in still air or with a known head or tail wind. The resistance to be overcome in order to keep a cycle moving at a constant speed over level road is given by the formula $R = a + bv^2$; where 'R' is the resistance in pounds, 'a' is the rolling resistance which depends on the nature of the road and tires and weight of the machine (on good roads may be taken as 40 lbs. per ton), 'v' is the speed of the machine in miles per hour and 'b' is the constant depending on the frontal area of the machine and degree of streamlining.

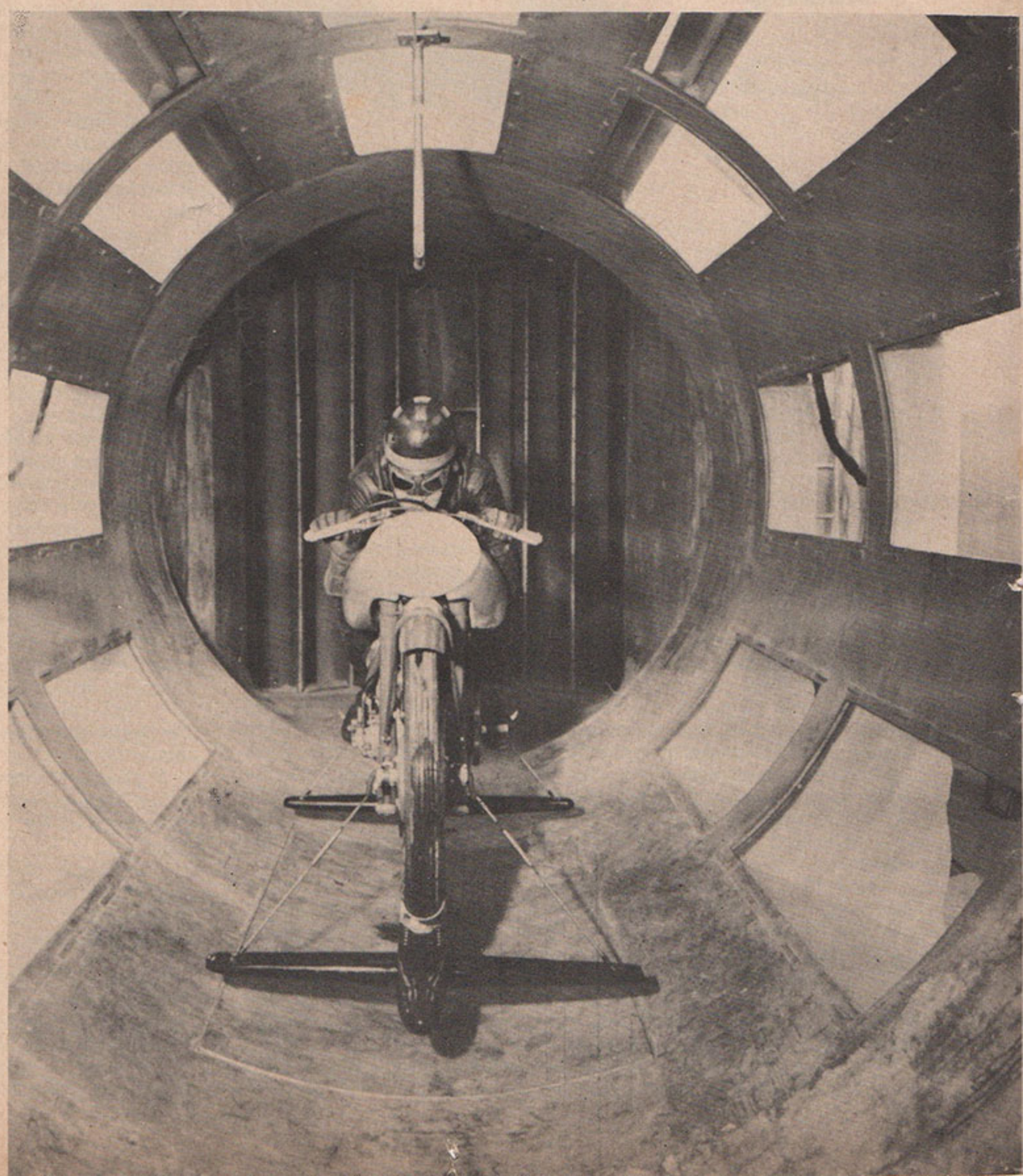
"As the speed increases, the rolling resistance 'a' becomes relatively unimportant and the air resistance represented by the expression bv^2 predominates. The wind tunnel enables the value of the constant 'b' to be found accurately and the value of any alteration in the size or shape of the machine, rider's position, etc., to be determined."

I then related to Wilson-Jones my perplexity in the problems of partial or total enclosure or streamlining. He listened carefully, then gave the following replies to my varied questions.

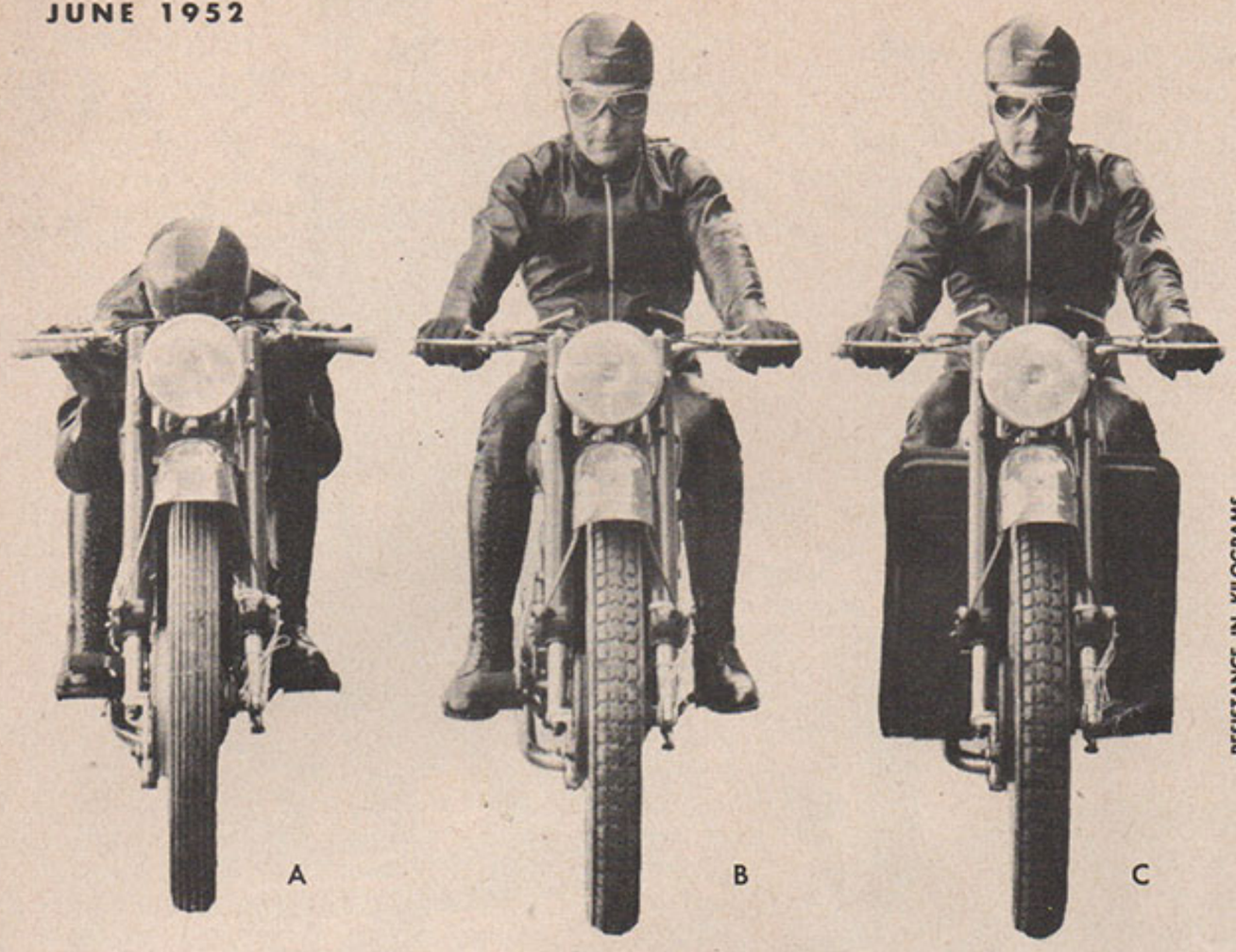
"Total enclosure in a streamlined shell may be the answer for obtaining an absolute world record. I do not think, however, the enclosed shells will ever be used on standard motorcycles unless some drastic alterations in steering layout are devised. The ability of a motorcycle to remain upright when in motion depends primarily on the fact that it automatically steers in the direction in which it is falling at any given instant. Streamlined bodies for world's record racing cars are always arranged so that the center of lateral pressure is behind the mass center of the vehicle; the object of this being to insure that any sideways component in wind tends to turn the car head into the wind in the event of it momentarily leaving the ground. Large stabilizing fins which are so prominent on modern world's record holders, are there for the purpose of bringing the center of lateral pressure far enough back.

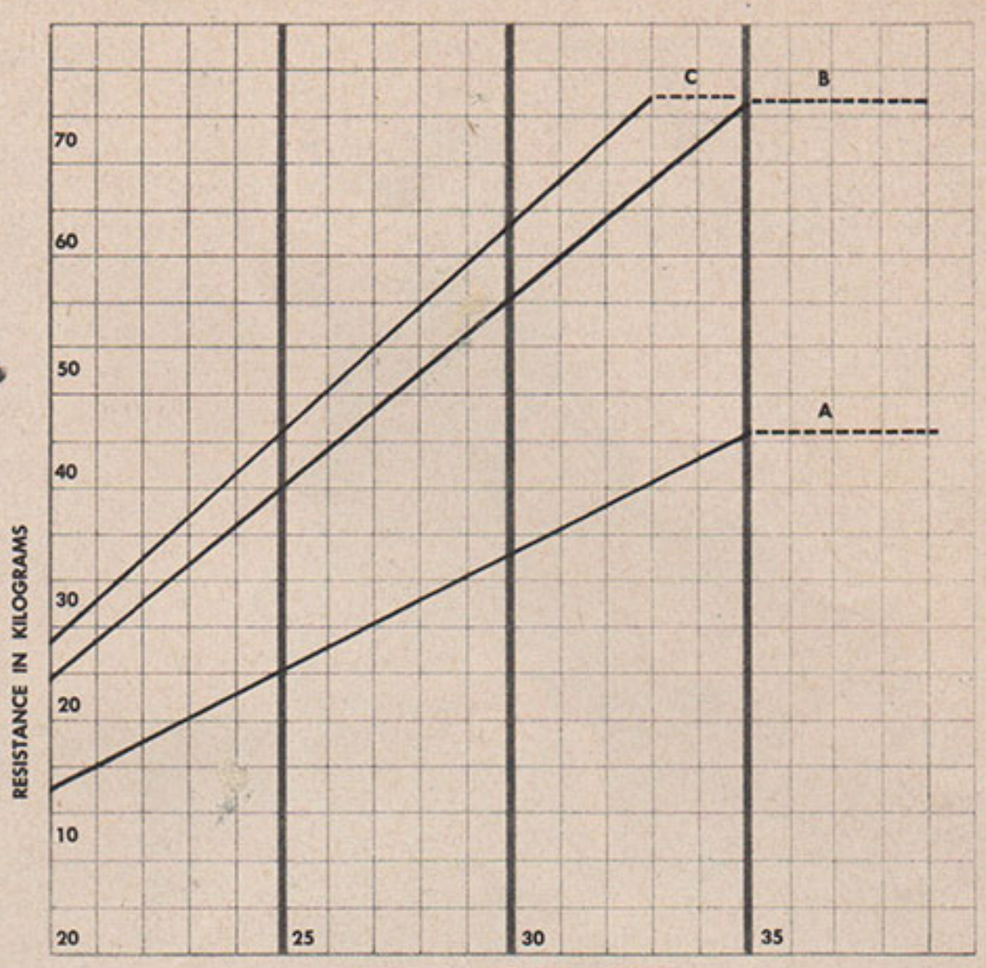
"If we apply the same principle to a shell for a motorcycle we find that a sudden gust of wind, say from the right, would tend to turn the machine to the right; *i.e.,* head into the wind. At the same time it would obviously cause the machine to heel over to the left so that the normal steering layout would tend to make the machine steer to the left. Thus the normal steering and gyrostatic reaction would be opposed to the reaction from the wind pressure. It is, I think, this conflict of reactions which has caused disaster to so many fully enclosed, would-be, two-wheeled world's record breakers.

"In connection with tests that have been made in the Guzzi tunnel, considerable stress was put on the fact that a horizontal single-cylinder engine created much less wind resistance than a V twin with one cylinder horizontal and the other nearly vertical. From this it was argued that much of the extra power of multi-cylinder engines such as the cross mounted Gilera and MV was wasted in overcoming their own additional air resistance. One obvious solution would be to have a multi-cylinder, in-line engine either water-cooled or placed in a cowling with suitably positioned ducts for entrance and exit of air, as is frequently done with



"Fergie" Anderson doesn't do all his racing on the track. Here the international ace Guzzi pilot models his racing crouch on the wind tunnel platform. The slowing effect of a peek over the shoulder, from this position, at high speed will cost the rider almost two miles per hour





Three riders at left are actually same man on same machine, a Guzzi Airone. At extreme left (A), he is shown in a racing crouch. Center (B), sitting in normal riding position and, at right (C), in same position except that leg shields were added. The effects in speed as compared to frontal drag are indicated on wind tunnel graph at right. The exclusive Guzzi motorcycle tunnel is presently being amplified to obtain higher testing speeds

air-cooled, in-line aircraft engines.

"On the other hand, such a cowling around an engine would render it completely useless for normal everyday conditions such as city traffic, cruising at low speeds, climbing mountain passes or for reliability trials and similar purposes."

Thus it would seem that the Guzzi wind tunnel may provide valuable information with regard to present day problems of motorcycle design for racing. What then, is the composition and action of this tunnel, the brain child of Guiseppe Guzzi, who designed it following the entreaties of his brother Carlo who vowed that it would provide the clue for more efficient motorcycle designs?

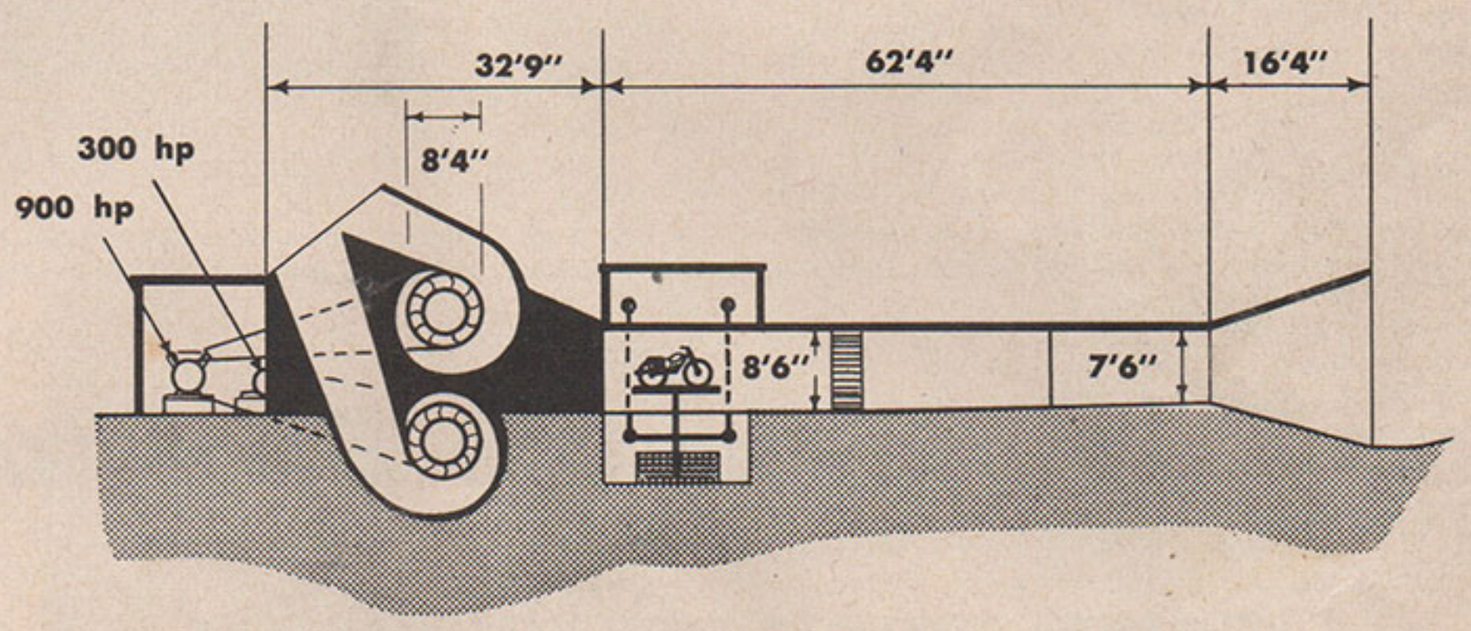
For the following information I am indebted to Dr. Ing. Aldo Peano, director of the Guzzi factory, who in supplying the data revived memories of my visit to their workshops some two years ago.

As can plainly be seen by the accompanying diagram of its longitudinal section, the tunnel is of the open circuit type, that is with no air return tube. The diameter of the tunnel varies from 2.30 to 2.60 meters (7½ to 8½ feet), its maximum width being that of the test section. The length of the tunnel is 40 meters (131¼ feet).

The air flow is produced by two double centrifugal suction fans located aft of the test machine. Fan diameter is 2.50 meters (8' 4"). Both may be driven either by a 300 hp electric engine or by a 900 hp Fiat engine. The electric engine is used primarily for testing standard prototype machines. A wind speed of 68.45 mph can be developed. The company considers this barely sufficient to fill its present needs. The massive Fiat internal combustion engine is expensive to run and is used only for experiments that pertain to racing practice. The maximum wind speed derived from this brute is 102.525 mph.

The machine to be tested, with or without a rider, is strapped to a special balance platform in the test section. Although difficult to describe, the fore and aft movement is hydraulically dampened by a paddle that is immersed in a tank of oil beneath this machine cradle. It is the minute clearance between the sides of the paddle and the edges of the oil tank that provides the excellent degree of damping.

Photographs taken inside the test section show the several curved glass windows giving the control room an unimpaired view. The observation room is alongside the tunnel



Cross section of tunnel designed by Guiseppe Guzzi, remarkable for the fact that he had never seen a wind tunnel before in his life! Authorities claimed it most unusual, but quite all right

and contains all necessary instruments for measuring drag offered by the machine in relation to wind speed. Manometers connected to pilot tubes in front of the test section register tunnel air speed. Once wind pressure reaches a certain strength, it begins to force the test machine backwards. This degree of movement is apparent to the men in the control room who are not only able to obtain a visual picture of what is happening inside the tunnel, but, from the many instrument dials before them, record accurate measurements of the moving forces.

Beyond the mouth of the tunnel, directly in front of the rider sitting on the machine, there is a large indicator which shows the rider all drag variations due to his positional changes or air speed changes. It's in the form of a clock-face, numbered from 0 to 200 around its 25-foot circumference. Intermingled with the numbers are numerous red lamp bulbs that enable the person seated on the test machine to readily understand the variations in speed made by changes in his movements or position. Owing to differences in body builds, it is hard to ascertain beforehand the least ultimate figure of drag that a rider might present. Seated on the machine he adopts his regular "dicing crouch" and remains still to allow the sensitive dial reading to remain steady. Looking at the indicator the rider will now see a light glowing at the reading his position has registered. His aim then becomes causing other lights to glow in an anti-clockwise direction. If he manages to do that, he can be fairly sure that his speed will increase during his next outing.

Fergus Anderson, whom we have often mentioned in racing reports, has had several sessions in the tunnel and has expressed surprise at the great difference in drag readings that were recorded simply by placing his toes on the footrests as opposed to his usual practice of firmly placing his arches upon them. This astounded your scribe who, when acting as the ballast for world's champion Eric Oliver, knew that each time he dusted the ground for a left hand bend, the revs fell a good 100 points. We did not expect, however, a great difference from a mere four-inch movement of the feet.

Air resistance in the tunnel is not the same as encountered by the combination rider-machine on the road, for there are additional resistances such as rolling drag and resistance offered by the moving wheels. However, it is possible to find a relation between the tunnel readings and road figures for all types of machines. This relation takes into account the power required to overcome the total resistances and, as the output of the engine is known through tests on the brake, it is possible, by subtracting, to determine the dispersed power due to the additional resistances which are not shown by tunnel readings.

(Continued on page 28)

Immediately before and after crash landing, a scene that was repeated time and again with no consequences except for horn falling off. Forks, spring hub and tires were mashed flat each time (note frame actually touching ground), but forks showed no leakage and spring hub was unaffected

I Was "Given the Bird" and Liked It!

cross-country flight puts a feather in Thunderbird's cap

BY BOB GREENE—EDITOR

SHOW ME TWO individuals and I'll show you two opposite directions of thought somewhere along the line. Thus, it was quite interesting to go back through our files to the first road test done on the Triumph Thunderbird over two years ago (April 1950 issue). You may find the comparisons equally entrancing and even gain a better picture of this 40 cubic inch vertical twin, since the original test was made by CYCLE'S first editor, Harry Steele. Of course, it's logical to assume that several refinements have been made by the manufacturer in the meantime, and no doubt this will explain certain discrepancies between the two tests.

Few will argue the point that the "Bird" is just about as hard a bike to pin a tail on as any running today. It has the speed that most of us require and it's there when you want to use it. The average Thunderbird delivers very little more top speed, if any, than this same company's 30 cubic inch counterpart, the Tiger 100, but the Bird's extra ten cubes get you there quicker and easier.

Other than larger engine capacity, the newest and most noticeable difference between the Thunderbird and the rest of the Triumph family is its new automotive type SU carburetor, explained in full detail last month. Briefly put, this worthy addition automatically adjusts for proper mixture, compensating for throttle opening, engine speed, and loading. While technical theories and practical applications seldom jibe to the let-

Down on the farm you may have need for the Thunderbird's clearance and power. On rutty roads and steepest hills, its 34 horsepower handled the job nicely during 400 mile road test

ter, this case seems to be an exception. You can make these two quick tests yourself. Walk up to a cold Thunderbird equipped with the SU pot, preferably one that has sat overnight, pull the choke lever up, open the throttle as you give the starter one healthy kick and the engine will come to life at once. Lower the choke lever to normal position right away. Observe that the engine is immediately carbureted properly, not blubbering or missing, and this without so much as touching a single spark, air slide, or compression release control lever. Starting procedure is so simple compared to other machines of all capacities that for the first few days you will feel as though you have forgotten something at each firing up. It's goodbye forever to those two prime kicks and tickling the carburetor.

With the engine running you are ready for test number two. Using the palms of both hands, roll the throttle open as fast as you can. Even by fanning it on in this manner she takes the gas instantly without a hitch. Brother, both of these little tricks are news in motorcycle performance, the latter especially in view of the fact that there still is no fuel pump employed as in automotive design. On the road these same characteristics manifest themselves in progressive acceleration; fewer flat spots appear throughout the range.

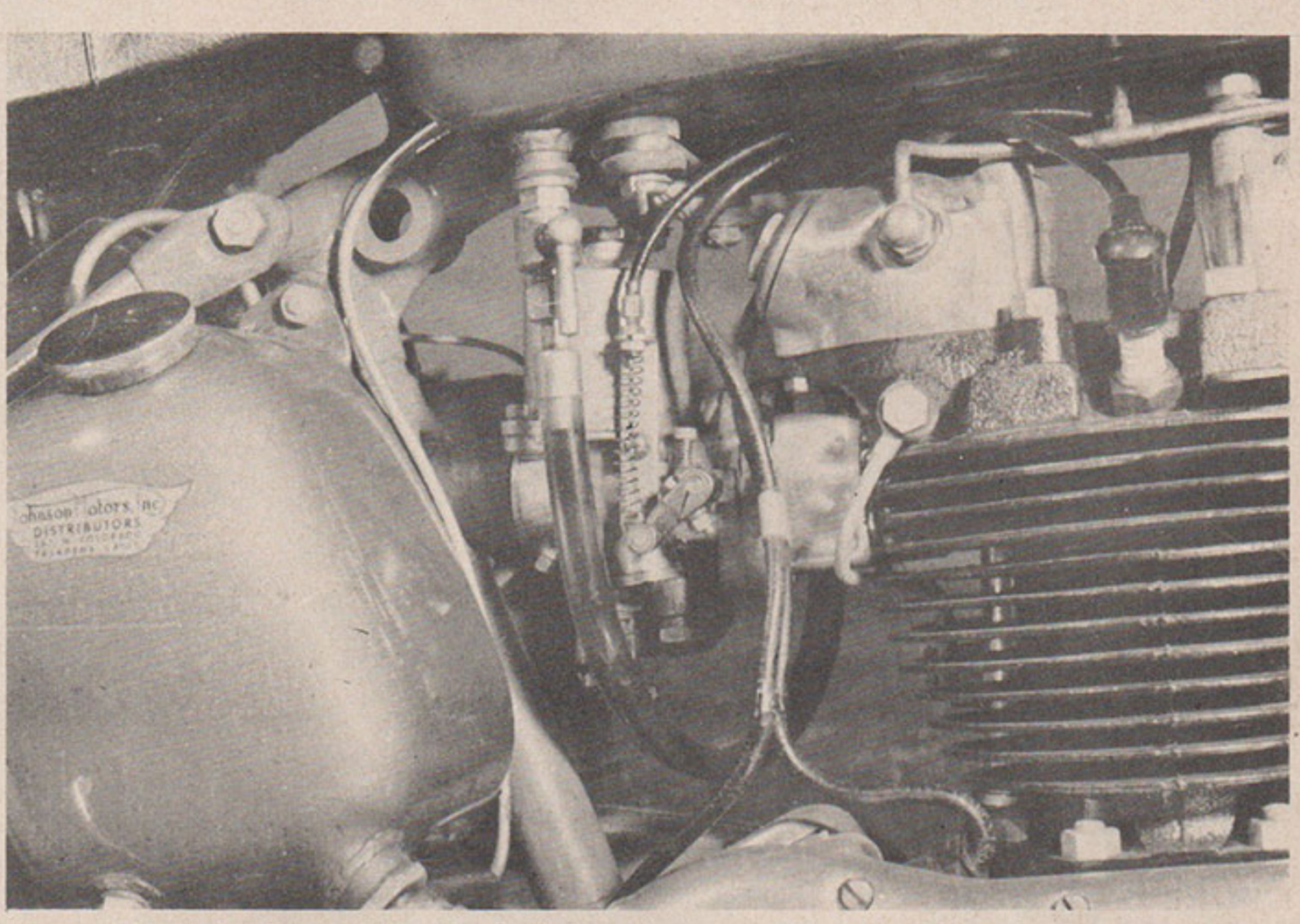
Another Triumph exclusive, their rear spring hub appears to have received some attention during the past year for there seems to be far less bottoming at both ends than in the earlier hubs. This unit, an adaptation of aircraft principles developed during the last war, has no hydraulic shock absorber but depends upon two recoil springs working against one counter-recoil spring to handle the load. Like all other rear suspensions, the hub is a subject of considerable controversy —here's the way we appraise it, bearing the other designs in mind. It is neither the softest, nor does it have the most travel. The hub is quick acting and serves primarily to dissipate initial shock but, by the same token, it imparts a firm, secure feeling in cornering that several of the other springers lack. It travels in a true arc with relation to transmission sprocket, assuring constant chain tension, and is the most compact and dust-free of all. There is hardly any possibility of its twisting, and general maintenance is nil. Possibly the best way to describe its action is to say that rather than a feeling of vertical movement it gives the sensation of having a large but firm rubber ball in place of the rear wheel.

Of course, the main issue in riding comfort is how both forks, front and rear, work in conjunction with saddle springing. Since Triumph's rear hub is lacking in generous slow travel it is felt that their featherbed duo-saddle, though extremely soft and form fitting in itself, should include some sort of springing. Although this saddle has the twofold advantage of allowing double-riding ease and plenty of room for the soloist, it still falls short of the spring solo saddle when rough, seat-slapping roads are encountered. Additionally, the twin seat, because of its loftier position, seems to raise the rider's weight high enough to detract somewhat from general riding stability over irregular streets or when bucking a side wind.

Having rubber replace coil springs is a good thought, as far as it goes. The deep sponge rubber saddle gives a lush ride for the first couple inches, but there just isn't enough of it. For normal touring it's fine, but a sharp pitch in the road socks you in the bread basket. Other relative features facilitating rider comfort, such as the positions of controls, were excellent with the possible exception of handlebars. They are fine for fast cruising where the rider wants to lay into the wind, but for about-town riding or chasing over the hills they are a bit low, forcing the placement of too much weight on the bars, with the possible result of oversteering at the wrong time.

Photos by Jack Campbell

It is always a pleasure to go testing with Pete Colman, Johnson Motors representative. After the motor had been in our hands for a full week and put through some 200 miles of city shenanigans, Colman, the photographer and I wheeled out to our newly found speed strip. Pete, as usual, insisted that no mercy be given the Thunderbird in order that it put out the absolute maximum in results. The low gear test will give you an idea of Colman's confidence in his product. In all due respect to fine machinery, the bikes are usually just brought to a boil in low, then quickly flicked into second. This meant 40 mph on the Triumph, but Pete would have none of it. "Let the blasted thing keep right on rattling," he insisted; so for your sake, dear reader, we now know they will top 45 in first cog. Please take our word for it!



New wrinkle in flexible fuel lines is plastic hose leading to Triumph's S.U. carburetor. Inside diameter of lines is larger, material transparent, permitting gas to be seen. If carburetor does not idle properly and cannot be adjusted out by large jet adjusting nut at bottom, chances are the jet needle on bottom of piston is touching jet and needs realigning so that it does not touch at any point (see CYCLE, May '52, pg. 16). Many bets were won on Triumph's starting ability

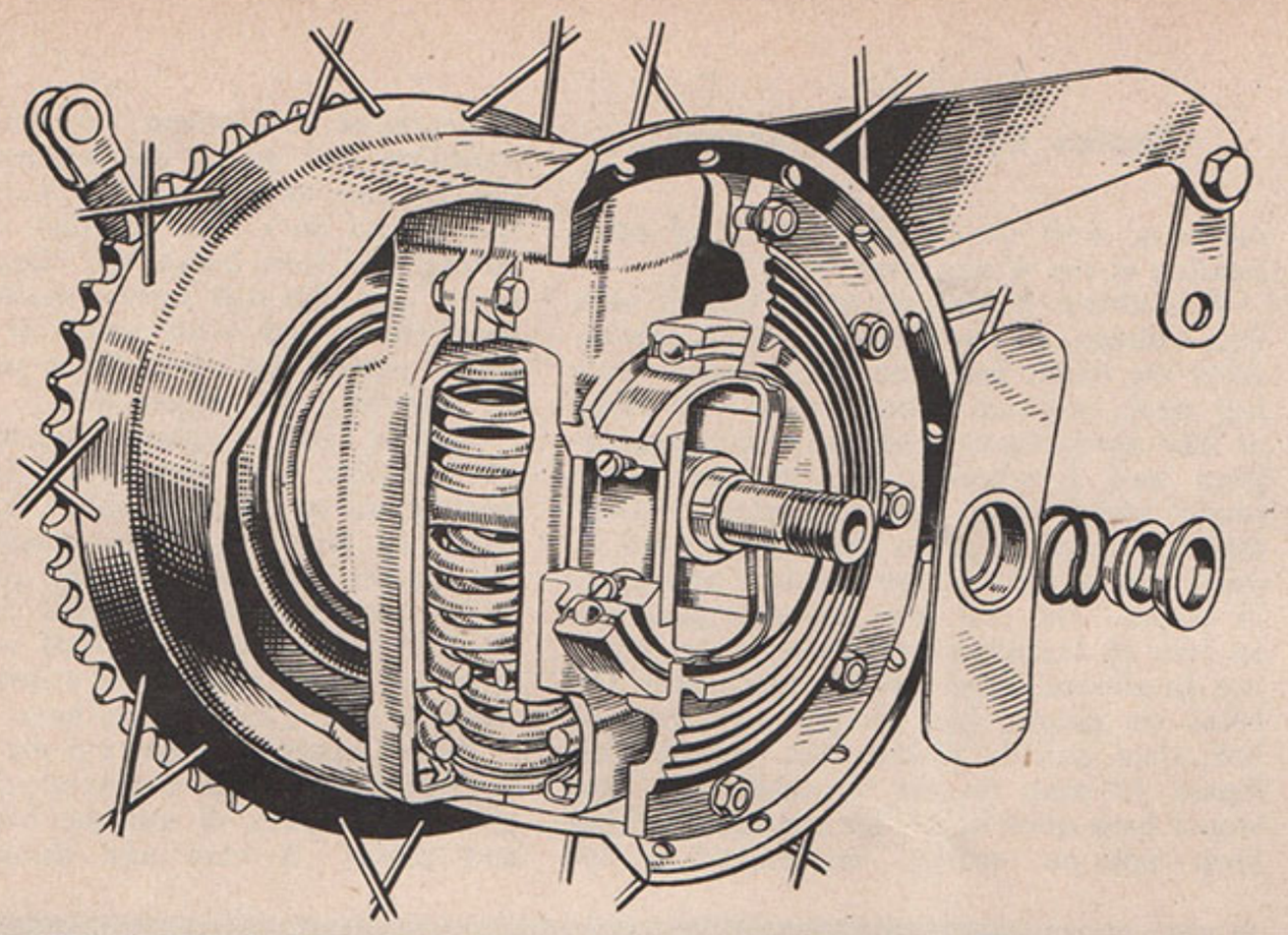
Again and again we cracked down on the Thunderbird through every gear, then just once more to make doubly sure she had given her all. Our efforts to put the finger on a definite surge that was felt in high gear were of no avail, but surge or no surge, who is to quarrel with a machine that turns a true 100 miles per hour? Reason may have been that the engine just hadn't freed up in its little over 500 miles total travel, or it may have been, as we were to later find out back at the shop, that both plugs were fitted barely more than finger tight. Another probability is that a 24-tooth engine sprocket is too high for maximum top speed results and the automatic carburetor was compensating for the extra load, thus the fluctuation as the mixture was changed. A 23-tooth engine sprocket is reported to give higher top speed with a stock Thunderbird. In any event, we wish our personal bike could surge at 100. This same finger-tight fitting was probably also responsible for the bolt that had fallen out of the right rear muffler clamp, but whatever the case, it is very seldom that any machine goes through the acceleration and gear test with all of its fixtures intact. At this point, the Triumph had withstood one of the most concentrated shakedowns we have yet given, including two spills, the keenest of which put an end to Pete Colman's 15-year, no-spill record on a road machine. It happened during the front-brake test. Despite everything, the bike still revved healthily on the same sharp note with which it began the earlier part of the week. There seemed to be no shattering this rugged mill.

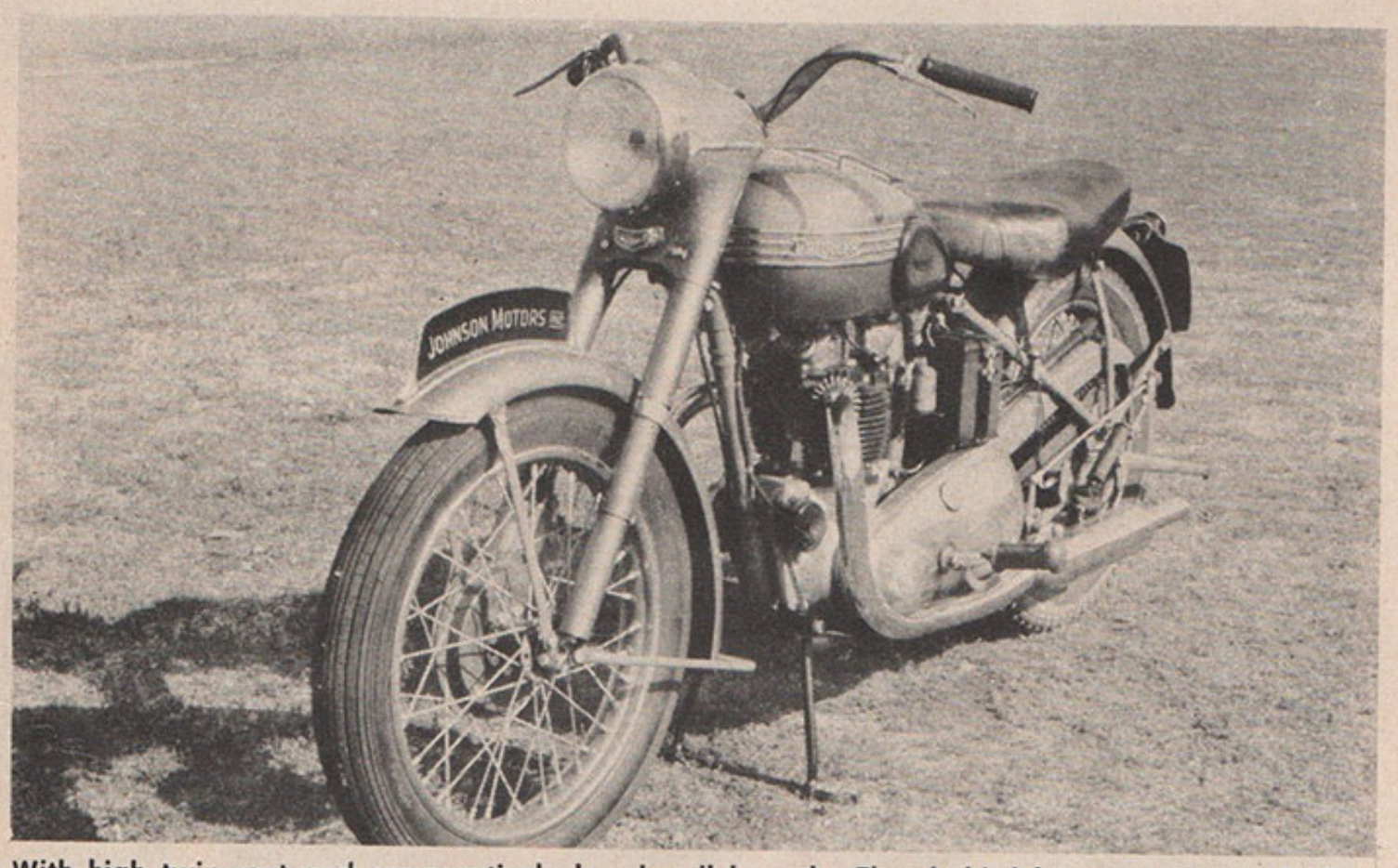
Back at "Jomo's" plugs were inspected for the first time. They showed no signs of overheating and at last were pulled down tightly. Once the foot pegs were straightened and the muffler bolt replaced, the photographer and I were off for the hills. If vibration wouldn't disintegrate the Bird we were determined to see what effect a little plain old mayhem in the hills would have.

Recent heavy rains had cut the countryside to ribbons, making a perfect devil's playground in which to test the bike's balance and power. A very odd thing happened here. After innumerable plunges off banks up to two feet high, the front brake locked. Fortunately, it was in soft sand at a very low speed that all forward motion stopped. The cause was one of the strangest things yet, but it could happen again and is therefore recorded here to save someone else grief in the future. The horn, which is mounted in the streamlined headlight nacelle, had broken loose and was bouncing free within its enclosure. In the meantime, the front-brake cable, which loops around very close to the horn bracket, had flipped over the now-open bracket the next time the forks had recoiled; and, as the forks returned to their normal position, the brake cable, hanging-up on the horn bracket, was pulled up tight. It just so happened that this accident occurred under unusual circumstances, but since horns of all types do have the habit of often parting company, take my advice and see that the horn on your Triumph is well battened down, and don't spare the lock washers. We would even go so far as to say to peen the heads of the retaining bolts over, if possible. Watch for the symptoms. If your horn starts blowing of its own accord, you'd better investigate, for chances are it's coming undone.

Back on the sunny side of the ledger, the Triumph transmission can be classed as good,

(*Continued on next page*)





With high twin seat and comparatively low handlebar, the Thunderbird has a top-heavy feeling that takes a little getting used to. Higher bars and lower seat make big difference in stability. Larger, size 400, tire is recommended on rear. Better lighting was found by substitution of a Mazda 1000 headlight bulb. If still unsatisfactory, convert to regular auto sealed beam unit

both in operation and in the selection of gear ratios. Although the gears themselves were a little noisier than average, most notably in third, shifts were made easily and positively. After becoming accustomed to this particular machine most changes could be made quietly, including engagement of low while at a standstill. Safety-wise, the model showed good stopping characteristics combined with terrific acceleration for pulling out of a chance tight spot. It is a consolation to know, too, that someone has at last perfected a motorcycle horn that doesn't fade out at speed. The Triumph clarion was loud and sharp, easily heard and respected at any speed. Although the test machine was equipped with four stands, one on each wheel, one center stand and one of Johnson Motors' own ride-off stands, all were tucked well up out of the way as will be noticed by the very short turning circle of 12 feet, 4 inches. This may be surprising for some since the Thunderbird would seem to have a narrow turning radius, but it was actually ridden within this circle.

Aside from the conventional kick-stand, the aforementioned ride-off stand is the best yet. It hinges at the base of the front down-tube permitting the motor to be racked up with the rider still seated. With this novel design the rear wheel stays on the ground. Starts can be made easily and quickly by merely engaging low gear, then riding off the stand which automatically springs back to its up position.

As is often the case, lighting was hardly up to par although better than on some bikes. The Triumph's headlight can easily be replaced to good advantage with an American sealed-beam unit. The novelty this year is the fitting of the parking light separately beneath the headlight. While the tank parcel grid has been retained, considerable change is made in the gas tank itself, actually for the better, despite appearances. The tank is now much stronger since the bottoms are no longer welded-in separately, but are all one piece with the sides and top. The only visible weld line is down the top center of the tank, making for more dependable construction. You may recall that a couple of the

(*Continued on page 23*)

GENERAL SPECIFICATIONS

ENGINE. Vertical twin cylinder with two gear-driven camshafts. Bore 71 mm. Stroke 82 mm. Capacity 649 cc. Overhead valves. Totally enclosed and positively lubricated valve gear. High tensile aluminum crankcase of immense rigidity. "H" section highly finished connecting rods in RR56 Hiduminium alloy with patented plain big-ends. Crankshaft mounted on massive ball and roller bearings with central flywheel. Dry sump lubrication with extra capacity plunger-type pumps giving positive feed to big-ends and valve gear. Pressure indicator on timing cover. Auto-advance BTH magneto and separate generator, gear driven. SU automotive type automatically expanding choke-type carburetor with patented air-cleaner and Triumph quick-action twist grip.

TRANSMISSION. Primary chain in polished cast aluminum oil-bath case. Rear chain positively lubricated and protected on both runs.

FOUR-SPEED GEAR BOX. Triumph design of greatly increased strength. Four speeds with large diameter shafts and gears of hardened nickel and nickel-chrome steel. Special dogs for easy changing. Positive stop foot change fully enclosed. Integral speedometer drive. Large diameter five-plate clutch.

GEAR RATIOS. Top, 4.57; 3rd, 5.45; 2nd, 7.75; 1st, 11.20.

DRIVE. Front chain, ½ in. x .305 in.; rear, ⅝ in. x ⅜ in.

GAS TANK. All-steel welded of two main sections with center connecting saddle over frame. Quick-opening plated filler cap.

OIL TANK. All-steel welded design with accessible filters, drain plug and separate vent. Quick detachable filler cap.

FRAME. Brazed full cradle type with large diameter tapered front down-tube and incorporating lugs for sidecar. Large eye in rear main down-tube for air cleaner connection to carburetor.

FRONT FORKS. Triumph telescopic pattern with six inches of hydraulically damped movement.

BRAKES. Triumph design cast iron brake drum eliminates fading. Finest quality linings, finger adjustment back and front. Polished front brake anchor plate.

HANDLEBAR. Western style for American sales. Quick-action twist grip with finger adjustment friction control. Integral horn button. Adjustable, plated clutch and brake levers.

FENDERS. Wide "D" section with streamline brackets. Completely detachable rear guard for rear wheel accessibility. Patented front number plate. Rear number plate with centrally mounted stop and tail light and lifting handle.

WHEELS AND TIRES. Triumph design wheels with heavy-duty dull nickel plated spokes. Dunlop tires, with a ribbed 3.25x19 front and a studded 3.50x19 Universal on the rear.

TOOL BOX. All-steel, large capacity, with quick-release fastener. Complete set good quality tools and grease gun.

NACELLE. Unique Triumph design instrument panel. All instruments rubber mounted, illuminated and readily accessible. Headlight diameter increased to 7 in. to accommodate standard American sealed beam unit.

EQUIPMENT. Lucas 6-volt, 60-watt generator with full ball-bearing armature. Powerful built-in headlamp with adjustable chromium rim. Electric horn. Adjustable de luxe solo saddle or twin seat optional. Smith's 120 mph chronometric speedometer with Triumph patented rpm scale, and internal illumination. Tire pump.

AIR CLEANER. Triumph design patented Vokes air cleaner, mounted beside battery.

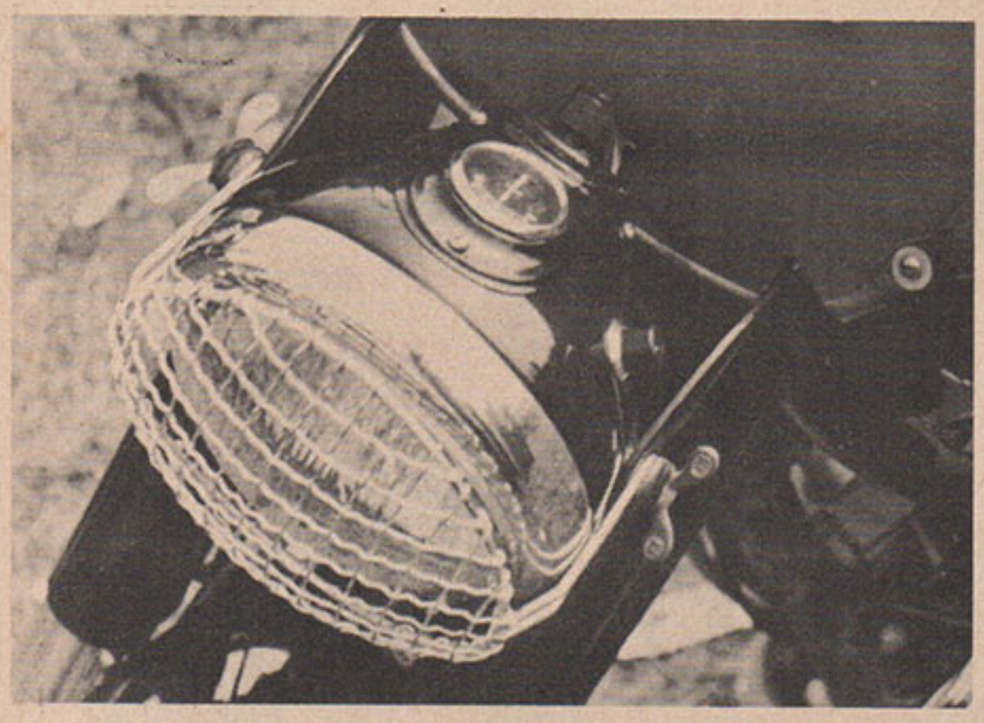
FINISH. Frame, forks, tanks and fenders in metallic Thunder-Blue. Chrome wheels with blue centers, gold lining. All bolts and nuts cadmium plated. Highest quality materials and finish throughout.

WEIGHT, dry	370 lbs.
OVERALL LENGTH	84 in.
OVERALL WIDTH	33 in.
WHEELBASE	55 in.
GROUND CLEARANCE	6 in.
SADDLE HEIGHT	31¼ in.

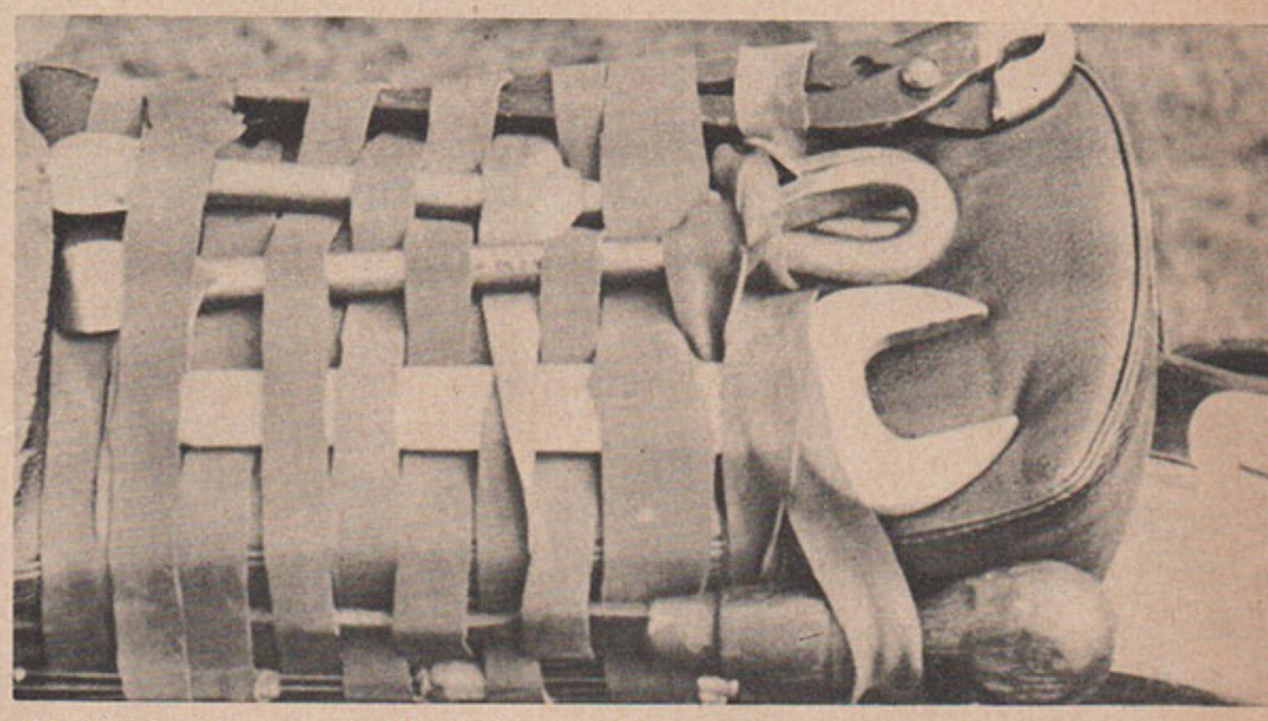
WHAT PRICE PRECAUTION?

each of these tricks has turned failure into success for the best riders. many such ideas can be adapted by the tourist as well

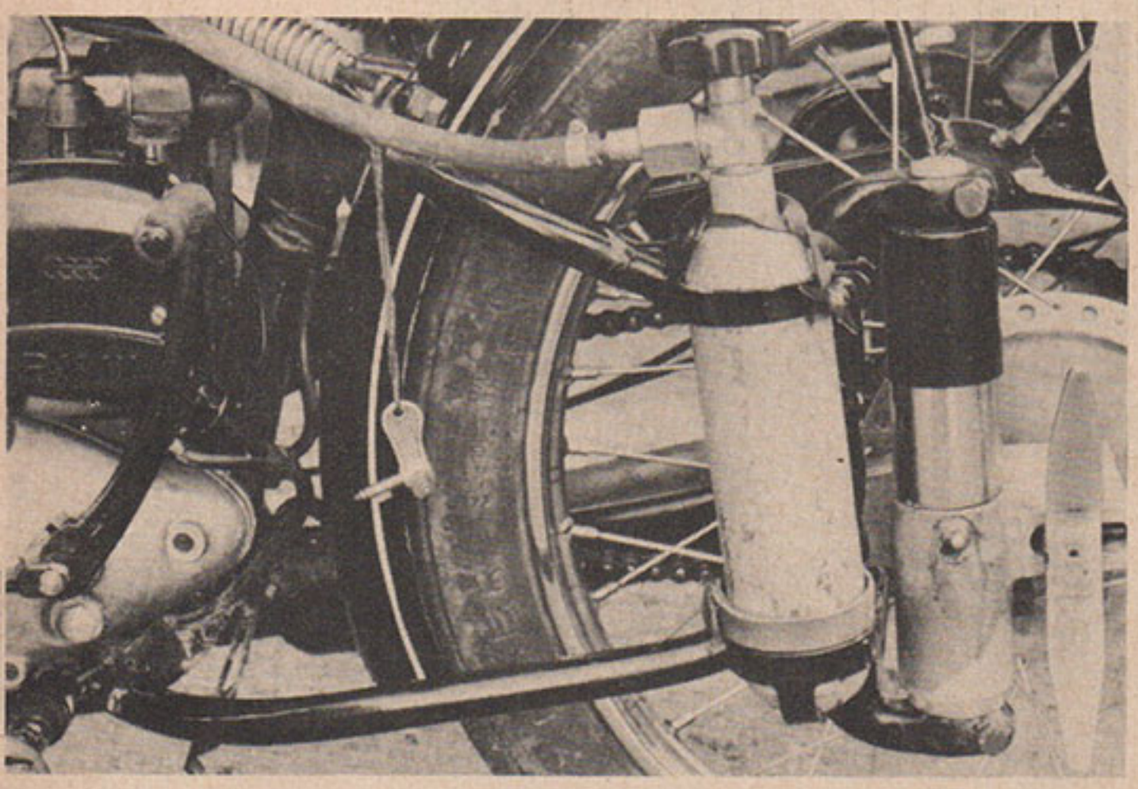
Photos by Kurt Wörner



Where night riding is required in an endurance run, the loss of a headlight can cost the race or even bring disaster. This wire protective grid not only protects the lens and bulb in case of a crash, but also fends off stones thrown by wheel of man ahead

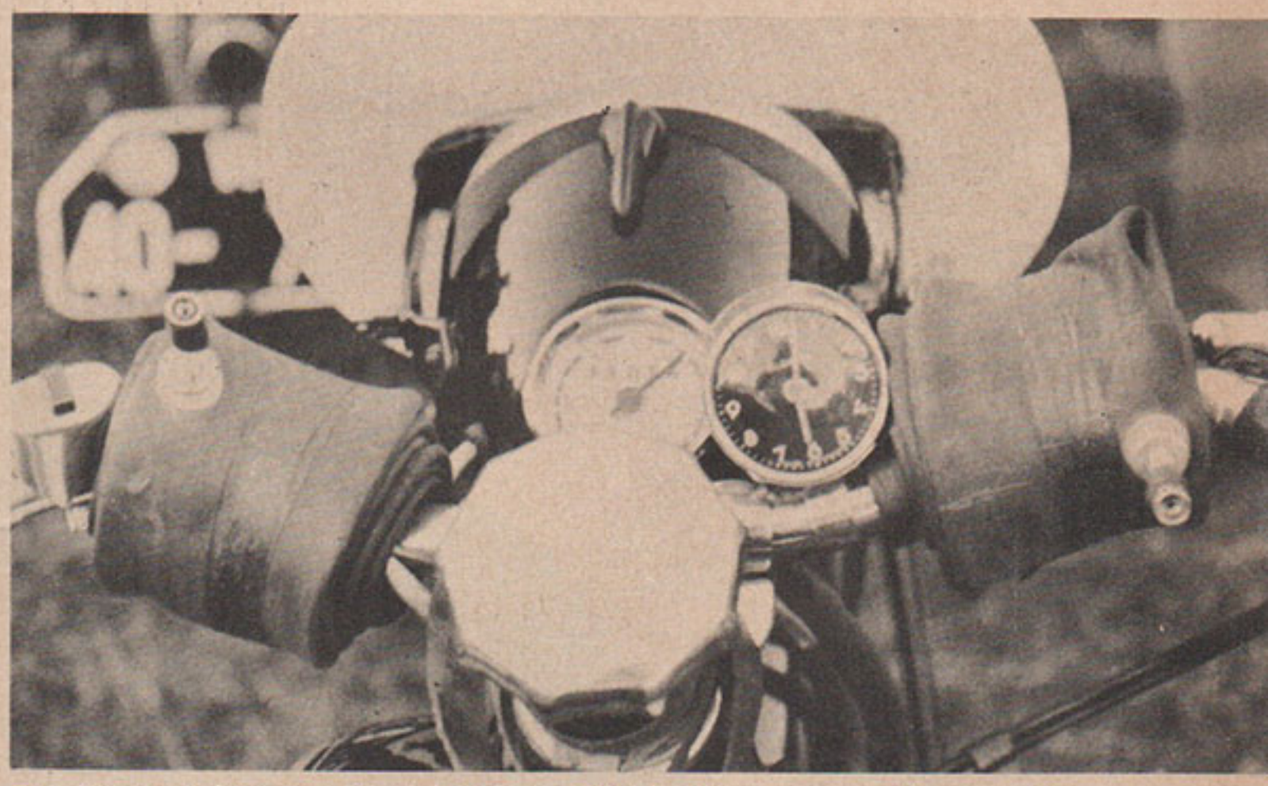


This Dutch rider mounts the tools most likely to be used on his racing pillow with pieces of innertube. Precious seconds lost fumbling through the tool box in an emergency are thereby eliminated. The tools are interlaced in such a way that no amount of vibration will loosen them



In cross country riding the possibility of a flat can never be discounted. The most rapid and easiest means of inflation is by a compressed air bottle mounted to a frame section. Rear wheel nuts have been lengthened so they can be removed without tools

To prevent the collapse of a front wheel spring this Norton Dominator has been fortified with longer coil springs within the fork tube. In Europe the Moto Cross events compare with the American TT race, while our Hare and Hound chase is practically unheard of



Two spare tubes are immediately available if necessary. By mounting these spares on the handlebars with rubber bands or tape they are safe from injury. To carry them in a tool box or saddle bag would invite trouble. Punctured tubes are never patched because of time involved

Europeans drive on the right just as we do here in America, but not so in the case of the Englishman. Being accustomed to holding to the left side of the road, even seasoned riders attach warning signs to remind themselves of the change when competing in continental road races

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designed to outperform, outride, outlook, outvalue ... any motorcycle in its class!

Here's the latest addition to the world-famous family of Harley-Davidson Motorcycles — the sparkling, *all-new* Model K. It's the motorcycle you've dreamed about — has everything you've always wanted! You'll get the thrill of your life when you swing into the saddle of this thoroughbred. Its surging power will dazzle you. Its comfort will amaze you. Its handling ease will astound you. You'll want to ride, ride, ride — and in competition you'll lead the pack. Come see this mighty new Harley-Davidson Model K at your dealer, and be prepared to enjoy a new sensation in motorcycling. Bring your buddy along.

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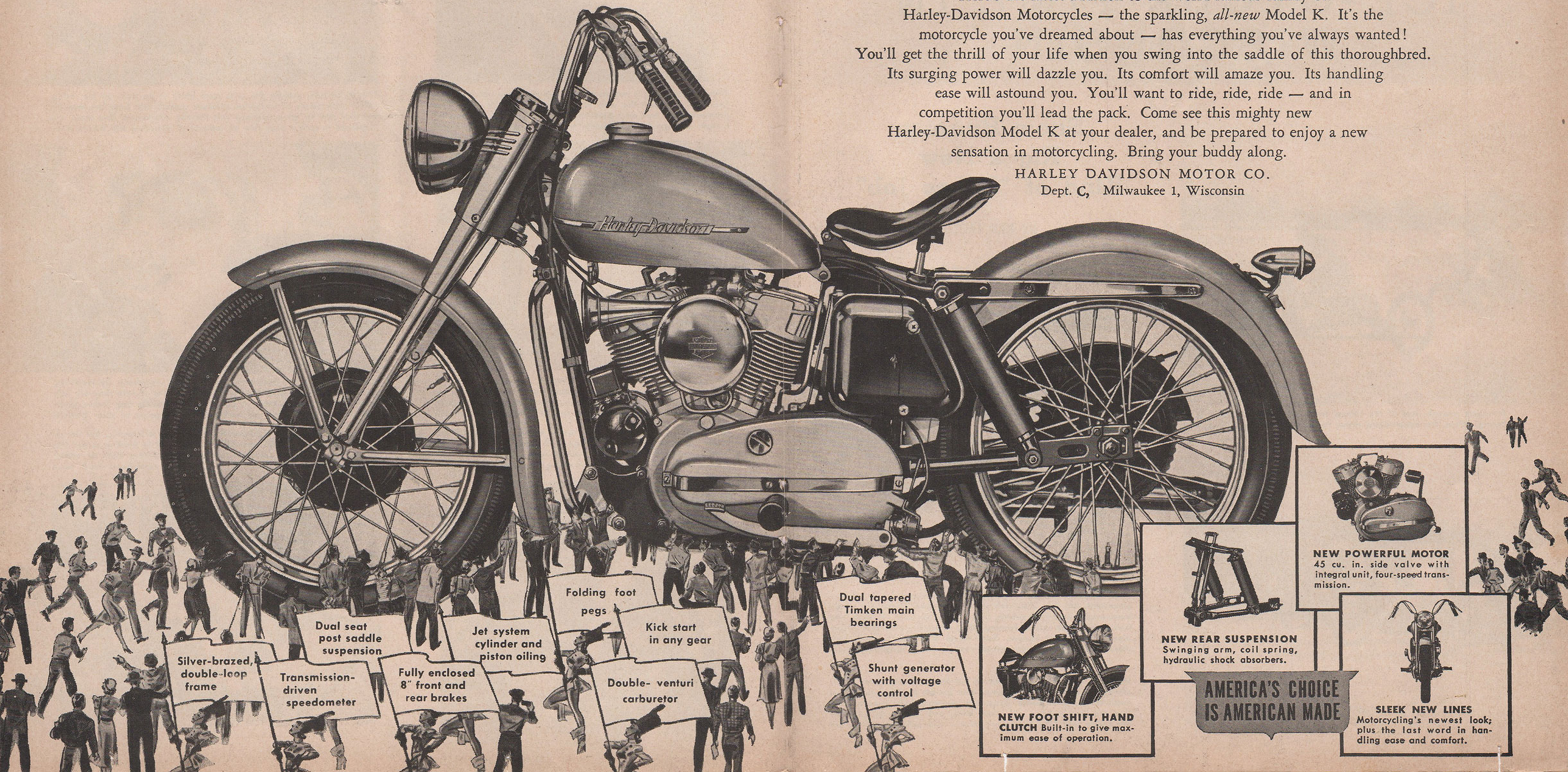
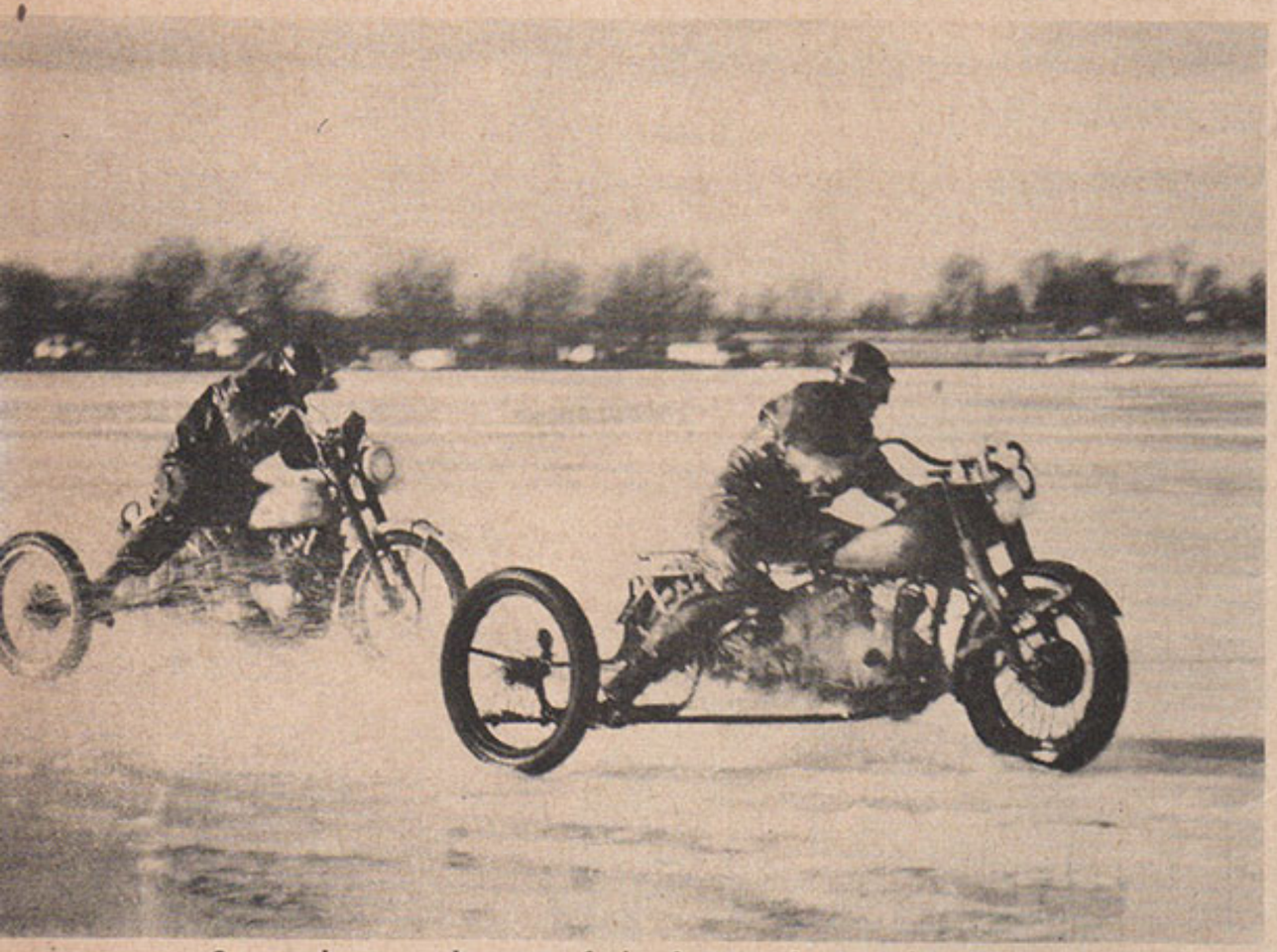


ICE-CYCLE TIME IN WISCONSIN

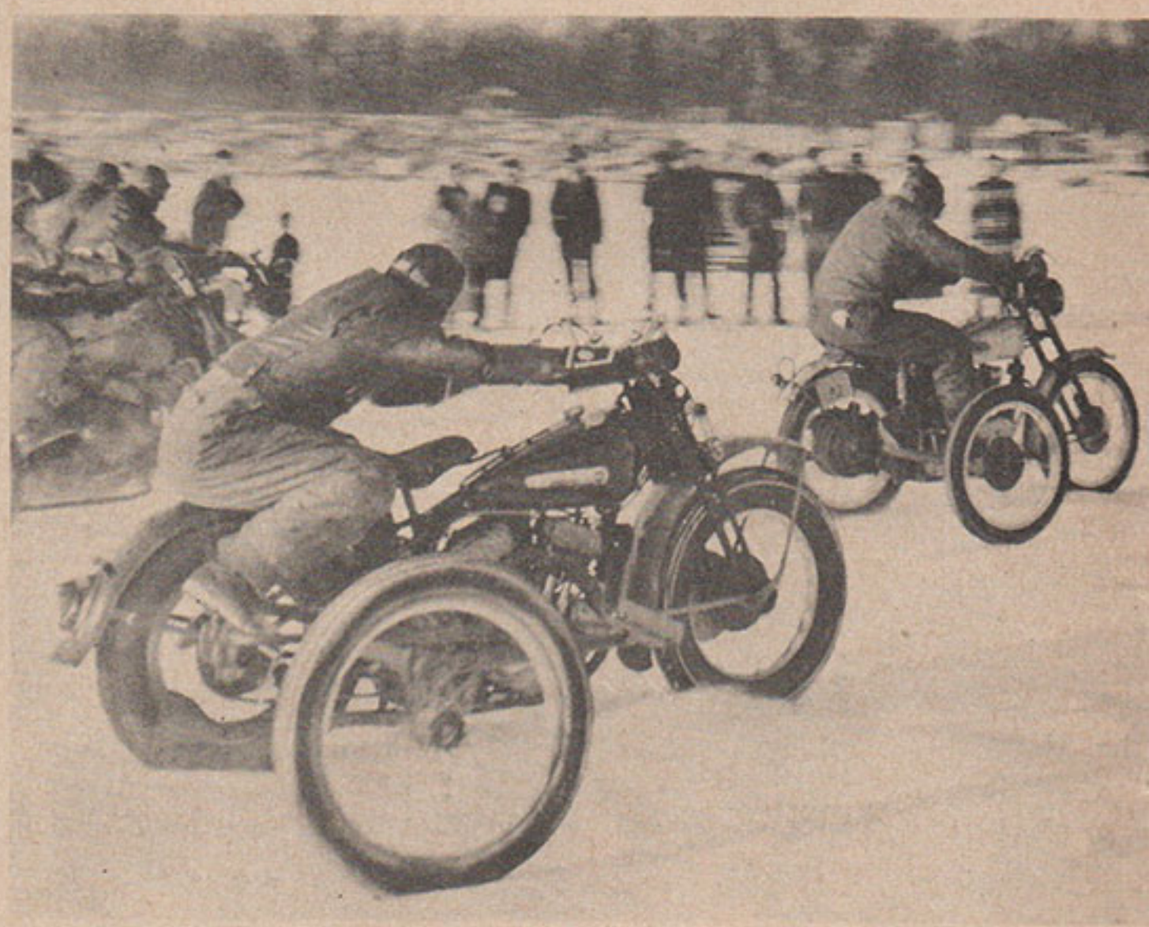


Strangely enough, one of the hottest forms of motorcycle sport is ice racing. When the temperature drops to 30 degrees, competition boils

Snow Bunnies Rig a New Kind of "Lakes Job"

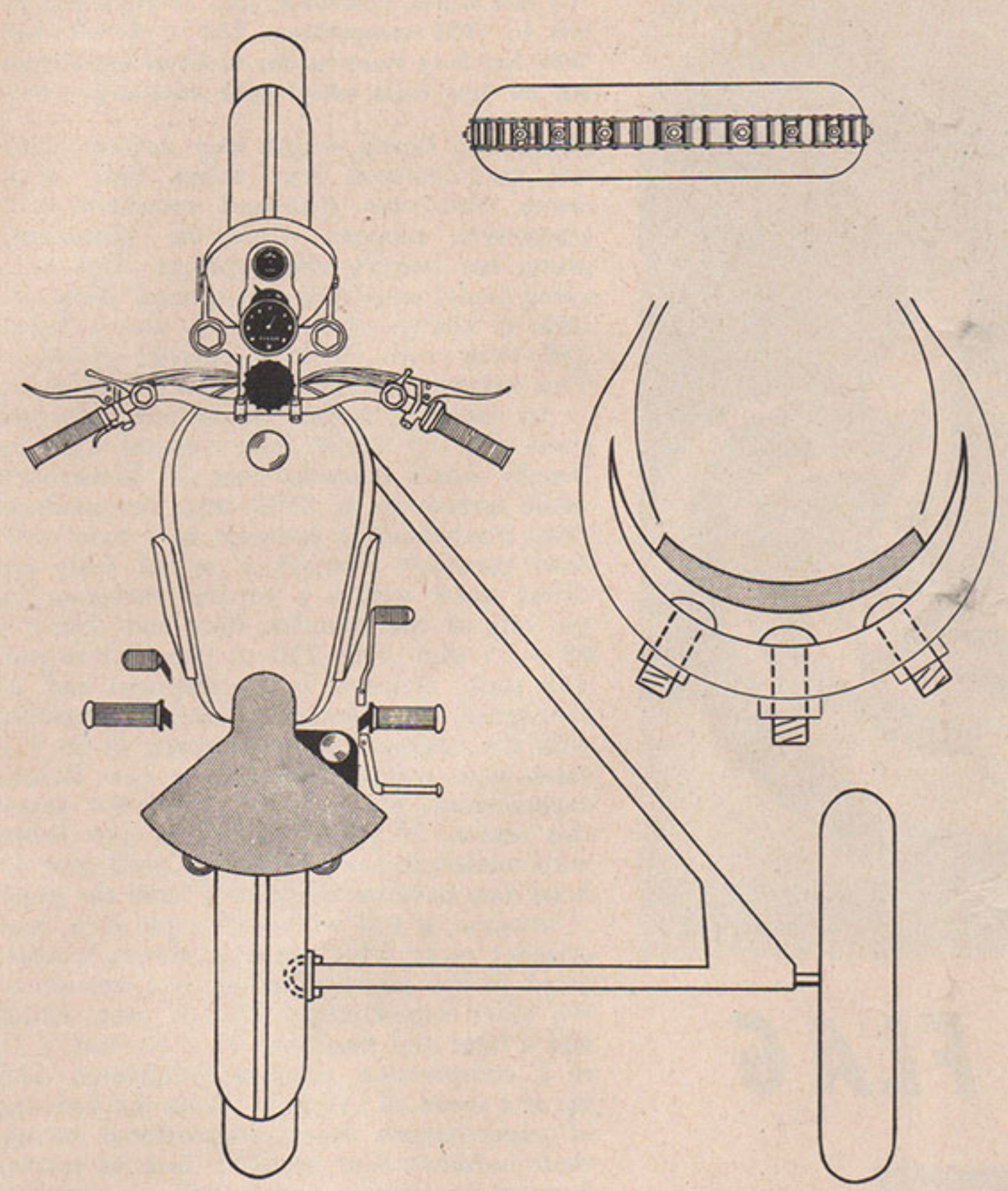
BY KEN JACOBI

Photos by Fred Krema and Ken Jacobi

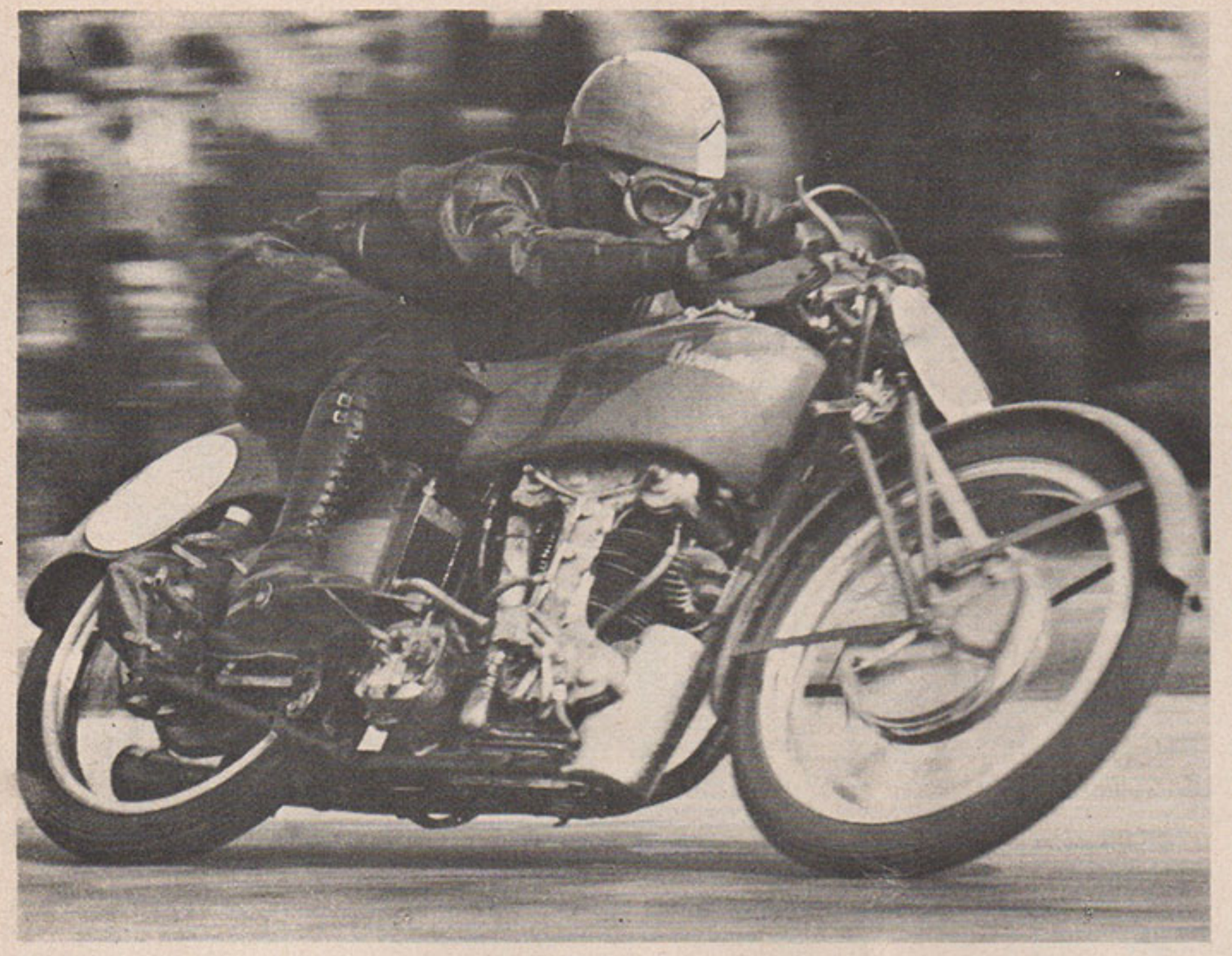


Stock machines are run in 6, 8, and 10 lap events according to displacement. Any bike is suitable since three-wheel frames are mostly home-made, usually requiring only a day to build. Harleys and Indians use stock sidecar frames, while others are constructed from pipe, U bolts, and flanges. Third wheel is weighted down with about 40 lbs. of flywheels, cylinder heads, etc., is surprisingly rigid

Standard cycle tires are run on all but the third wheel; no recaps allowed. Another form of competition known as "stud racing" is much faster, often more dangerous; extreme high speeds. Rear tires are then studded with stove bolts, with a liner between the tire casing and tube to prevent friction and consequent blow-out



ABOVE, Elmer Brown sends up a spray negotiating a full-throttle, left turn on his Triumph Trophy model. In faster stud racing, front tires are grooved down the center to accommodate regular motorcycle chain that is secured with bolts staggered every 4 or 5 inches, assuring good steering stability. This is illustrated at left along with cross section of rear-tire studding procedure which requires that large bolts be cut through the casing, then drawn up tight with a nut on the outside. Shaded area inside tire represents protective liner to keep tube and bolt heads apart. Sketch of motorcycle shows proper linking of third wheel to frame by two pieces of tube



The late Dario Ambrosini, one of eight Italians lost in 1951 competition. 250 cc Benelli twin OHC has long front fender to direct the disturbing air flow from wheel back instead of ahead

AWAITING the FLAG

are Italy's newest developments in the 250 and 350 cc class

BY GIOVANNI LURASCHI

A RECENT FLARE OF INTEREST in 21 cubic inch class road racing in America gives rise to speculation on the future of this class in another country which has no national races for motorcycles of this size. Only international races, such as the last championship held at Monza, embrace the 21s in Italian road racing. National Italian works, such as Gilera, Guzzi and Benelli, do not produce commercially in this class and therefore have little interest in 350 cc competition.

Nevertheless, during last season some attempts were made by Guzzi and Parilla. The first used an enlarged 250 cc single cylinder and an experimental smaller version of the 500 cc twin, the latter rode a blown-up 250 cc single, double overhead cam job. Their racing tours, always spotty and outside of the country, made little impression against the British works machines.

The 350 cc Guzzi V twin is a 120-degree engine; a bore and stroke of 57 x 68 mm with a general appearance similar to the bigger 500 cc machine. Their 350 single lies horizontally, has a bore and stroke of 78 x 73 mm, 348.8 cc capacity, double overhead cam, 30 hp at 7000 rpm and weighs 230 pounds. Its speed is estimated at 110 mph.

This engine has four valve springs per valve arranged in a square, and a five-speed gear box. The extra gear can be quite useful in certain races such as the English TT. The Parilla 350 single bore and stroke is 72 x 84 mm, giving a 342 cc capacity with an 8 to 1 compression ratio and 30 hp at 8400 revs. Its twin overhead camshafts are operated by pinion gears with a vertical drive shaft and bevel gears. The valves are operated by cams through flat top tappets and the valve springs are exposed. Ignition is by magneto as in the Guzzi racers. This machine has a foot-operated, four-speed gear box, tubular frame, telescopic front forks, and rear swinging-arm suspension with telescopic dampers, and additional friction dampers. Weighing in at 374 pounds, it has a claimed speed of over 116 mph. This same bike won a German championship with Roland Schnell in 1950.

Guzzi, Parilla and Benelli have shone brightly in the 250 class of past seasons. It now appears that Innocenti, Rumi and perhaps the Gilera twins will also establish themselves in this group. Guzzi's official contender is the Gambalunghino (Little Long Leg), a version of their smaller Gambalunga (Long Leg) 500. The Gambalunghino's urge is supplied by a single horizontal 247 cc cylinder of single overhead cam. Bore and stroke are 63 x 68 with two springs per valve. This 15 cubic inch boomer draws 27 hp at 7500 rpm on 8.7 to 1 compression, and moves along at a clip of 109 mph. General appearance of the Guzzi Gambalunghino is somewhat the same as the larger Gambalunga with tubular frame, interior swinging link front fork, and swinging-arm rear suspension with friction shocks. An experimental Guzzi single seen darting about last year featured four valves, two carburetors, and twin overhead camshafts with piston-type tappets, while the Gambalunghino has hairpin valve springs. This four-valve model employed coil springs. Although little is known of it, there is also a Guzzi 250 twin with inclined parallel cylinders. This mystery machine has never been raced.

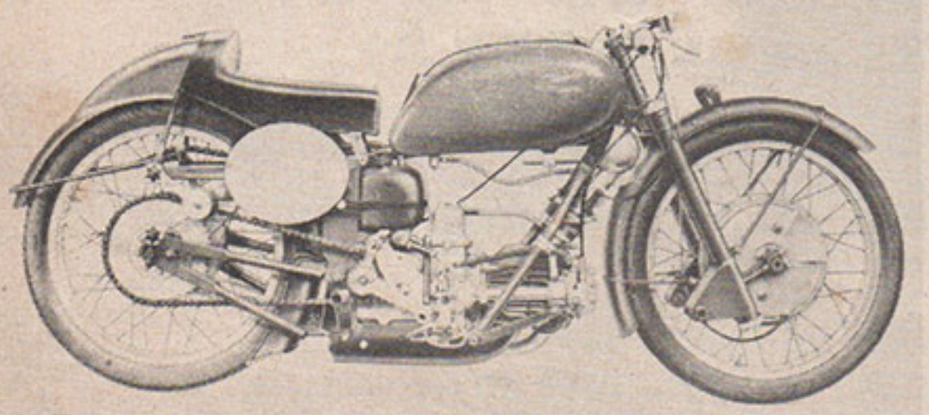
An amazing power delivery is obtained from the 15 cubic inch vertical cylinder Benelli which achieves over 27 horsepower while screaming at 8500 revs. Its overhead valve mechanism is operated by a twin overhead camshaft through a set of fully enclosed gears within a vertical enclosure up the side of the cylinder. Bore and stroke is 65 x 75 mm. This 250 cc Benelli hits near 112 mph. Ignition is by magneto and its four-speed gear box is in unit construction with the engine. No doubt many of its features were incorporated in the new Benelli experimental job which is posed for attack this season. This one features a new frame with telescopic front forks, but until now official data have been withheld from the press.

Imagine, if you will, a 15 cubic inch, four cylinder racer. This machine, although never raced in the postwar period, is a version of the elder supercharged 250 cc four, which had a bore and stroke of 42 x 45 mm, a 12 to 1 compression ratio, and delivered 62.5 hp at a speed of 146 mph. With the banning of superchargers from international racing, their unblown four seems to lack its former forward propulsion and Benelli has returned to their single.

The third combatant is Parilla whose path was strewn with misfortune last season, but who now seems to have prepared for a fresh attack. The powerplant of the Parilla model is a vertical single; 66 x 72 bore and stroke, 247 cc capacity, 8 to 1 compression ratio, 24 hp at 8500 rpm, and a speed of 103 mph. Its other features are similar to their 350 cc model previously mentioned in CYCLE.

One of the newest and most formidable contenders will be the superlatively beautiful Innocenti twin, the details and cutaway drawing of which appeared in CYCLE, Sept. '51. The details of this, as well as the Rumi and Gilera 250s, have been guarded from the public to date with strictest secrecy.

From appearances, it would seem that the Italians have good reason to be jealous of their factories' top secrets.



Guzzi's 250 cc Gambalunghino (little long leg) will vie with Benelli for class supremacy. Rear swinging arm suspension is sturdy double bar

250 and 350 cc Parilla. The 350 model will race again this season, chiefly in Germany, but little is known of the experimental 350 cc Guzzi racers

THUNDERBIRD ROAD TEST

(*Continued from page 16*)

boys had their seams split out at Daytona last year, thus the change.

Color is the same as last year, metallic blue with a fine gold stripe. It could be a little smoother. Frame and handlebars are painted this same hue, matching tanks and fenders. Most metal work is bright and highly polished, making a very attractive appearance. Without gloves, black palms are assured with the Triumph rubber handlebar grips. Amal grips are more advisable since they are less inclined to shed their color.

If you're contemplating a new machine this summer, the Thunderbird is a lot of bike for the money, $837.68* plus tax and license at Los Angeles. It is most suitable for solo or sidecar work. Incidentally, Johnson Motors is now distributor for the German Steib sidecar as well as the British Swallow Jet 80 and they are both beauties. Back to the Bird—it's fine for competition or cross-country trips and proves to be about as rugged as they come. Equipped with the SU carburetor, it is the easiest starting machine and therefore very suitable for the girls.

**Rigid frame model without spring hub sells for $773.49 plus tax and license.*

PERFORMANCE SUMMARY

Maximum in low	45 mph
Maximum in second	71 mph
Maximum in third	90 mph
Maximum in high	100 mph

Braking

From 25 to stopped, rear brake only	34′2″
From 25 to stopped, front brake only	24′6″
From 25 to stopped, both brakes	14′

Acceleration

1/10 mile drag (8.5 sec.)	42.3 mph avg.
1/4 mile drag (15 sec.)	60 mph avg.

Slow Running

High gear without snatch	17 mph

Turning Circle

Minimum Diameter	12′4″

Mileage

Town	41 mpg

CROSSED UP

(*Continued from page 9*)

minutes) with a basic reference accuracy of a millionth of a second (1 microsecond). This basic accuracy is impaired slightly by errors inherent in photoelectric vehicle detectors. The price of this gadget is $2,000. "Stand by the calendar, Jeeves, I want to check my jets."

Incidentally, speaking of microseconds, did you know that a "Jiffy" is the time it takes light to travel one centimeter, which is 33 thousandths of a microsecond.

MOTORAMA EXPOSITION

FOR THE THIRD straight year, the motorcycle section of the annual international Motorama exposition will be held in Los Angeles next November.

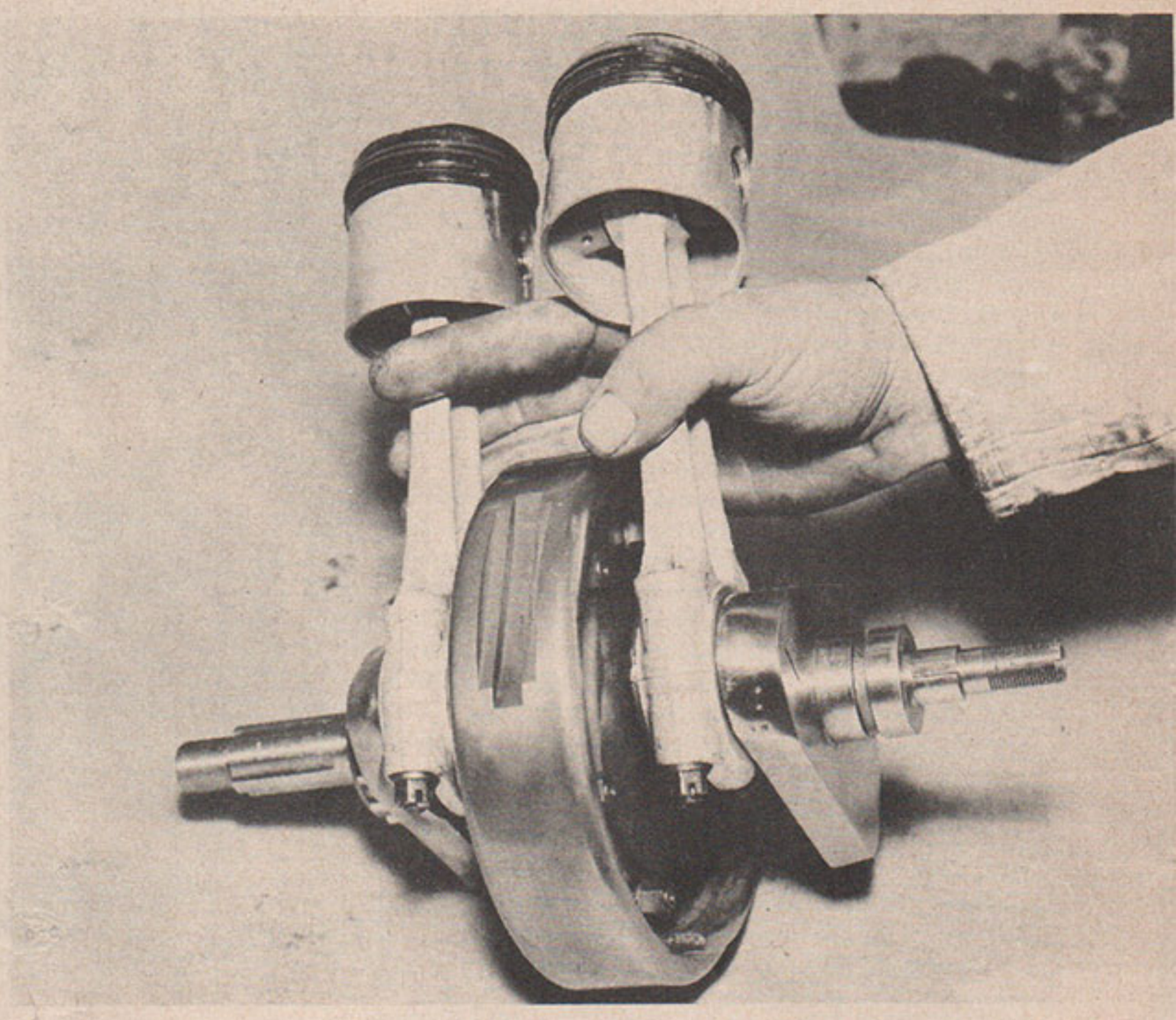
Show dates have been set for November 7 through November 16. Decision to double the running time of Motorama was reached by the management because of the overflow crowds which jammed the 1951 five-day showing.

Commercial exhibitors already have applied for additional space for 1952, indicating that the motorcycle section will be far larger and more colorful than ever before.

Additional details on the exposition will be carried in the July issue of CYCLE which officially endorses the show.

FORTY CUBES ARE DYNAMITE IF PROPER ATTENTION IS GIVEN THOSE IMPORTANT SMALL DETAILS

Grasp con rod firmly and exert up and down pressure. Side play is all right, but cases should be split if there is up and down play



Polishing flywheel and weights has little effect on performance but does help prevent fatigue checks. There aren't any limits when you've got the itch

MORE DASH FOR YOUR FLASH

BY RUSS KELLY

Photos by Pat Corner

THE GOLDEN FLASH was built in answer to the enthusiasts' demand for a road machine of sufficient inches and torque to be suitable for sidecar work, and one which could maintain high average speeds for long distances. Road tests, sales, and buyers' praise convinced the factory that they had given the proper answer, but the American enthusiast, as usual, still clamors for more . . . if something is good he wants it better. Some satisfy the urge with paint, polish and chrome, some with lights, saddle bags and shields, but the rider with the worst itch of all is the one who wants extra performance. He doesn't want a racing machine, they're impractical and finicky, and usually outside his financial reach. Sometimes he manages to buy that "little extra" in a shop but it's expensive. Most of us don't have the money to lay out for shop work, so it's either hang draft and suffer when another machine goes by, or try to do something about it ourselves. So if you own a Golden Flash and would enjoy searching for that "little extra," let's take a look at what can be done by spending a lot of time instead of a lot of money.

Dismantling is straightforward. First remove the gas tank. Then detach the leads from the spark plugs and remove the stays from the rocker box. Only the rocker box end need be disconnected. Loosen the nut on the frame end and the stays can be pushed out of the way. Take off the carburetor; the slide can be pulled out and slide and cables can be turned back over the handlebars out of the way. Remove exhaust pipes as a unit by taking off the nut at the silencer and the nut at the front frame stud. Remove the overhead oil supply pipe banjoes and rocker box covers. Front stud for the rear cover has to come out before the rocker box can be removed. There are flats machined on the stud which make removal easy. Take out the five bolts, including the one inside the box, and four nuts under the rocker box and lift off. Lift out the push rods. There are nine bolts holding the cylinder head. If, after removal of the bolts, the head tends to stick, a few light taps with a wooden mallet under the exhaust ports will loosen it.

To take off the cylinder block rotate the engine until the pistons are at the top of their stroke. Remove nine cylinder base nuts and carefully lift the block off until it is possible to insert a clean rag into the crank case mouths. After this has been done, lift the block clear of pistons. The engine may have to be rotated further in order to lift off the block because of top tube interference. The rag prevents any possibility of a broken ring falling into crank cases when pistons are free. If, by any chance, pieces of broken rings have fallen into the crank cases, don't figure you can turn things upside down and shake them out—the crank cases must be split to make certain, so use the rag and be safe.

To remove pistons take out a circlip on one side of the wrist pin by using a pointed instrument such as a small screwdriver or an ice pick in the slot provided for this purpose. A cloth soaked in hot water, wrung out and wrapped around the piston, will aid in the removal of the wrist pin, which is taken out by supporting the piston on the side from which the circlip has been removed and tapping out the wrist pin from the opposite side using a light hammer and punch of suitable diameter.

Care must be taken not to strain the connecting rod. The pistons must be marked upon removal, marking the front of each piston and, individually, timing and drive sides so they may be replaced in the proper bore. (These marks are usually scratched inside of each piston with an ice pick.) Pistons are very delicate for reasons explained later and if left outside the cylinder bores for any length of time must be wrapped in cloths and safely put away.

Using the valve removal tool included in your CYCLE workshop (January, 1952 issue) remove the valves. It may be necessary to tap the collett (after tightening the tool) with a piece of bronze to break the keepers loose. Either label the valves, using timing and drive side designations, or make a rack for them keeping colletts and keepers with respective valves.

Remove the rockers from the rocker boxes. Take the acorn nuts off the rocker spindles and tap the spindles out, using a soft punch to avoid damaging the threads. Check carefully the positions of the various washers as they must be replaced in the correct order. The cylinder barrel and head, after the valves have been removed, should be "cooked" to remove all carbon and paint. Almost any shop has facilities for "cooking" heads and barrels and the charge is negligible. All other parts such as rockers, valves, spindles, pistons, etc. should be washed in Benzole or other cleaning solvent.

Disassembling may seem unrewarding work, but close observation during dismantling will help to familiarize you with the characteristics of the engine.

To state here that you should polish this, scrape that, and be very careful of the measurements of the other gismo, would be useless unless some mention were made of the theory behind these things. Basically we'll try to achieve three aims: 1—to increase the volumetric efficiency or breathing of the engine, 2—to increase the efficiency of combustion or burning of gases in the combustion chamber, 3—to minimize friction and power transmission losses. The first two are directly related and interlocking and may be achieved by easing the intake flow of gases by smoothing and polishing intake ports; reducing pumping losses caused by leaking valves and poorly fitted rings; taking full advantage of

the cam's action upon the valves by careful fitting and checking of tappets; by raising the compression ratio; by using an exhaust system with as little back pressure as possible, and by fitting a carburetor of larger choke to handle the increased fuel/air flow.

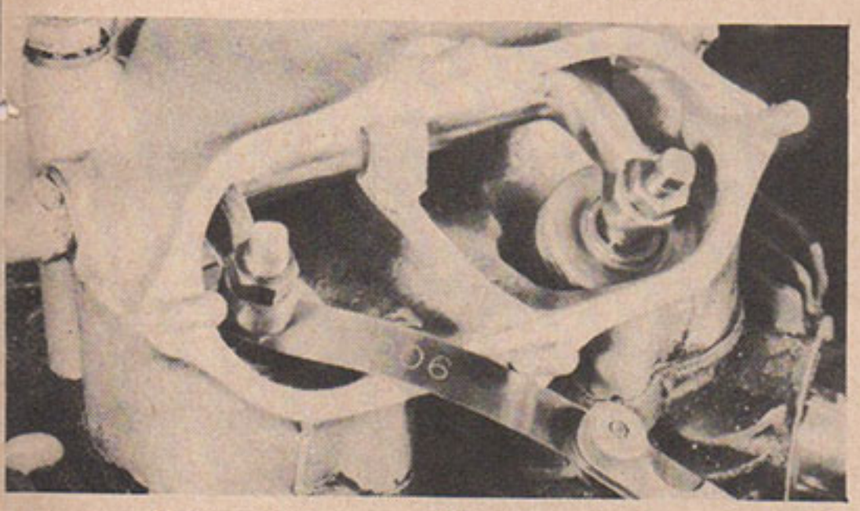
It will be noted that there has been no mention of enlarging ports or valves. If we were building a racing machine such work could conceivably be called for, but in a road machine it is neither practical nor necessary. The unplanned enlarging of ports and valves has been very much abused and is actually a hold-over from a practice begun just after the first world war. At that time design was far ahead of metallurgy and it was the practice of some manufacturers to deliberately throttle or restrict their engines to protect their products from a short, overstressed life.

Postwar engines, especially the new designs, come with valve size, action and overall engine balance that is almost the maximum in getting good road performance. The carburetor, in the interest of good gasoline economy, is usually small and can easily be changed to advantage. So, other than the carburetor replacement, all there is left for us to do, if we are to stay within the limits of good low speed torque, dependability and smoothness, is to hand-finish and carry out careful adjustments commercially impossible for the manufacturer to do.

Now to the engine. Crank cases should be examined first. We'll assume that all the basic alignments have been carried out in a satisfactory manner at the original assembly (these alignments can be checked, but it is a complicated process and is seldom necessary unless very high output is desired). Remove the cloth from the crank case mouths. Rotate the engine slowly by means of a connecting rod, holding the other con rod to keep it from banging against the crank case edges. Any misalignments or worn bearings will be evidenced by dragging, rubbing or noises. If you feel that something is wrong, consult a shop—it may save you trouble later. Connecting rods will have a little back and forth play on the crank pin, but in an oiled condition there should be no up and down clearance, which can be felt by alternately pushing and pulling on the connecting rod. If you are satisfied everything is okay, cover the crank cases again with a clean rag and leave until assembly begins.

The cylinder block should be considered next. It should be closely examined for any cracks or checks. It should be checked for taper and if tapered in excess of 3½ thousandths should be rebored. Grinding might be preferred to regular boring, but if the bores are ground, wash them out thoroughly with hot water and strong soap, as any grinding dust left in the pores of the metal will cause excess wear. If, however, the bores are all right, they should be oiled and covered and

(*Continued on next page*)



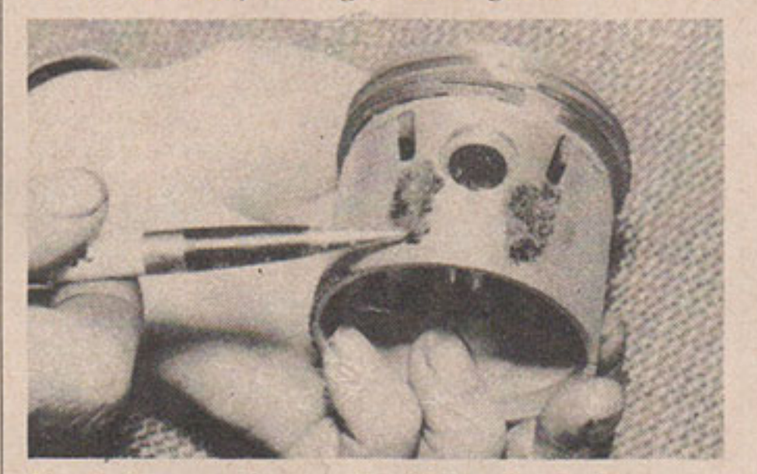
Many engines require top dead center with intake and exhaust valves closed for tappet setting; however, the grind of a BSA cam is such that the procedure illustrated must be followed. Each exhaust valve is set when the other is fully open. The same system must be used on the intake valves. Clearance for both is .010

Continued

the block put away in a safe place. It will be noted that the tappets are locked in the block with small set screws, and other than to make sure they are free from sticking, will need no attention.

Rockers should be polished but no attempt should be made to lighten them. It's extremely easy to take off too much metal and reliability is much more important than the few extra rpm that might be gained. The spindles should be inspected for chafing, and on reassembly make sure the spacers are properly located.

The head will need considerable work and this should be performed in definite steps. First, the guides should be knocked out with a suitable drift. Be careful not to damage them because, though new guides will be



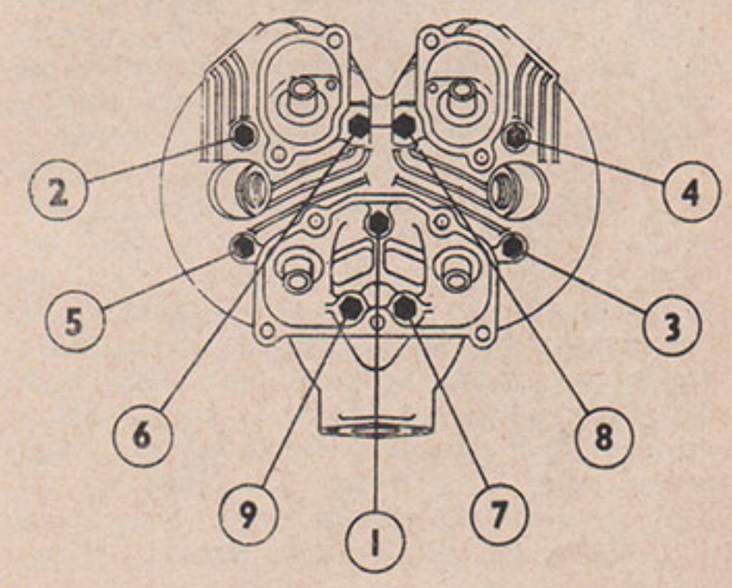
Shaded areas shown should be checked on run-in pistons for high spots that show abnormally heavy contact. These are easily detected as shiny areas on the dull gray of the normal contact bearing surface. They should be relieved with a nail file using a light circular motion. It isn't advisable to use emery paper and care should be taken not to remove too much metal

fitted, the old ones will be suitable for emergency spares. Next ⅛" should be machined off the manifold to make room for the larger carburetor that is to be fitted. Be sure in machining that the same degree of tilt or downdraft is retained.

Work on the ports should be carried out next. The grinding should consist only of the removal of the usual casting burrs and irregularities. Under no condition should the contours of the ports be altered, especially in the region under the valves. If a sand pit is found of sufficient depth to interfere with polishing it can be filled by a competent welder with an electric arc. No preheating would be necessary. Polishing ports has never been an easy job. The one-piece casting of head and manifold in this instance doesn't make the intake side any simpler. Some alterations will probably have to be made by you to your present polishing equipment. Proper mating of carburetor and manifold can be obtained by using a 1⅛" gasket as a template. Scribe the proper diameter from the template and grind out to the mark. Blend the different diameter obtained into the regular port diameter within a short distance. After polishing has been completed, having taken care not to damage the valve seats, the four valve guides (be sure that the drift used to install the guides is of the proper diameter with a square shoulder) should be driven up snugly. The interior of the combustion chamber may now be polished if so desired. This has very little effect on efficiency but does retard carbon deposit. If you do polish the combustion chamber, put in valves to protect the valve seats. Valve heads may be polished by chucking the stem up in a drill and holding emery paper lightly against the head. The underside of the head may also be polished, but do not attempt to polish the stem. The valves should now be refaced and the valve seats reground. Don't try to lap the valves in. If you regrind the seats in the head and reface the valves yourself, blue in each valve to make sure it is seated properly. If the work is done in a shop be sure the valves are blued in so they will not need lapping. Heavy lapping of valves is not too good a practice because, since this is done cold and does leave an indentation on the face of the valve at the point of heaviest contact, when the engine becomes hot the exact point on the seat and on the valve do not coincide and can actually give a poor seal.

After thorough washing, the head may be reassembled. Put plenty of oil in the guides and stems and a little oil around the seats of the valves. New springs should be fitted. Place head on a flat surface, preferably a block of wood, and place a piece of bronze against the end of each valve stem and tap it with a light hammer hard enough to bounce the valve on its seat. This will tend to seat the keepers and the valves. Next, using a brush, wash the cylinder bores with Benzole or cleaning solvent. To check the piston ring gap put each ring in the cylinder separately; push it down with a piston to make certain it is squarely in the bore. Gap on the compression rings should be between .011 and .012. If the gap is less than specified, the ends of the ring can be carefully filed to the correct clearances (a feeler gauge must be used). With the new pistons, if the cylinders have not been rebored, clearances will be sufficient. However, if there has been a rebore, follow the clearances recommended with the piston. Both head and block may now be painted with a good cylinder enamel.

When you buy your pistons check them immediately for any signs of damage or mishandling. If you have any doubts, ask for another piston. If this is done at time of purchase, there will be no hard feelings. The reason for all this care is that the piston is the largest bearing surface in your engine and consequently the largest source of friction loss, and for all the abuse it takes in the cylinder is very delicate and easily damaged outside. Used pistons, that you intend to use in reassembling the engine, should be examined on the bearing surface for shiny spots where rubbing has occurred. These spots should be very carefully relieved with a nail file. Wrist pins should be a tight push



Distortion with resulting hp loss and the possibility of serious damage is the bugaboo of vertical twins. The illustration is BSA factory recommendation for tightening the cylinder head bolts. Tighten them in the sequence numbered

fit in the pistons. If your engine has less than several thousand miles on it, the wrist pin bushings will probably not need renewing. If the machine has more mileage, renew them. Fit the rings in the piston, spacing the gaps evenly around the piston with the top ring gap away from the exhaust valve. Dip the wrist pins in oil. Fit the pins to the connecting rods using new circlips—warming the pistons beforehand will help.

Clean all of the old gasket from the crank cases and fit a new gasket using Permatex sparingly. Now lay two pieces of wood approximately ¾" by ¾", and long enough to span the cases crosswise, one in front and

one behind the rods so the pistons will rest on them in a vertical position. Put plenty of oil on the rings and pistons, then go for assistance.

Even with ring compressors it isn't an easy job to fit pistons and rings in the bores, and it's a good idea to have help and also to leave the rag in the cases until all the rings are safely in the bores. Tighten the nine base nuts evenly. Fit a new cylinder head gasket. Fit the cylinder head and tighten the nine bolts according to illustration to prevent distortion. Fit rocker box gaskets to the head using very little Permatex. Fit push rods into the lifter cups (the exhaust push rods are the longer) and fit rocker box, making sure the push rods are correctly inserted into the rocker ends, and tighten box down evenly against the pressure of the valve springs as this pressure cannot be avoided.

Bolt up the new carburetor using a new gasket lightly coated with Permatex. The air cleaner problem will have to be left to your own ingenuity. The needle in the carburetor slide should be in the middle position and a 250 jet should be used to start with.

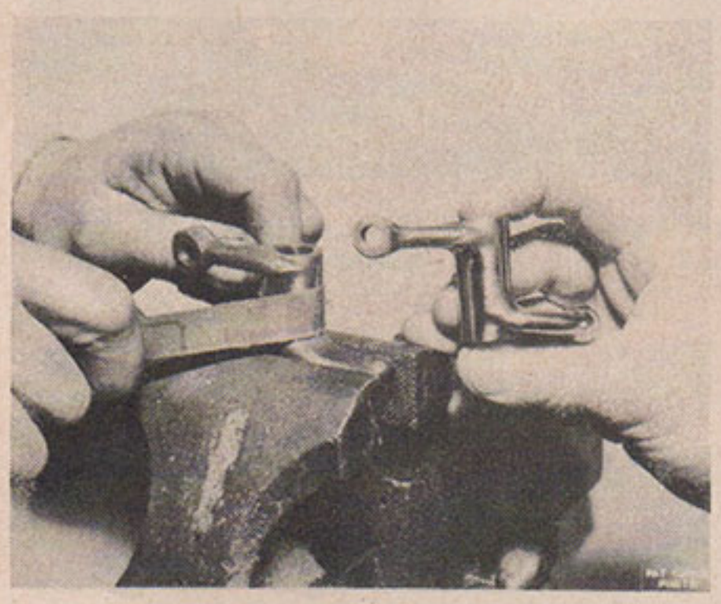
Tappet clearances should be set cold. To gain the best position for the drive side intake valve, turn the engine until the timing side intake valve is fully open. Reverse this procedure to set the timing side valve.

The same procedure is carried out for the exhaust valves. Clearance is .010 of an inch, not .011 and certainly not .009.

Check the ignition timing. $^{11}/_{32}$ of an inch before T.D.C. at full advance is stock, but experimenting and changing up to $^{13}/_{32}$ of an inch might prove fruitful.

After reassembly has been completed the engine should be run in a bit. About 50 to 100 miles should seat the rings, but clearance of new pistons dictates number of miles necessary to prevent seizure. Racing clearances i.e., 2½ thousandths per inch of bore clearance, naturally require less running in of the engine than stock clearances.

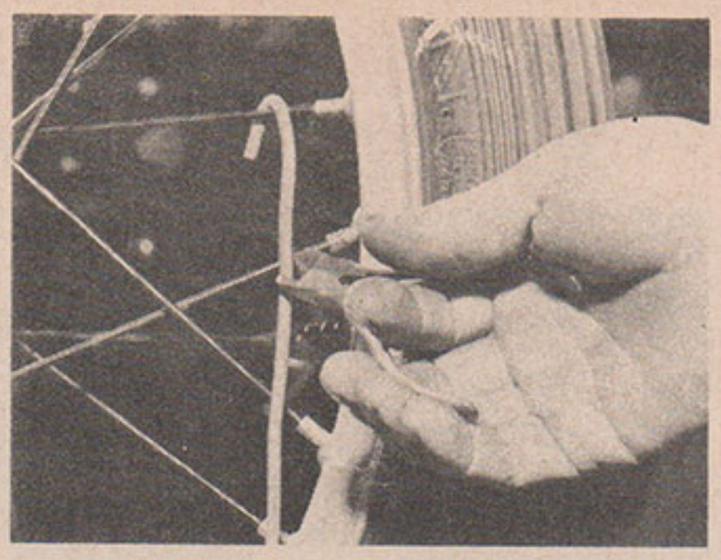
Carburetion should not present any great difficulties with this type engine, the most important phase being the selection of the proper main jet. It is necessary to use the same type exhaust system when checking the



Rockers are more easily polished by hand unless you have access to some very expensive equipment. Hold rockers in a soft-jawed vise and use emery cloth as illustrated. Start with 100 grit cloth and finish with 150 grade cloth

main jet as will be used permanently with the engine. The best system to use is to run the motorcycle over a distance of about ¼ mile at full throttle and at the end of this distance close the throttle, kill the engine with the killer button and lift the clutch. If possible these things should be done simultaneously to prevent the spark plug condition from being altered by a slow running mixture or excess oil. Color of plugs will indicate performance.

Ignition timing and proper jet sizes are very important in extracting those last miles per hour, and any time spent in experimenting to get exactly what you want usually



Out of balance wheels can, at high speeds, treat you to vibrations that will start you checking for a broken frame. To properly balance wheels, grease retainers should be removed and bearings cleaned of grease, then lightly oiled to reduce friction. Spin wheels and mark spot that comes up light. Hook lead wire over spoke nearest mark as illustrated and cut to right length. Wind it around spoke, tape and shellac. Don't forget to repack bearings, replace seals

pays good dividends. After all, it's your skill that actually makes the engine.

Parts you will need: one set high compression pistons (these come 7.98 to 1 for Class "C" racing and 8.5 to 1). If you don't intend to use the motor for competition the 8.5 to 1 pistons are recommended. These retail for $10.55 each complete with rings, pin and circlips; one set of top end gaskets at $1.87; four valve guides at $1.50 each; one complete set of valve springs at $2.12; one B-31 1⅛" carburetor at $22.43. The prices will vary a few cents with different locales.

SPEAKING CYCLE

(*Continued from page 4*)

The popular lakes-meet will be run similarly to those in the past with one exception. Should any rider approach the speed of an existing AMA record, the course will be immediately cleared of all other riders and he will be given top priority for a two-way run within a specified time in which to establish a new national mark.

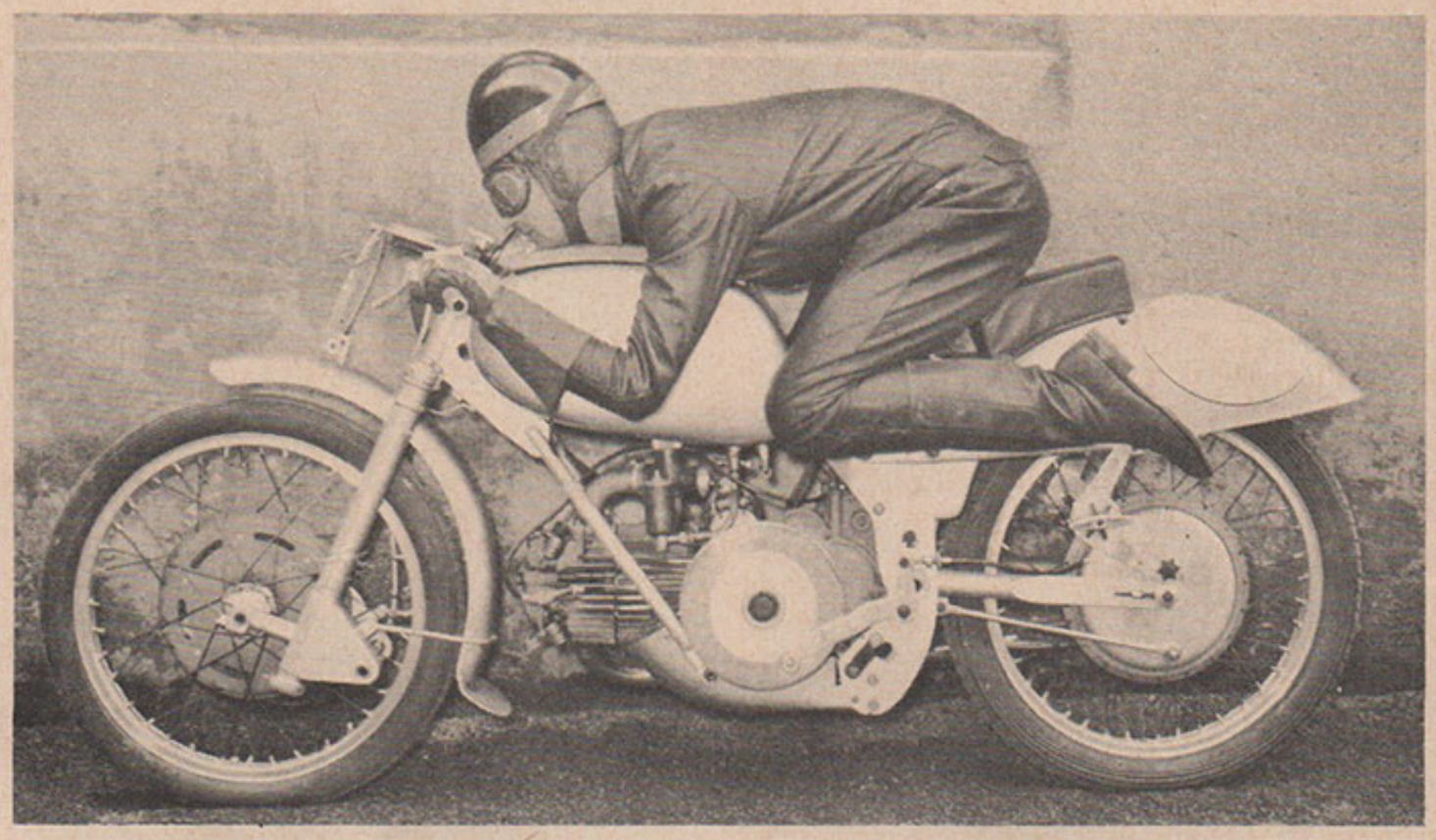
Undoubtedly the extremely successful Bonneville, Utah meet staged by the hot rodders' Southern California Timing Association last year did prove the need of a like gathering in cycle circles. (See "Speaking Cycle" and "Speed Trials Pay Off"—CYCLE Oct. '51.) Whatever the motivation, it appears that at last there are the makings of a recognized annual trials for the first time in American motorcycle history.

In addition, SCTA President Ray Brown has just contacted us regarding their 1952 meet and we learn that they are graciously extending another welcome to Bonneville this year. However, instead of inviting the *ten* fastest bike jockeys out on the salt there will be *twenty vacant berths* come August 25 through 31. This highly organized speed fest must be invitational, of course, since only a specified number can go and we should have instructions in the mail within the next two months to those twenty U.S. riders most qualified. Any riders feeling they have the equipment should write CYCLE magazine at once giving full data on their machine's capabilities, size, and past performance. At this date AMA approval is pending, but it is our hope that individual sanctions will be allotted upon request as they were last year once the twenty fastest potentials have been determined. Come on you Easterners, show the boys out West how it's done!

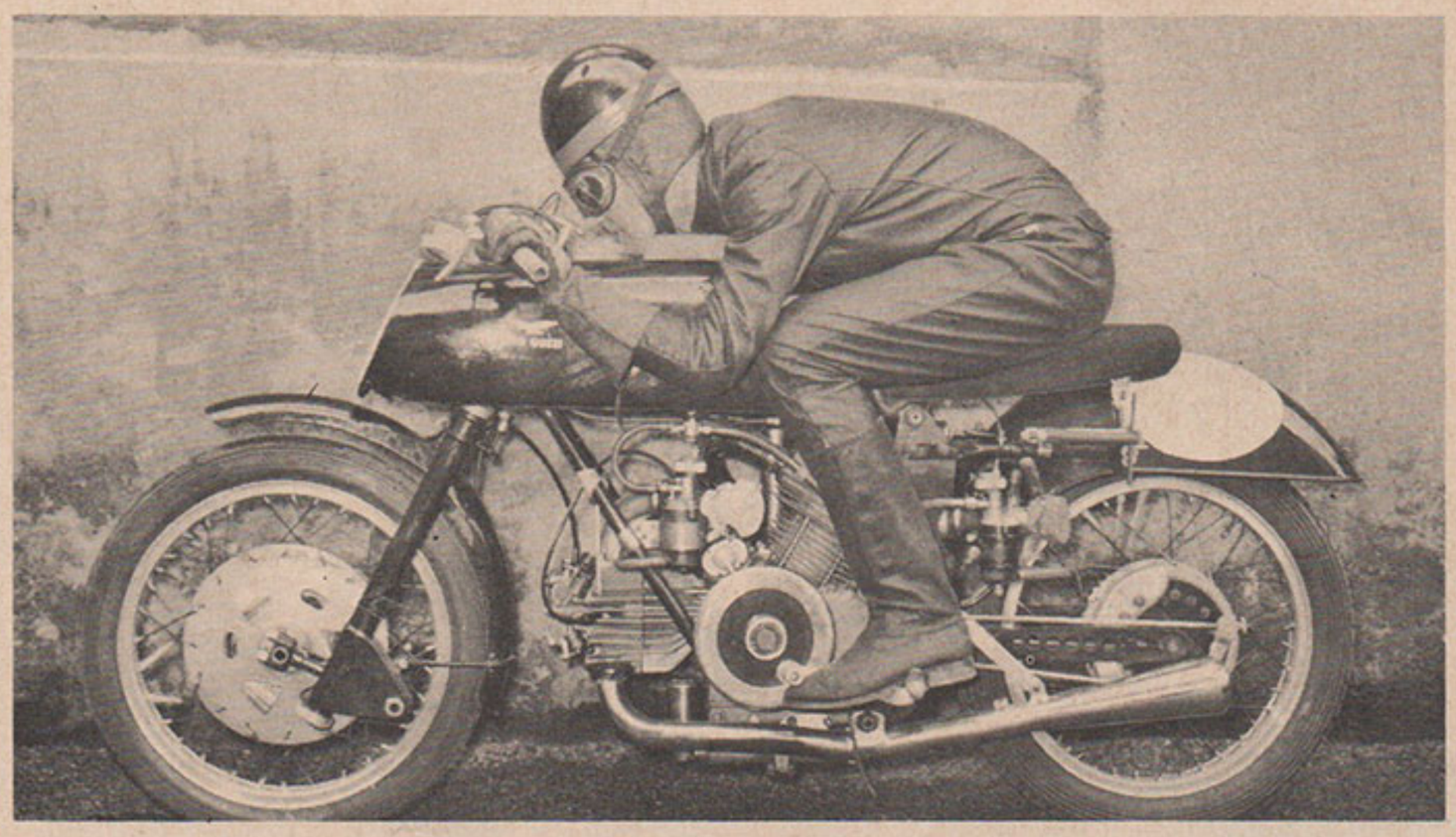
At Bonneville in 1951 over a dozen long standing American speed records went up in smoke. This year, with *two big trials* in the offing, it looks like we've only begun to go. Look out Wilhelm Herz!

GALE FORCE

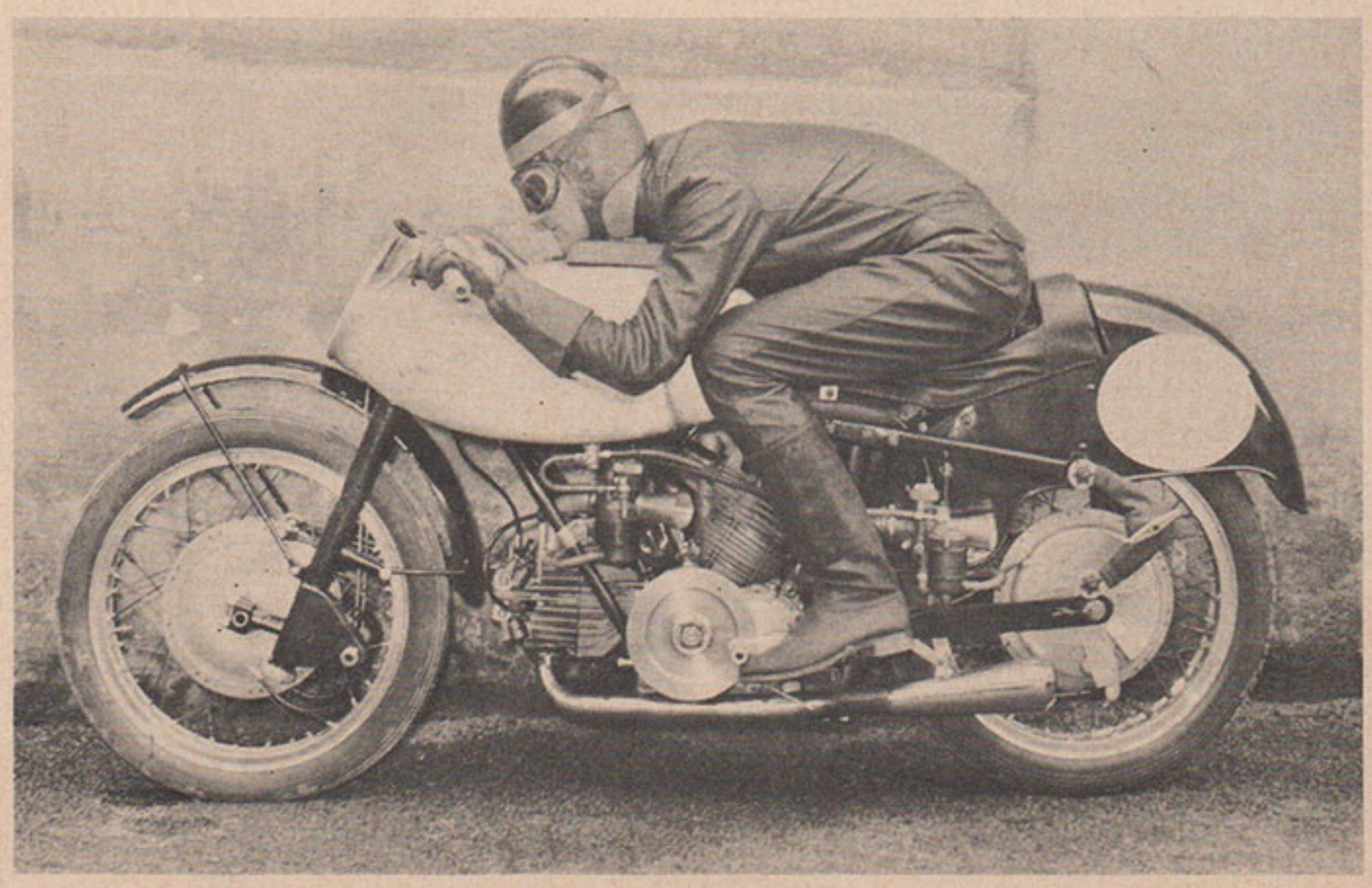
continued from page 13



Comfort and streamlining are equally important in fast, long distance road racing. Anderson demonstrates an unusual kneeling crouch on the 500 cc single. A pillion seat is used in this instance



Feet down this time on an early Guzzi wide angle twin. Seat has been elongated for easier shifting of weight. Tank extends beyond forks and is tapered to diameter of number plate



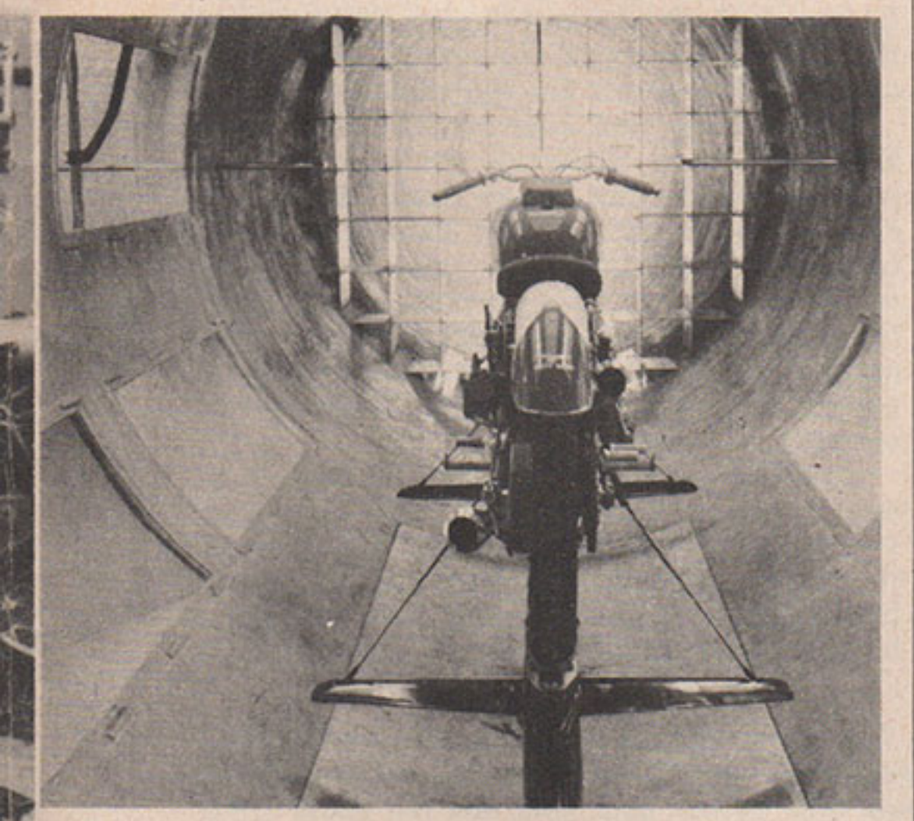
Aerodynamic tanks of latest Guzzi twin are notched for arms and knees. Forward extension of tank allows more room for rider at rear. Rear fender is re-designed; lower seat

Of course, rider position has great influence upon drag. The fully prone position is best, but obviously cannot be sustained for long distance road races. While tunnel riding in the normal racing crouch, it has been found that any slight movement backwards or forwards results in an increased or decreased resistance, depending on the machine being tested at the time.

Moto Guzzi has found the tunnel particularly useful for testing racing machines and determining the best line for tanks, handlebars, fenders and riding position. These factors vary, however, and on different models it is impossible to provide precise information without first testing in the tunnel.

From our own close study of the illustrated racing machine coupled with the position of the rider, it seems that footrests will be positioned well back and on a higher plane, thus inaugurating a new foot control layout. Gas tanks may become elongated to enable the rider to lie rather than sit on the machine. This, together with the use of slightly smaller wheels, will reduce the frontal area with the rider's head and back presenting a horizontal line.

Following a recent FIM regulation pertaining to sidecar records, we can see much work ahead for the streamline boys; and it would seem that without the knowledge derived from the Guzzi tunnel the recently gained NSU sidecar record would stand for,

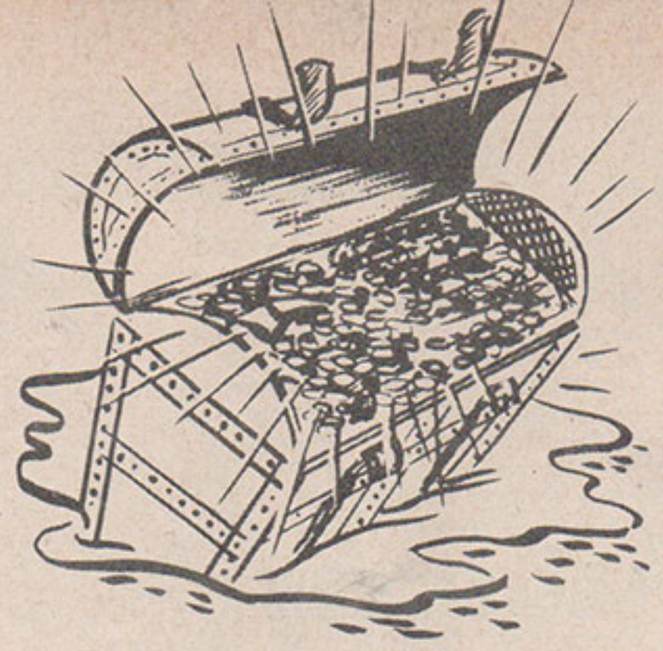


Looking into the huge mouth of the tunnel, bike is mounted on floating platform. Vanes at other end equalize air flow from giant 900 hp fan

perhaps, our lifetime. Remember the use that was made of streamlining—a loaded fairing aerodynamically designed partly covering the third wheel, and three streamlined struts serving as chassis?

The new regulations state that the chassis must be provided with accommodation for a passenger. Said accommodation must be at least 15¾ in. wide, 31½ in. long and have a frontal area equivalent to the area of a rectangle 15¾ in. x 12 in.; the minimum wheel track to be 31½ in.

Where do we go from here? The future sidecar contender will find perplexities in preparing a motor that will give the added urge to make up for the drag that has been heaped on his lot. He still can, if he so wishes, carry ballast of 132.3 lbs. in lieu of a passenger, but the regulation defining a sidecar cannot be altered. Ultimately, when some aspirant to the absolute world's record builds something that is simply nothing more than a projectile on two wheels, the cult of the streamline in motorcycling will have achieved its goal.



PIRATES on the LOOSE

IT TAKES NO "PIECES OF EIGHT" TO LURE THESE 20th CENTURY BUCCANEERS

BY VIOLA CARRUTH

PHOTOS BY REX PERRY & TED BRUEHL

BEARDED DESCENDANTS of Jean La-Fitte and his men crossed swords at early dawn in Shreveport, Louisiana, beginning the sixth annual battle for the hand-hammered brass Pirate's Treasure Chest and its pieces of eight.

Like the legendary characters of old, they asked no quarter and gave none as they rode out the two-day, 500-mile Pirate's Treasure enduro. For the first time in the history of the run, a true Gulf Coast buccaneer, Robert "Hot" Brady of Selma, Alabama captured the chest with a score of 963 points. But riding hot on his British tail-pipe was Yankee Earl Robinson of Detroit, Michigan, 1947 winner, on his Harley 45, whose score of 961 gave him first place Class "A" solo.

This was the thirtieth 500-miler for the Michigan Harley-Davidson dealer, who hasn't missed a national enduro in 23 years. He won the national enduro championship in 1940 at Columbus, Ohio and has ridden 19 Jack Pines, finishing 15.

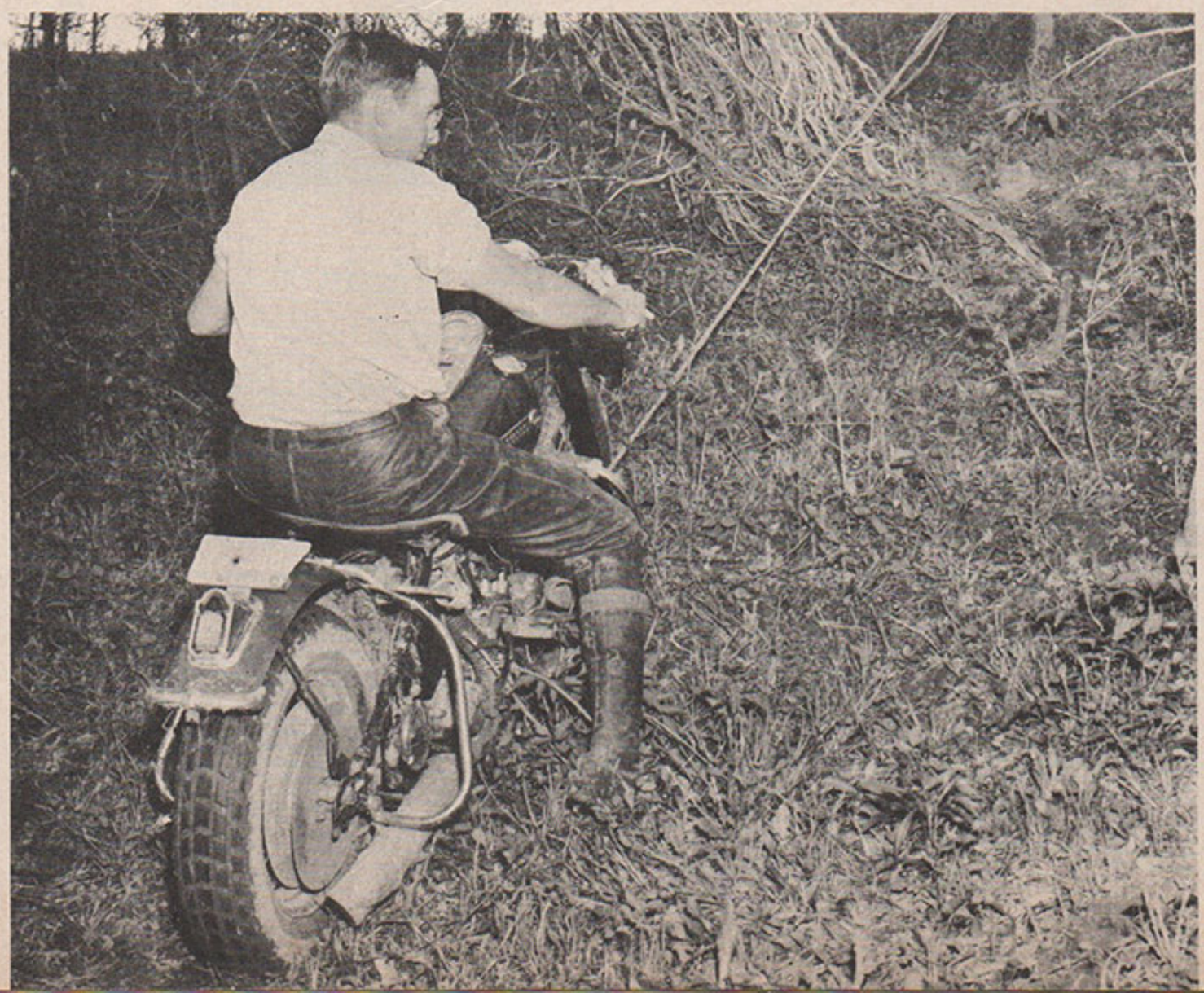
Although Brady started last year's Pirate's run in seven above zero weather in Montgomery, Alabama, he wasn't one of the 12 who finished. This year he came to finish, hoping, but not overconfident, that he would win. His other claim to glory in the endurance riding field was third place in Class "B" solo in the Alabama State enduro last year.

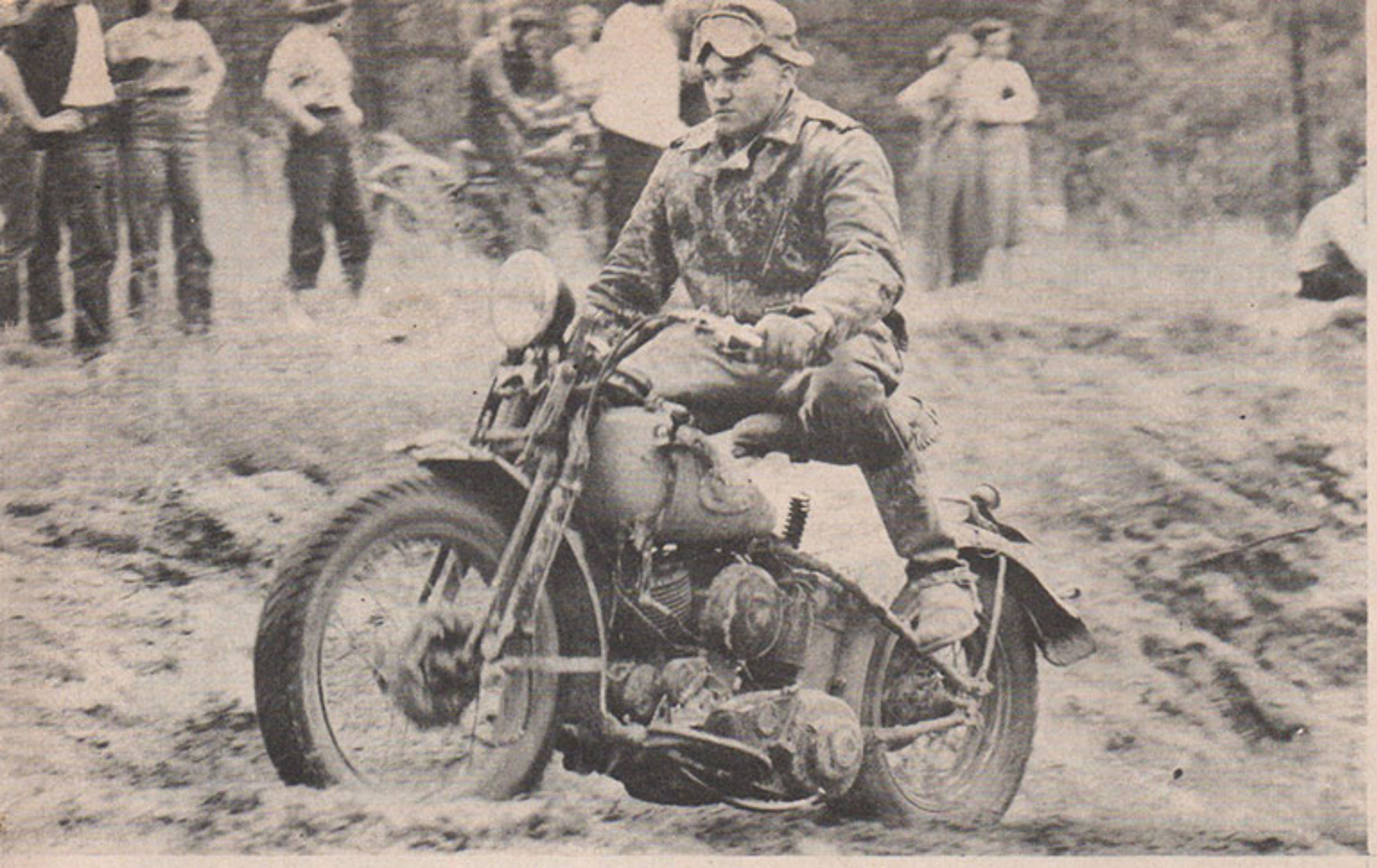
Class "B" solo was taken by another buccaneer—Folsom Henderson, also of Selma. Riding with Brady and James Williams as the Dixie Motorcycle club team, the group totaled 2,863 points for the team trophy.

Because rain and cold even in the sunny Southland were defeating the enduro, this year's sponsors—the White Eagle Motorcycle club of Shreveport and the Twin City Ramblers of Monroe, Louisiana—moved the heretofore winter date up to spring. In addition, the pathfinders plotted a course for Mr. Average Rider instead of setting the usual nightmarish run that only about a tenth of the entries could finish.

Toughest obstacle in the first day's ride was a series of abandoned, uncertain and swinging bridges. One that had collapsed in the middle formed a perfect V, which had to be hurdled. Some had only two or three boards across rickety frames. Loose timbers

Here's the answer, boys! Otto Schaffer of Memphis, Tennessee, will push no more. If stuck in a bog hole, ingenious Otto merely unrolls rope wound around huge spool attached to his rear wheel, ties it to a nearby tree, climbs back in the saddle, puts bike in low gear and lets the spool wind itself back up again, at the same time pulling the cycle up the hill. Otto's always thinking!





Buccaneer Snookie Meyers is really on the loose as he and his saddle part company in a sand trap. Extra spring on seat post apparently had too much oomph. Pat Boatright, most popular AMA girl rider of 1949, was first girl to finish a Pirate Run, second to ever try; rode a K model this year

crashed into the brink on all sides of the riders as the motors thundered over decaying structures. One rider almost lost his machine when a board broke under his front wheel.

Regrouped the next morning in a drizzling rain—Louisiana's usual gift of lagniappe—only 68 of the original 96 entries checked out for the second day's grind. Rain made the going much tougher than the pathfinders had intended. In addition to the planned stretches through gooey swampland, the hills were gruesome; water holes, sticks and mud everywhere. Even the roads were slippery.

There was plenty of glamour—Pat Boatright and Dot Robinson, AMA's most popular girl riders of 1949 and 1950, and Eloise Talmadge of Shreveport. All three finished with Mrs. Robinson copping first place trophy in the Class "A" 125 with a score of 919 points.

Shreveport's Mrs. Pat Boatright captured the sportsmanship trophy in the 1950 run and won the 125 class "A" trophy in 1951. This year she rode a new model K. A bad spill in a water hole on the second day injured her right knee and slowed down her riding to 881 points.

Strictly a novice, having ridden a motorcycle for just a year, Mrs. Talmadge not only finished the run by sheer grit, but won by popular vote the Pirate's second most sought after trophy—the sportsmanship award.

Talk of the run was Millard Reynolds, powerful Alabama buccaneer from Maplesville, who rode his stock model Har-Dav. 74 with full rigging—foot boards, crash bars, buddy seat, saddle bags and stock fenders (not to mention such sundry items as battery, air cleaner, muffler, license plate, etc., which are often as not left at home in the garage these days).

But the riders quit snickering when they saw his technique. Bog holes didn't bother him. Astride his machine, he just looped his arms under the handle bars, lifted the bike between his legs and walked it out. Reports are that he makes his living snaking logs out of the woods on the same machine.

Checking was done at all controls with a regular time clock system, which is being used extensively in Texas and the southwest area. R. M. "Shep" Shepherd, retired cycle dealer of Corpus Christi, Texas, developed the system to remove the human element by merely punching the riders in at each stop rather than looking at a watch and writing their times down. But human error crept in even then, when Shep accidentally set four of his clocks five minutes fast. Instead of having the scores tallied and posted within 30 minutes after the last rider crossed the finish line as planned, a couple of hours were consumed making corrections in time.

But the riders couldn't leave anyway, since Old Jupe Pluvius, who had been crying quietly all day, climaxed the finish with a flash of lightning, a loud clap of thunder and a terrific downpour. This gave the riders a chance to bunch together in the clubhouse over heaping plates of beans, chili, salad, and hot coffee to rehash the run and make plans for the next one, which will be held in Mobile, Alabama.

Dot Robinson, winner of 87 trophies—most of them in enduros with a big sidecar job. This Detroit woman is probably the world's most accomplished cross-country rider. Dot rode a 125 this time

DRAGGER'S DREAM

SURE SHOT SPEED SHIFT ELIMINATES CLUTCHING COMPLETELY

BY DON WATKINS

HOW WOULD YOU like to never lift a finger, or a toe, again—at least as it applies to shifting the gears on your Harley? As the early day hand-shift mechanism atrophied through the years to its present stubby protrusion from the gearcase, it became unnecessary to remove the whole hand from the bars to make a shift. Only two fingers were needed to operate the clutch which was grafted from footboards (yes, British jobs used to sport them) to handlebars.

The advent of the footshift was quite a milestone in cycle history—the day that first Englishman (or was it an Indian Scout rider) found he could better operate his abbreviated handshift lever with a flip of the leg.

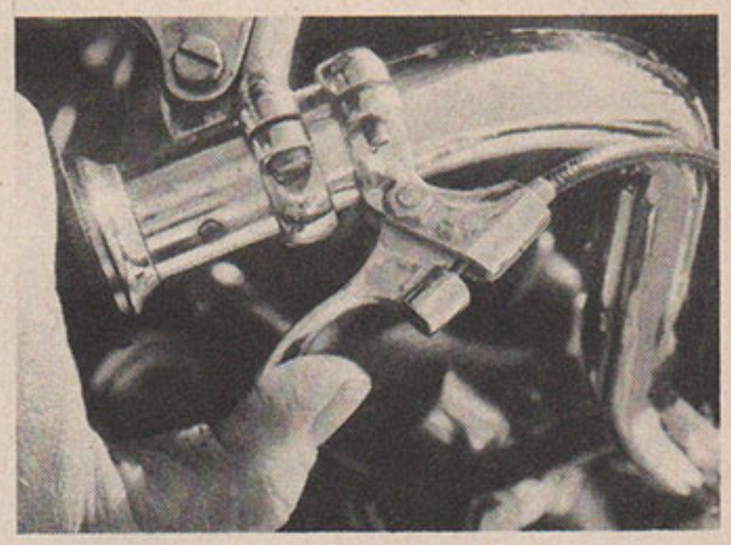
What appears to be an equally revolutionary step in gearshifting progress is now available for adaptation to big twin Harley-Davidsons. Known as the "Speed-E-Shift," this revolutionary device eliminates the clutch entirely, that is as far as the rider is concerned. The entire operation of gear changing can be made with one downward movement of the foot; all clutching and shifting being semi-automatically made through a single pedal. When it becomes necessary to make a back-shift to a lower gear the procedure is still the same (downward movement of pedal) except that the reversing switch on the handlebar is pulled. The system is claimed to be positive, the best feature being that the pedal never has to be lifted with the toe as with "old fashioned" footshifts.

Positive action is assured since the shifting rod is locked in position at the time each shift is made by means of a spring-loaded mechanism. The reversing lever also acts as a sure-fire neutral finder which allows neutral to be located from any gear with a simple flick of the finger and tap of the foot. This neutral finder is unique in itself, since it serves a two-fold purpose. Having three positions, it must be depressed all the way down for back-shifting and held until the desired gear is hit. Then by releasing the lever forward shifting may be resumed. To locate neutral the lever need only be depressed half way.

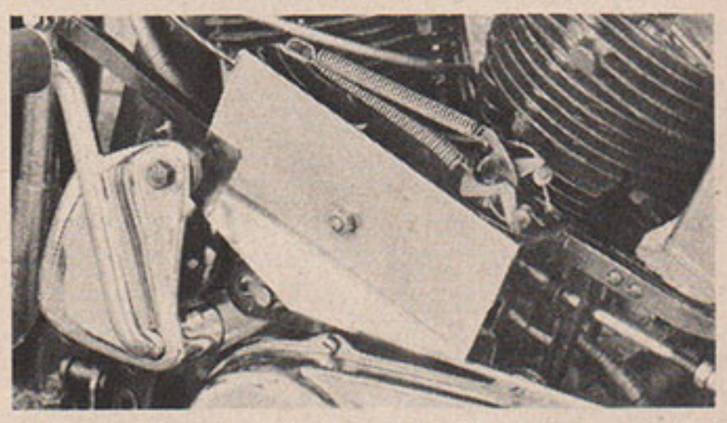
The first part of the pedal's travel operates the clutch, further pressure engages the desired gear. This makes slipping the clutch in traffic a simple proposition.

Designed for the Lee clutch pedal, the unit is available with the pedal optional since so many riders already use the pedal. The assembly fits most Harley-Davidsons from 1936 through 1951 but at present is available for only the 61, 74 and 80 cubic inch models with four speed transmissions (except for 1937 models with neutral between second and third). We'll leave it up to the tax collector to determine whether its $45.00 cost be classed as a luxury or a labor-saving necessity.

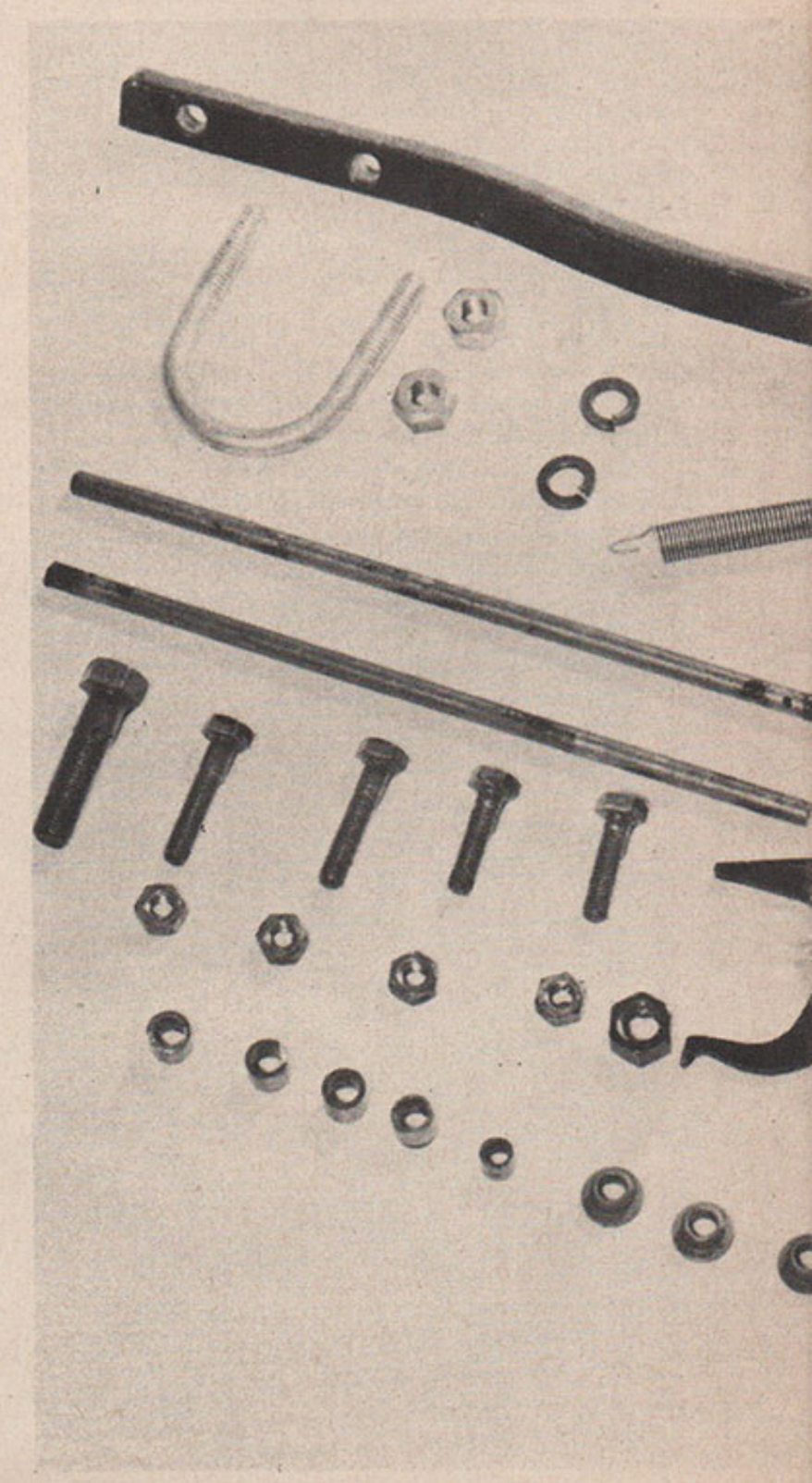
PHOTOS BY TOMMY AMER

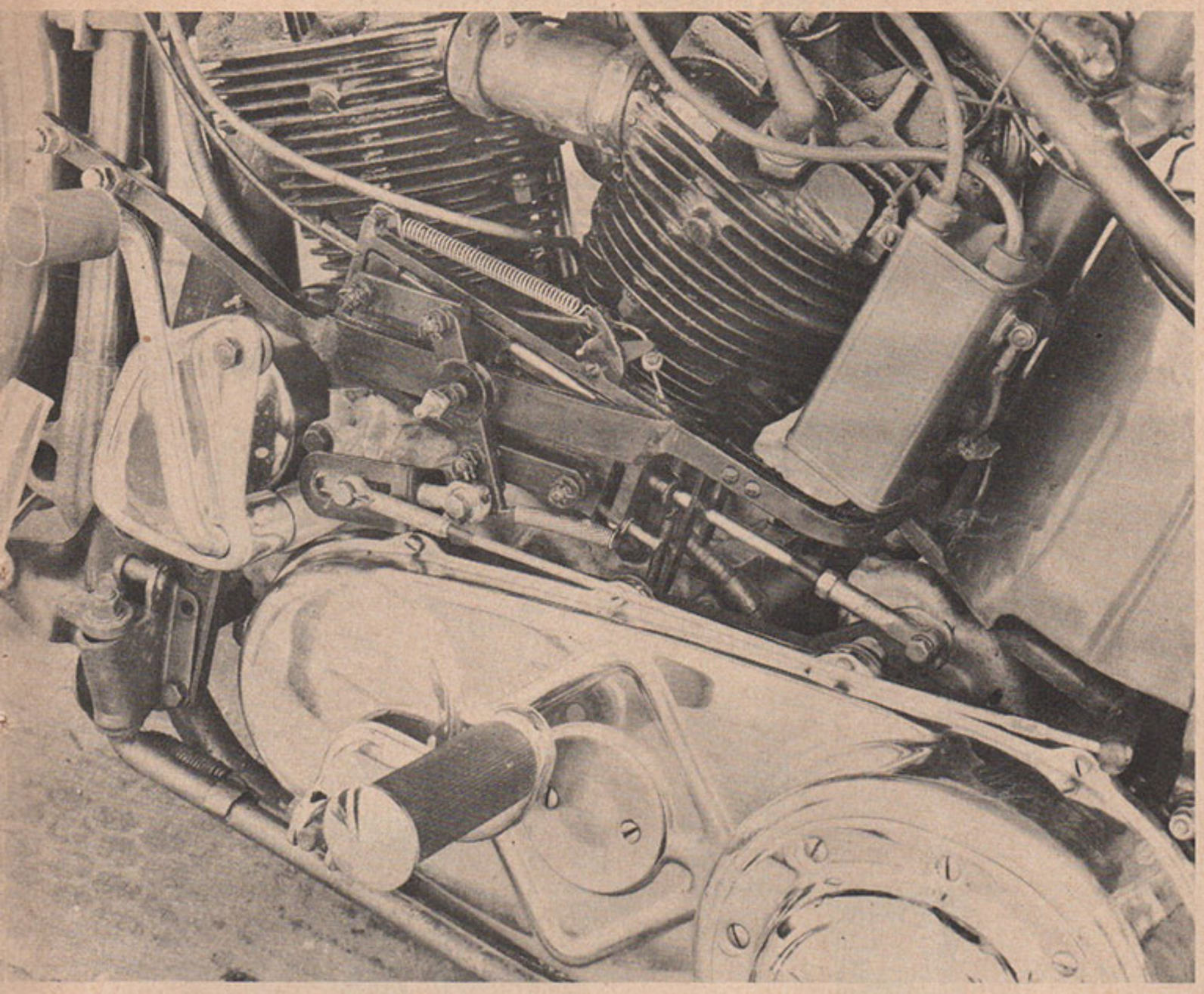


It's thumbs up on the most novel of gear changers. Thumb operated reversing switch makes shifting up a gear or down a simple matter



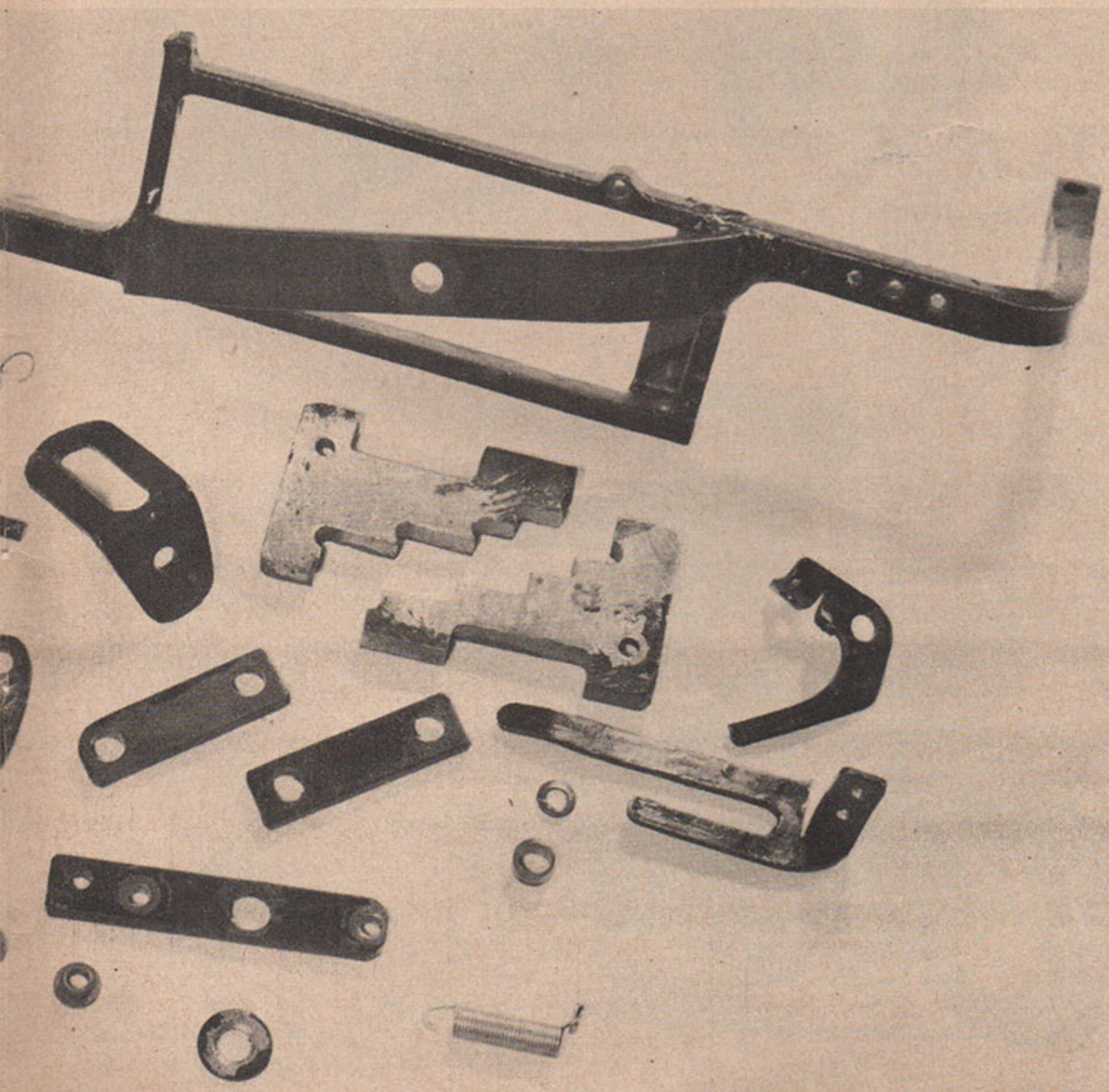
With chrome plated cover in place the intricate linkage is neatly concealed. Former clutch pedal now also operates gear shift mechanism





ABOVE, The mechanical brain that relieves you from the task of coordinating clutch and gear shift levers. First part of foot pedal's travel operates the clutch, second part the gears

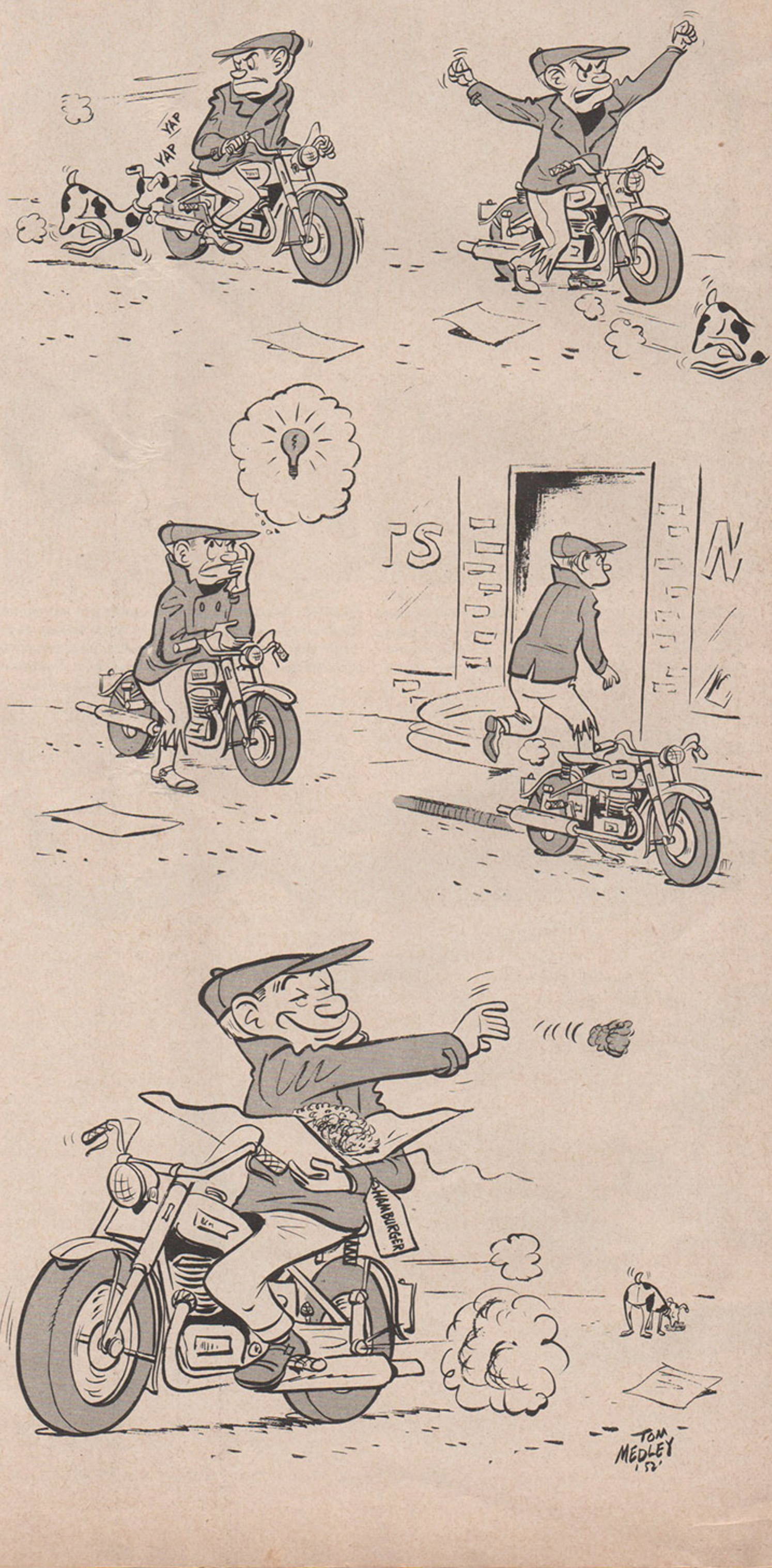
BELOW, What draggers' dreams are made of. The selection of husky rods and levers links both the clutch and transmission operations to one pedal, makes shifting fast and foolproof



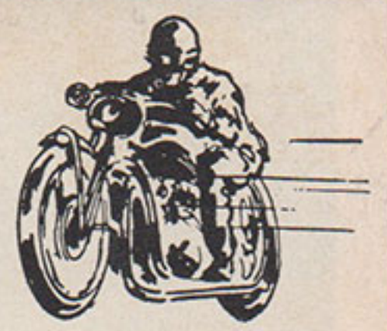
"A POUND IN TIME SAVES MINE"

"FLAT OUT" SNODGRASS

BY MEDLEY



before you buy

ride a 

MOTO GUZZI

Jim Johnson & Alex Rendich with their 500 CC MOTO GUZZIES*

*These (Illustrated) competition machines feature 55-tooth rear sprockets, skid plates, bobbed rear fenders and traction tires. All lighting equipment has been removed, including the generator. The mufflers and the side skirts on the front fenders have also been eliminated.

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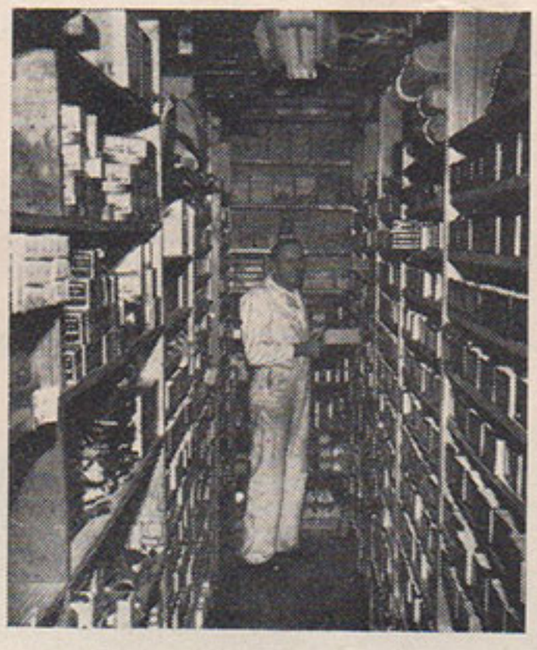

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