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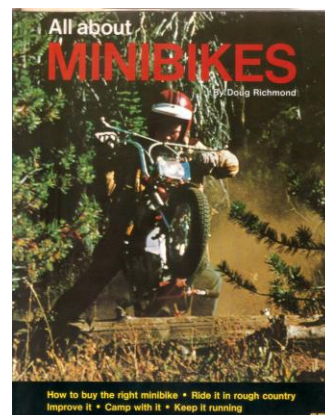


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The first book I ever read on mini bikes back in 1973. I got it at the Library. I bought the kids a mini bike for Christmas several years ago, [Sarah loved riding](#) and I got back into mini bikes. Hence, the name of our FaceBook page and Website... "All About Mini Bikes" thought you might get the connection. Thanks for your patronage in our hobby and feel free to write us anytime at Przyojski@Yahoo.Com

Your Mini Bike Friends,

Dan & Sarah



MiniCycle

JULY 1972 75c

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BIKE**
GUIDE

K47745

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TESTS:
NEW BONANZA 80
TWO MOTO SKEETERS

TECH:
REED VALVING
THE SUPER RAT

TECUMSEH'S
NEW MINI-BIKE
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HONDA CT70 MODEL CONTEST WINNERS



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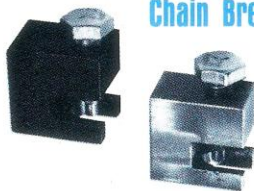
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editorial

**A MINI RIDER'S PRAYER—
with apologies to Art Buchwald**

We beseech You, O Lord, in our hour of need, to look kindly on our desire for a small part of Your Land to ride on. Grant us strength to deal with cob-webbed officials who know not the joys of two-wheeling and give us patience to deal with their dilly-dallying.

We pray for guidance to lead us not into the paths of wrong-doing, like riding on sidewalks and making loud noises. Give us wisdom to know how to get to riding areas designated by Thy servants, when even pushing our machines, with engines dead, shall be evil in their sight. Give us this day, and every day, our daily riding practice.

We ask, O Lord, that You protect our machines from confiscation by those with hardness in their hearts. Let them see the errors of their ways. For, truly it is said, out of the minds of under-aged citizens shall come the voting patterns of tomorrow. Surely, as the meek shall inherit the earth so, one day, shall we set up some individual as Mayor of our town and we shall permit no graven image to be before us. Only warm, sympathetic, people without granite hearts.

Have mercy on those who pit-race against us in the chosen areas for we shall show no mercy to them. Surely Thy peace should reign over us in honor and justice, as much as possible.

Help us, we beseech, to guide our wheels along the path of righteousness, avoiding all rocks and pot-holes, even though we ride through the valley of shadows. Protect us from high places that we shall not fall down upon hard times. And if we should fall from grace, help us to seek redemption by the wearing of helmets and other protective clothing.

Let those who are above us, parents and others, find it in their hearts to work for our salvation in the form of local mini riding areas. Let them not heed the sticks and arrows of outrageous fortune until they have set aside those who would oppose this. Let them heed Thy word that it is better to give than to receive. For the givers shall find themselves in a family of contented off-spring. Our needs are so small, O Lord, and Thy land is so vast.

Make Thy wrath to strike down those among us who would violate the God-given rule "Thou shalt not litter." If there should be one among us who would cast so much as a crumb of bread upon Thy clear-flowing waters, pluck him from our midst. Show us the way to a clean land. Teach us that a cast away pop can contains the seed of eternal condemnation. Lead us not into the path of temptation, though we may have to carry our refuse long distances to find a blessed receptacle. Bring to us the understanding that all that glitters is not gold, especially if it is laying in a bush, for litter also glitters. Open our eyes to the probability of choking in our own filth.

Show Thy wisdom, as in the case of Moses, upon mini-bike and mini-cycle manufacturers. Guide the hands and minds of their designers that their products shall flourish. Make it so, so that we may never have to worry about brakes that stop our machines in the appointed time. Inspire the workers who build our machines to goodly efforts in tightening bolts, lining up sprockets, and so on. Help these manufacturers to find the best possible components, brake cables, kickstands, grips and bolts that do not twist like putty, that Thy light may shine upon them. Show them the way to do all their functions in Thy image so that they might make a legitimate profit while we will have perfect, low-cost, machines. In this way, Father, will we spread Thy word that mini riding is a good and safe and righteous occupation for Thy children.

Thy name will be hallowed if you could show the way for an engine manufacturer to invent an engine that would turn with the torque of the heavens in their orbit. That would have more horsepower than the number of stars that Thou has created. That would weigh on the balance less than a mote of dust. That would sip delicately from the gas tank. And that would be so quiet, Lord, that Thou, who knows everything, would not know when it had passed. If these things would be too much for mortal man, we would be content with an approximation.

Lastly, O Lord, help Thy servants at *MiniCycle* magazine to fight the good fight with vigor. Let them not wane from their increasing daily labors. Lead them into better ways that we might rush to the newsstands and come to proper wisdom. If they should once stray from the straight and narrow path, smite them mightily that they shall learn the errors of their ways. For on *MiniCycle* we lean like a staff and a staff must not bend. And the staff of *MiniCycle* shall not bend, or we will cancel our subscriptions. □

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MiniCycle

VOLUME 4, NO. 7 / JULY 1972 / AMERICA'S FIRST MINI-CYCLE MAGAZINE



Kami handles with verve



Three-wheelers drag for fun and race round-and-round

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letters

(Editorial Note: MiniCycle receives many more letters than it is possible to print. As a general principle, we feel that everybody who takes the time to write to us, should have the courtesy of a reply. However, we are finding it increasingly difficult, in fact, impossible, to live up to this principle. This is undoubtedly a side effect of our spreading circulation and the growing popularity of mini riding. Nevertheless, it is a fact that all letters sent to the magazine are read by the editorial staff. All letters. A report on the subjects is made every month and this helps us to plan our editorial package to suit the majority of readers. So, we are not uninterested in what you have to say and your letters help us do a better job. We beg the understanding of our letter writers and would suggest a basic ground rule that would enable us to get more letters in print. Try to make them as brief as possible and keep to one subject. One recent letter asked us for the history of mini riding so that the reader could write a term paper. We'd love to oblige but there is no way. More than 15 per cent of the letters ask for local "riding areas" and we just do not have that information. Better to ask other local riders. Another common letter is one asking us to recommend a machine for a prospective buyer or to chose from several suggested models. Since everybody has different requirements, and since there is no such thing as the "best" machine, this kind of letter, too, gets unanswered. We do our best but there are some things that are beyond our capabilities. Finally, "rush" inquiries are difficult to comply with. If you need an answer within a few days, it is best to seek other sources rather than wait until it is too late. And publication of a letter takes at least three months. That's the facts of publishing, so bear with us.)

JUSTIFYING?

The first issue of my subscription was the 1970 Special Holiday Edition. I decided it was one heck of a fine magazine. Since then I have watched the magazine go through an identity crisis. It covered mini-bikes, go-karts, light-weight motorcycles, mini-cycles and a mini-Volkswagen. All of this was interesting but now I find that I have a subscription to MiniCycle while MBG plays a minor part.

There were some mumbblings in the January 1972 editorial that sounded like an attempt at justification, to me. Do you really believe that you have covered all aspects of mini-bikes? There are many modifications that would make very interesting articles. You could compare torque converters, engine swaps, installations of front brakes, heavier chain and sprockets. What about testing the mini-bike products advertised in your magazine? Should Tecumseh go back to industrial uses of their engines, only? Possibly they can use the

kick starter, chrome shrouds, hop-up parts and other sexy goodies on a deluxe water pump.

There are many cycle magazines around and they test mini-cycles. I think mini-cycles have a place in Mini-Bike Guide but they should be secondary. I am for advancements and improvements of the breed, but mini-cycles do not represent this. You have behaved like children. You are tired of your mini-bike and now you want a mini-cycle.

Leslie W. Fiegel, Jr.,
Bowie, Maryland

We think we have behaved like the market. Sales of mini-cycles have soared. Obviously, there is a need for more information on them. Contrary to what you say, there is no publication, besides MiniCycle, that deals with them in any depth. Still, mini-bikes are far from being abandoned. In this issue, for instance, are three mini-bike tests and an in-depth look at a new Tecumseh mini-bike engine. That accounts for at least half the magazine. 'Nuff said?

MASS. CRY FOR HELP

As elsewhere in the U.S.A., the multitudes of mini-bike enthusiasts in Massachusetts is growing rapidly. Also, as elsewhere, Massachusetts law enforcement agents (both local government officials and police) have been intolerant of this new style of fun-lovers. The situation is uneasy.

It seems as if clouds have been forming for several years. Now some sort of decisive meeting between these two (perhaps not-so-different) factions seems imminent. "Kids" of all ages need outlets, ways to rid themselves of their daily frustrations. And mini-biking is surely one *good* way of doing this.

So what's the rub? "Authorities"! People all-too-often elected by the *few* and all-too-often spokesmen of the *fewer*. Conservative people usually, bound to a Spartan past. Well, maybe I'm exaggerating a bit. Some of the arguments against mini-biking are valid. But are they? Aren't these arguments essentially *bad* mini-biking, not mini-biking at its best, not responsible mini-biking? It is one of the unfortunate facts of life that the bad often seems to be more visible than the good.

Indeed the only argument against

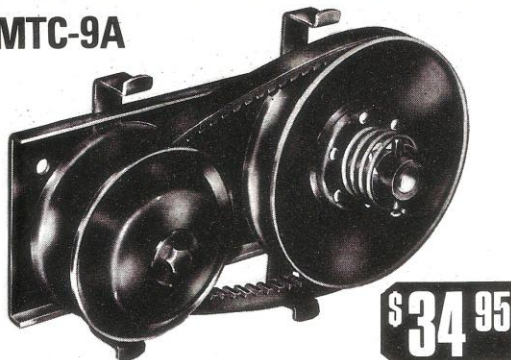
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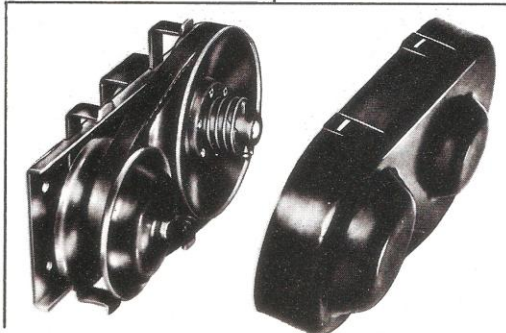


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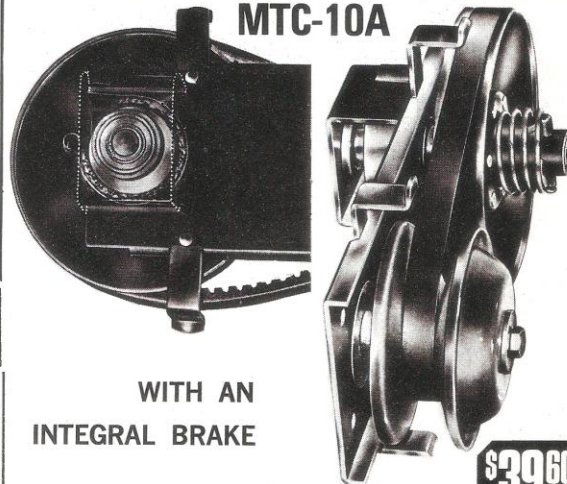
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TECH TIPS

BLOWN UP

Q. Your article "Hottest Bike In The Pits", April, 1972, stated that a Roots-type blower was used. Could you tell me more about this blower, where to get it, and how much it costs?

Arnold Michels,
Mahomet, Illinois

Q. Where did Harlan Dye get the blower or did he make it? Was gasoline or nitro used?

Gary Wilson,
Groves, Texas

Q. What parts would be needed to build such a high-performance engine and what would be the cost? Are plans available?

Mark Warnke,
East Aurora, New York

Q. What's the name of the blower, who makes it, and what does it cost?

John Roylos,
Portsmouth, New Hampshire

A. The story sure kicked up a storm. Anybody planning a similar trip is largely on his own. There are no plans available, as far as we know, and finding a similar blower is usually a matter of searching until you find it. Which is no help. Reader Tom Reardon of Portage, Michigan, steered us to a commercially-available supercharger that cost \$23.50. It comes from Groban Supply Co., 9300 South Drexel Ave., Chicago, Illinois 60619. Tell 'em MiniCycle sent you. We have no personal knowledge of the unit but we can pass along information that Groban supplied. It is a Roots-type Midland-Ross supercharger originally designed for use as an air pump for the exhaust control on Volkswagens. It moves 13.5 cubic feet/min at 6 psi, up to 5000 rpm. It has a two-bolt flange on the inlet and outlet and a 3½-inch pulley. Judging from the information, Groban sees it for use on industrial-type engines and they claim an increase of 2.8 hp when it is hooked up to a 4 hp engine. It comes with general installation instructions. A word of warning! A supercharger is no magical go-fast thing. There is a whole world of supercharger

technology but if you have a spare engine to experiment with, fine.

MOTORCYCLE ENGINE AND TORQUE CONVERTER

Q. Recently you had a story about a mini-bike that had a motorcycle engine hooked up to a torque converter. What was the name of the manufacturer? I'm 48-years-old and having the time of my life on mini-bikes and small motorcycles.

Ken Carlson,
Muskegon, Michigan

A. Happy to hear about your interest in little two-wheelers, Mr. Carlson. We have had several stories about motorcycle type engines driving through a torque converter although it is a fairly recent development. There are three in this issue from Moto-Ski and Bonanza. You can get the addresses from the spec boxes. However, you probably recall the test of the Black Shadow from Speedway Products, Inc., 160 Longview Ave., Mansfield, Ohio 44905. This machine uses a Sachs two-stroke 7 hp engine and Speedway's torque converter. The test occurred in the October, 1971, issue.

STEEN'S HODAKA IS FIRST GEAR CRAWLER

Q. I recently brought a Steens X-100 as a result of your test and I am very impressed with its power. However, first gear is quite a crawler. How can I hop up the engine to get the same first gear power into second gear? Also, could you please tell me how good a Filtron air filter would be.

John Steere,
Mercer Island, Washington

A. The answer to your problem does not seem to lie in modification of the engine (although we are currently running a series of Hodaka modifications that might be interesting to you). If it is your intention to get more power from the engine so that you can do without the first gear, you will be losing the benefit of the fine five-speed gear box. We would suggest that you go back to the dealer who sold you your Steen's and ask him for the final drive sprocket

Continued on page 19

IT TAKES A TOUGH BIKE TO KEEP UP WITH THIS KID.



Everybody knows this kid. It doesn't matter to him that the races are only on Sunday, he wants a bike that can take it all the time. Whether he's ripping full bore into turn one or just messin' around on that dirt patch down the street. This kid's a hard charger, and he needs a bike that's a hard charger. He needs an Attex. An Attex can take all that he can crank on because there's nothing he can do to it that we haven't already.

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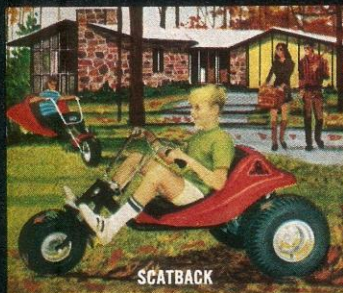
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LETTERS Continued from page 8

mini-biking is not really an argument against mini-biking at all! Irresponsibility is the culprit and irresponsibility can be found anywhere, in anything, not merely in sporting activities. If there were logic in the mini-bike argument there would also be logic, for example, in the suspension of everyone's drivers licenses for the wrongdoing of one drunken driver. Logical?

Since there is really no need to belabor this point, I'll close by returning to my original remarks. Mini-biking is growing in Massachusetts. That's a fact. This is not, however, being paralleled by growing municipal cooperativeness with mini-bikers. In fact, the degree of enmity existing between bikers and lawmakers (and enforcers) makes the need for establishing mini-bike riding parks more urgent. But creating such parks will not be easy. Strong and favorable evidence is needed. Most of all, successful instances of such parks is needed, for such evidence would be virtually impossible to discredit.

If you know of any such parks (especially in New England—I've heard of some in New Jersey and Long Island, N.Y.), I would appreciate any information you could give me about them.

Dan Brown, President
Brown's Motorsports
17 Central Street
Worcester, Massachusetts

By now, Dan, you will have seen the story in the June issue on mini-bike clubs and parks. Maybe that will help. We do not, personally, know of any municipally-supported mini riding tracks in New England. However, if any exist, our readers will know and we have taken the liberty of including your full address so that they can write to you. That's right, you, sitting there, reading this. Send Dan all the information you can lay your hands on. While you're at it, send the same information to Mini-Cycle. He needs help. In the meantime, we are sending you our office copy of the report done for the Los Angeles parks and recreation people on the subject. There is nothing more convincing. We agree with Dan's political approach, getting to the lawmakers before they freeze themselves into anti-mini positions. While we are writing this, the Massachusetts primary is getting into full gear. We'd dearly love to watch McGovern's face if somebody would get up and ask, "What is your position on the mini-bike question, Senator?"

Continued on page 12

The HOT one's come to town . . . she's the all new

KAMI

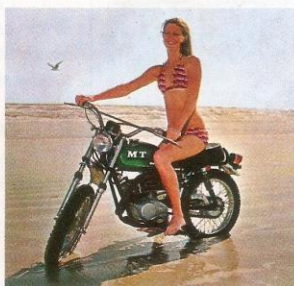


She's an exciting one . . .
with the all new Fuji F-480.
She's a yielding one . . .
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built just like you want her . . .
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KAMI doesn't just promise—she performs.
Go get her—she's the *Hottest* one in town!



KAMI MX (Mini Moto Cross)
Yellow with black pin-stripes



KAMI MT (Mini Trail)
Green with white pin-stripes



KAMI JX (Junior Moto Cross)
Orange with black pin-stripes



KAMI JT (Junior Trail)
Red with white pin-stripes

These classy stablemates have everything you want—and then some! The MT Mini Trail Bike has an 80cc Fuji (Hodaka-designed) 6.6 h.p. engine with Mikuni carburetor; kick starter, 4-speed trans, 15" tires, sealed-beam headlight, tail light/stop light, speedometer and horn. The MX Moto Cross version has all the above, less lights, horn and speedometer. Both have chrome fenders.

The name of the game is *fun*—and this Kami duo is engineered to *deliver*! The JT Junior Trail Bike has a Fuji 80cc engine that produces 6.6 h.p. with Mikuni carb and **tuned exhaust** for high performance! Kick starter, 4-speed trans, headlight, tail light/stop light, speedometer and horn. The JX Junior Moto Cross is identically equipped except for lights, horn and speedometer. Both models have 2:50 x 17 front tires, 3:00 x 16 rear, on 2" rims.

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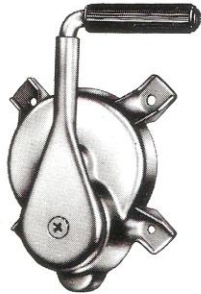
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90 DAY FACTORY WARRANTY

Ask for part no. 59489 ... **22.95** suggested
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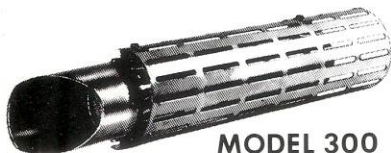
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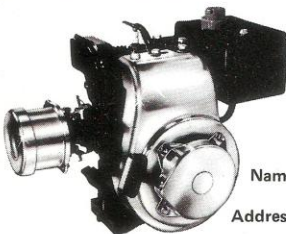
Part No.	Item	For Engine H.P.	Price	Quan.	Total
730156	AIR CLEANER COVER	2.5 thru 7 H.P.	\$ 2.75		
730157	HEAD BOLT & WASHER SET	2.5 thru 4 H.P.	3.15		
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City _____

State _____

Zip _____

LETTERS

Continued
from page 10

Anyway, Dan, perhaps Chet Winter, the
American Motorcycle Association legis-
lative director, can help. The address is
P.O. Box 141 Westerville, Ohio 43081.

SHOCKING FULCRUM

I do not quite agree with Mr. Price's
statement on page 36 of the March issue
that "A shock mounted past the axle
arc will produce a smoother ride..." It
will, in fact, produce a harder ride since
the distance from resistance (shock) to
fulcrum (swinging arm pivot) is greater.
A shock mounted inboard of the axle
will produce a smoother ride and more
swinging arm travel.

Gerardo Sanchez,
Homestead AFB, Florida

At first Brick Price didn't think he'd
made that statement but there it was, in
black and white. He agreed that the
wording was misleading. What he had
meant to point out was that a larger
shock, with more travel, can be
mounted outboard than could be
mounted inboard. It is true that the arc
of the axle will be longer for the same
shock absorber if it is mounted inboard.

KUDOS FOR PRICE

I liked Brick Price's article on "How To
Build A Perfect Two-Wheeler" model. I
have been wondering where I can get a
model called the "Honda Racing Bike."
Can Brick help me? I'm an eight-year-
old model car builder and I want to try
a model motorcycle.

Leigh David Menkes,
Lancaster, Pennsylvania

Brick says the model is manufactured
by Revell and can be ordered from any
model shop.

BAD LANGUAGE?

Your reminder of my rapidly failing
subscriptions has prodded me into get-
ting off this long-planned letter. When I
took out my subscription I also talked
our elementary school principal and
librarian into subscribing in the interest
of our 5th and 6th graders who are
getting mini-cycles.

I am disappointed in your editing. I'm
not a do-gooder or a prude but I am
unhappy to be responsible for some of
the language in your magazine. I know
all the arguments about children being
exposed to much worse every day, even
at home, but two wrongs still don't
make a right.

I wonder if you are oblivious to the
age of your audience. I would guess

Continued on page 14

Are you up to a **BENELLI?**

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MINICYCLE / 13

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LETTERS Continued from page 12

your readers' average age to be pre-teen. I would much rather see four letter words such as love, mother and apple pie than those I've read in your articles. Also, the word "bitchin" is a California slang word (I have been there) and the word bitch means something of an entirely different connotation here in the Mid-West.

So, thanks for the good times but I have asked the school not to re-subscribe for the above reasons. I have decided not to subscribe because I never

once saw an article on the Honda Trail 90.

Denis Moore

No address given

It would seem that your mind is closed on the subject and since you no longer read the magazine, you won't be able to read this reply. Still, your criticism stings because we feel that it is unfair and we are answering it in case there are others who feel the same way. We are really super careful about the language used in MiniCycle. (The arguments pro and con about use of the word bitchin nearly created a major riot in our editorial department.) It is readily admitted

that we do not always stick to text book English but we are not producing a text book. We try to avoid the use of offensive language (although, obviously, there are some with super-sensitivities who object to the slightest deviation). However, English is a living language and many of the text book words were once slang. Common usage is the key. We don't want to break new ground in language freedom but neither do we want to sound like college professors (although some of these gentlemen use language that would make Mr. Moore's hair stand on end). It is our considered opinion that we are on the same intellectual level of most of our readers, (ages 10 to 80) although we are somewhat more experienced in our field. Thus our style of writing is aimed at them rather than over their heads. More learned people than we (even the Supreme Court) have difficulty in determining what are acceptable community standards. We just do what comes naturally, with care.

FROM DUNECYCLE

I would like to take this opportunity to thank you for the excellent job you did on the coverage of John Taylor's and Ron Gerchow's trip to Los Angeles in the May, 1972 issue of Minicycle magazine.

I certainly appreciate you taking time from your busy schedule and coming to our plant for their arrival from Pontiac, Michigan. Both John and Ron have seen the article and wish for me to convey their thanks also.

W. S. Stull

General Manager

A. P. E. PRODUCTS

Santa Fe Springs, Calif.

WHERE'S BRONCCO?

I am thinking about buying a brand new Broncco Eagle mini-cycle. I understand that Broncco has gone out of business but I am not sure. Do you have any information about this company? Back to the Eagle. It has a Minarelli two-cycle engine that is made in Italy. Now, if Broncco is out and my Minarelli breaks down where can I get parts? It is a 75cc four-speed manual jobby. Does Minarelli have an importer in the United States? If so would you please send me the address?

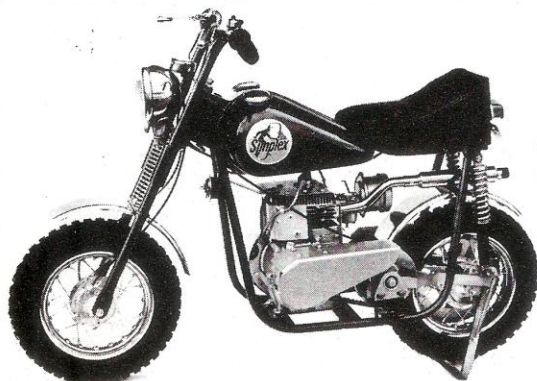
Gale Brockie

Jackson, Michigan

The Broncco machines are marketed by Engine Specialties, P.O. Box 260, Cornwells Heights, Pennsylvania 19020. They are in business and have a full

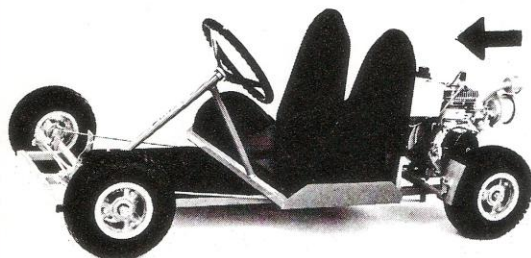
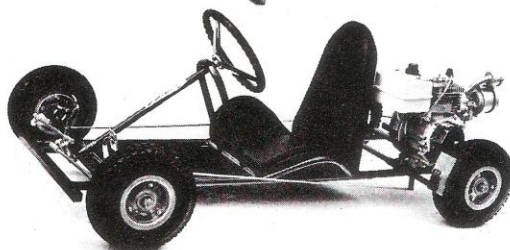
Continued on page 16

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ADDRESS _____

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MINICYCLE / 15

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LETTERS Continued from page 14

stock of parts for all their machines, we are informed. The reason for their low profile in recent months is due to the company's involvement in a law suit but this has effected only their marketing activities, not their parts situation. Write to *Engine Specialties* if you need more information.

MIXED FEELINGS

I have mixed feelings about the change of Mini-Bike Guide to MiniCycle but, as you say, one cannot stand in the path of progress.

But now that the change has taken place, why don't you do a tech article on the complete teardown of one of the popular gear-boxes (Honda, for instance). I'm sure that this would be of great value to your readers since the gear-box of a cycle is extremely important (but who am I to tell you that) and often the most costly item as far as repairs go.

Eric Illowsky
Spring Valley, New York
Good idea, Eric, and keep watching. We'll get to it immediately.

IT'S A SCREAMER

I own an Arctic Cat Screamer and I think it's the best mini-bike made. What's your opinion? If you haven't tested it yet, when are you going to get around to it? Could you tell me the best riding places in northwestern Pennsylvania? I enjoy reading the new version of *Mini-Bike Guide*, called *MiniCycle*,

very much and have become a true fan.
Felix Zents
R.D. 4 Brookville, Penn. 15825

For our opinion see the Arctic Cat road test article last month's issue. Can't help with locations of local riding areas but we've included your full address so that other readers might write and give you the information.

More letters page 73



5-PIECE AIR JET POCKET PUMP KIT!

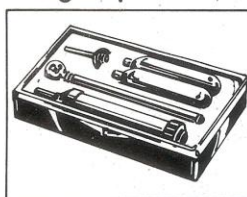
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\$153.72* saves you about \$100 in extras!

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*Manufacturer's suggested list price

TECH TIPS Continued from page 8

with one or two less teeth. This will have the effect of making the gear ratios a little higher. Then, if you want more power, follow the instructions in this and the previous two issues on Super-Ratting the Ace 100. Incidentally, your problems with the gearing of your machine is not unusual. When the manufacturer is making a decision on gearing he takes into consideration the weight of the average or heavier rider. In this way he avoids criticism about lack of power. However, we suspect that you are somewhat lighter than average. About the Filtron air filter, it is an excellent unit and does much to improve breathing. However, we cannot give the exact increase in power from this one change.

HOOKER EXPANSION CHAMBER FOR MINI-ENDURO

Q. I'm planning on buying a Yamaha Mini-Enduro this summer and some accessories. Can you tell me if I have to take off the stock oil tank to fit a Hooker expansion chamber?

Bruce MacDonald
Mississauga, Ontario, Canada

A. No. You simply remove the stock muffler and install the Hooker expansion chamber in its place. The Hooker chamber comes with a fiberglass silencer core in the aft-end but it has no spark arresting feature. You can get a bolt-on spark arrestor to fit at most dealers. Suggested retail price of the Hooker chamber is \$41 and there are adjustable stinger pipes available for an average cost of \$3.50. Hooker has just introduced a down-swept chamber for the Mini-Enduro and both go for the same price. Hooker claims a 10 per cent to 15 per cent increase in power over the stock muffler when their unit is installed.

"SHADE-TREE MECHANICS"

Q. I was considering purchasing the Suzuki Rover and your test in the February, 1972, issue convinced me to go ahead. Since then I have been having some transmission problems that are rather annoying.

After the machine is warmed up I have trouble getting it to shift from third to fourth. The gears hang up between and give me a false neutral. I took it back to the dealer and he made an adjustment which seemed to help somewhat. However, it is still difficult to get into each of these gears. Do you know where my problem lies.

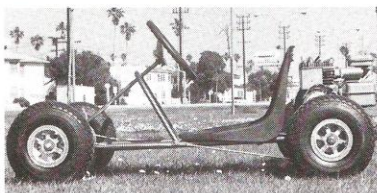
Continued on page 20

MINIBIKE & GO KART HEADQUARTERS

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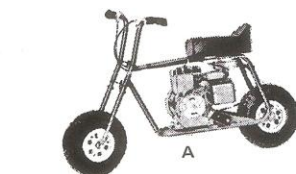
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Completely assembled less engine and engine accessories \$149.95
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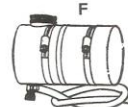


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E JACK SHAFT ASSEMBLY
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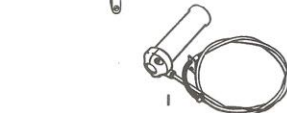
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Unchromed, \$5.95.



G REAR WHEEL ASSEMBLY
Finest components. Motorcycle brake, sealed bearings, aluminium wheel, 60T spr., axle, 13" tire & tube, spacers etc. \$29.95
Matching front wheel 14.50



H BRAKE CONTROL
6" Lever & Ball. Built in adjuster. Complete with in and out cables, cable stop. 4, 5 or 6" lengths. \$4.95



I THROTTLE CONTROL
Soft waffle rubber grip. Smooth acting. Complete with in and out cables, cable stop, etc. 4 1/2, 5 or 6" lengths. \$4.95
Add 50¢ for matching dummy grip.

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MINICYCLE / 19

AllAboutMiniBikes.Com

TECH TIPS Continued from page 19

As a point of information, if I shift without using the clutch, the gears change instantly and easily, never hanging up. I have talked to several dealers but none of their mechanics seem to know how to service this kind of problem.

Albert F. Otten

Little Rock, Arkansas

A. The trouble with your gear box is unique since this unit has been around for many years and is virtually trouble-

free. The only way to discover what is wrong is for a qualified mechanic, who knows what he is looking for, to take it apart and carefully examine it. We can make some guesses at the problem. For instance, we feel that it is probably a bent shifting fork or a plunger stopper that is binding. However, we do not advise that you go poking around inside since you would not be able to recognize the problem if you saw it. Your basic problem is contact with "shade-tree mechanics" who do not know how to do their job properly. Since your machine is probably still under war-

ranty, insist that your dealer do the job properly. Be firm. If you do not get satisfaction write to the Customer Relations Department, U.S. Suzuki Motor Corp., 13767 Freeway Drive, Santa Fe Springs, California 90670. Give them the name of your dealer and details of your contacts with him. Just like all big motorcycle companies, Suzuki is making a determined effort to bring their dealers' mechanics up to snuff and they have a permanent service school for them. They want to know what mechanics to pull into this school to avoid the kind of trouble you are having. You'll be helping yourself, other local Suzuki owners, your dealer, and Suzuki.

Tora

it all adds up

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Michael Langford

Cypress, California

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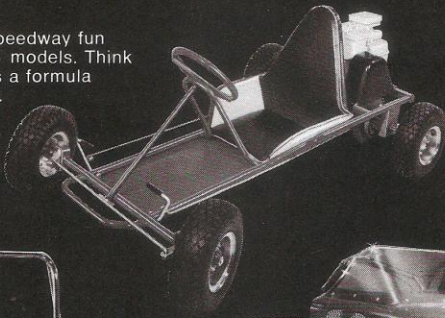
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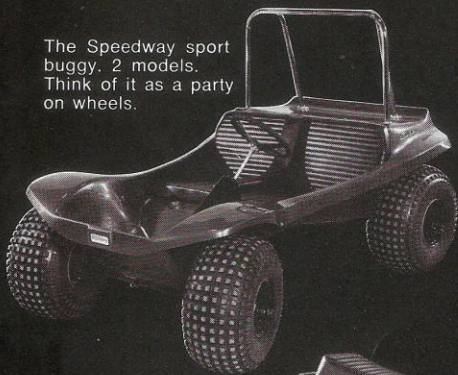
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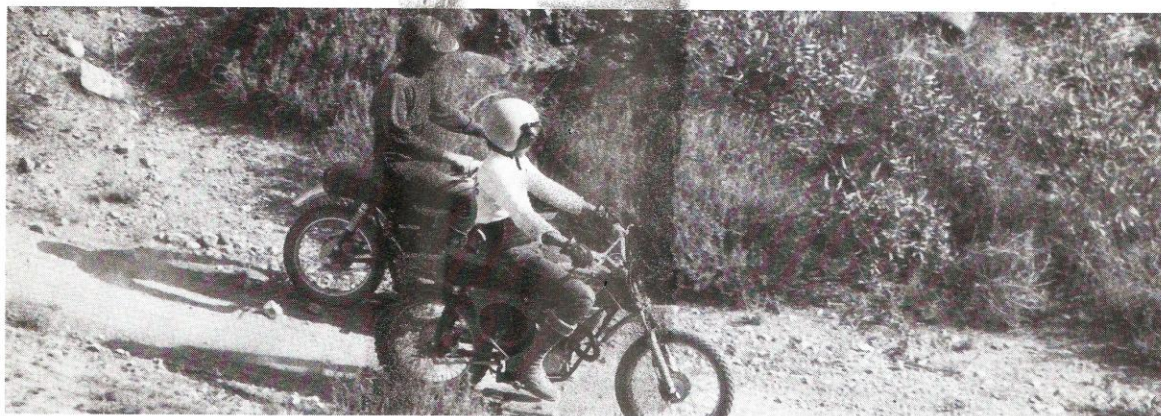
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Two New-Comers With Verve And Vigor

KAMI JX & MX



Kami is a new name in the mini-cycle field but it is one that is liable to be on everybody's lips before long. Judging from the production prototypes that MiniCycle recently tested, Kami is on the right track. The few minor corrections that seem desirable are currently being corrected by Sam Cullen, their "man in Taiwan" who is setting up the production line.

The two machines we tested were designation the MX and the JX. MX, of course, stands for motocross and the JX means Junior 'Cross. Strange though it may seem, the JX is the larger of the two and seems to be aimed solely at off-road use. The "name game" produces some peculiar designations but, we suppose, the important thing is how the machines work, not what they are called. Both the JX and the MX are dirt versions of "dual-purpose" street bikes, complete with ignition key switches, battery ignition, reflectors, street lighting and speedos.

We were very impressed by the working results of the dirt versions (the street-legal machines were not available at that time of writing). We have come to expect that new machines being introduced onto the market for the first time will need considerable de-bugging. But, in the case of the Kami machines, particularly the bigger JX, there doesn't seem to be a heck of a lot that needs improving.

Both machines share the Fuji F-480 mill, the one designed by the Hodaka people. This engine has been examined in depth by MiniCycle on a previous occasion (January, 1972) and we remain impressed. It is an 80cc two-stroke specially designed for the mini-cycle field and has proved itself in two tests to be a very willing worker that has no trace of temperament. Power output is rated at 6.6 hp. This seems to be a conservative estimate but more important for the mini-cycle field is the fact that much of this power is available over a wide rpm range. The Fuji F-480 was a wise choice for the Kami machines.

Power is transmitted through a four-speed gear box that displays extremely good manners. There is an absence of false neutrals and gear changes are very smooth, no matter how amateurish the rider is. It appears to be very strong and able to take the mistakes of a learning rider without complaint. Clutch operation is just a shade on the stiff side but if we had to make a choice between a slightly-stiff clutch able to take punishment and an easy-to-operate clutch that might break down, we'll take the former.

Control levers for the clutch and front brake displayed one major virtue and we'd like to see other manufacturers pay more attention to this. The levers were relatively close to the handlebar grips making it possible for smaller

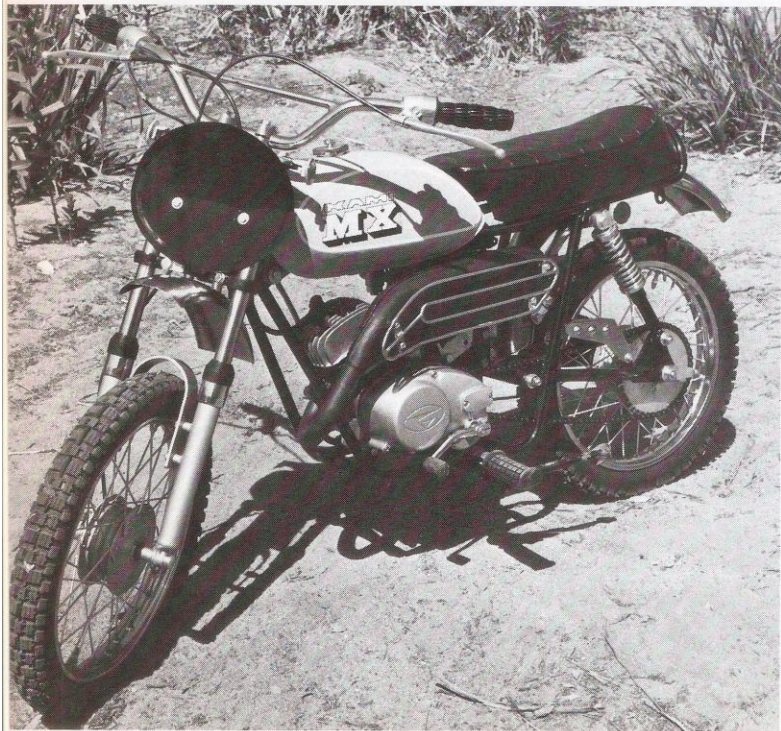
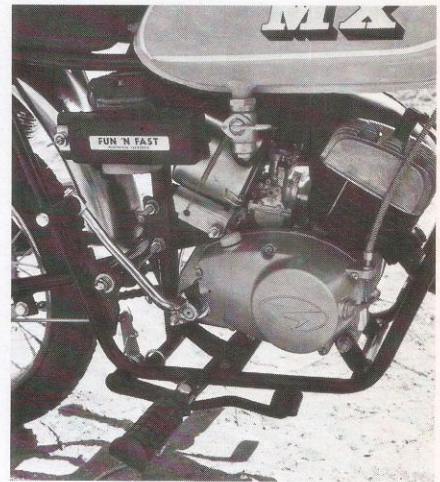
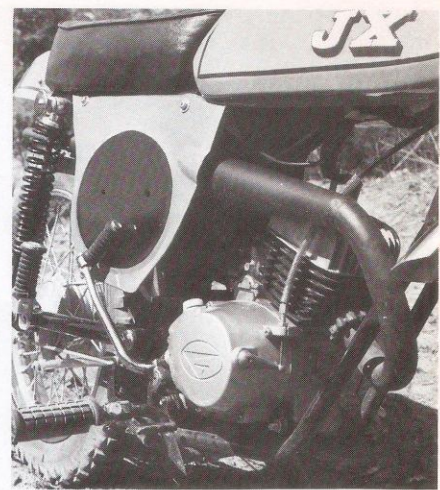
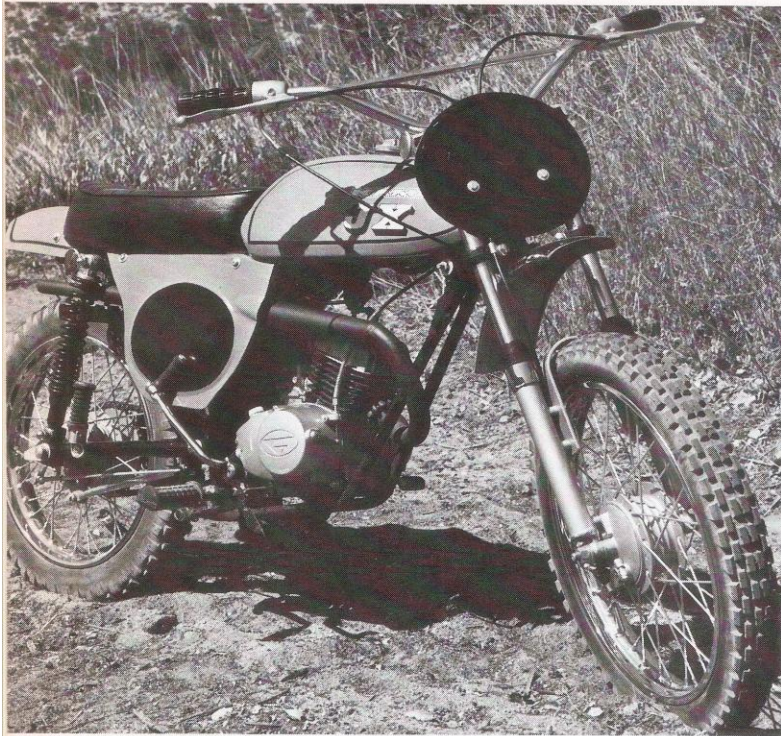
hands to reach them without stretching too far. Some control levers on other machines angle out so far in front that you need the hands of a basketball player to reach them. However, the Kami levers are cast aluminum (with knobbed ends) and this type of lever doesn't take kindly to being bent.

Gear ratios seemed fine for most applications although they are obviously a compromise between the street gearing and the trail gearing. For exclusive trail use, first gear (12.32:1) was not close enough to second (7.16:1) although the other gears were located just fine. There is not much that can be done about in-box ratios but Kami does offer a choice of final drive sprockets (13, 14 and 15 teeth). A little experimenting with these should produce the desired results.

Talking about controls, the lighting control clusters and horn button, that are an integral part of the grip mounts, seem somewhat odd on a trail machine and only serve to get in the way. Possibly they were on our test machines for convenience sake and perhaps the production models will come with simpler grips, saving the type on our test machines for the street-legal models only. Another thing that can be left off the dirt models are the reflectors. These are minor things but look odd in the pictures.

The handlebars were just right. They





24 / JULY 1972

created a very comfortable seating position and were wide enough to provide good control. The angle of the grips resulted in a natural wrist position. They had a "motocross" type brace across the top and were mounted in rubber cushions to reduce vibrations. Despite the shock cushions the mounting was firm and displayed no tendency to move even when the weight of an adult was thrown against them.

There are very few similarities between the frames of the MX and the JX. It is as though the job of designing the frames was given to two rival engineers and they were told to come up with competitive results. True, both appear to be well-executed but there are very few of the signs of standardization that usually brands frames made in the same factory. Not even the gussets are the same shape and even the kickstands are different.

We'll describe the frames one by one. First the JX, the bigger of the two.

The JX has a single backbone, double engine cradle loop design. The main backbone member, a sturdy 1½" tubing, angles downward from the steering column at a fairly radical angle. There

are no bends in this member. At the steering head it is heavily gusseted and at the lower end it is welded to another 1½" down tube that runs from about midway on the seat loop to the engine mounting box member. The box member provides the rear support for the engine cradle loop which is also joined to the main back member by a transverse tube. The upper mounting of the engine cradle is molded into the steering head gusset and the forward mount of the engine is to the cradle. This provides the engine with considerable protection but the gear box and flywheel sides of the engine project beyond the cradle.

The seat loop joins the main backbone member well forward of the back of the gas tank and runs back beyond the seat. From the back of the seat loop there is a subframe to support the rear fairing. This subframe provides an ideal place to locate a tool box and/or water bottle, if some way can be found to hinge the fairing or provide it with quick-release fittings. The seat loop is additionally supported by a loop running from the top of the main down tube. It is attached to the seat loop by a fitted gusset. The upper rear shock mounting runs

through all this metal and ensures super strength for this critical point.

The swinging arm pivot point runs through the lower section of the main down member and there is a large bearing surface for the swinging arm which terminates in a transverse bearing on the pivot point. Back of the swinging arm pivot point is a heavily gusseted transverse tube that prevents the arms from twisting when hitting a glancing blow with the rear wheel. Mounted on the swinging arm are buddy pegs which, considering the size of the seat, seem unnecessary.

Wire spoked wheels for the JX are 16-inch in the rear and 17-inch in the front. The rear tire has a 3.00 section and the front a 2.50 section, both with knobby treads. Diameter of the rear 22½-inch, which seems to cancel out the advantage of the bigger front wheel. Overall length is 69½-inches and wheelbase is 47-inches, which makes for a comfortable machine. The wheelbase is long enough for stability and the rake of the front fork gives about 2½ inches of front wheel trail. The seat height is 29 inches and handlebar height is 37½ in.

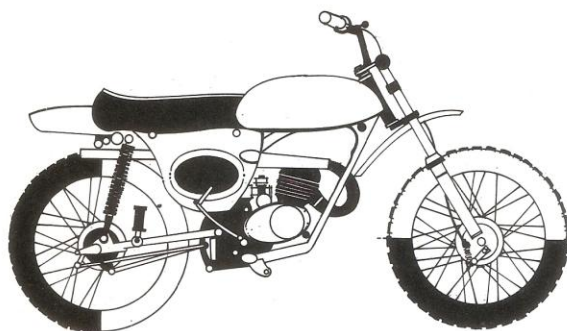
The MX has a slightly smaller frame. It, also, has a single backbone but the engine loop is of the classic design providing a full loop from the steering head, around the engine, and back up to the engine seat loop. This design is somewhat simpler than the JX. The main backbone member has a lighter section than the JX and it runs from the steering head, under the gas tank, forms a bend at the back, and descends to the rear of the engine. The engine mounting box member is welded to the bottom of the main backbone member and front support of the engine is via tabs welded to the engine loop.

The seat loop runs from the main backbone member around the seat and up at the back to provide a lifting handle. The upper shock mountings are in a gusset at the rear of the join between the seat loop and the engine cradle. The swinging arm pivot point is located in a bracket forward of the engine cradle. This puts it about two inches further to the rear of the PTO sprocket, when compared with the JX. Consequently there is an increase in the variation of the arcs performed by the chain and the swinging arm when the suspension is compressed. Thus, the possibility of chain stretching is increased.

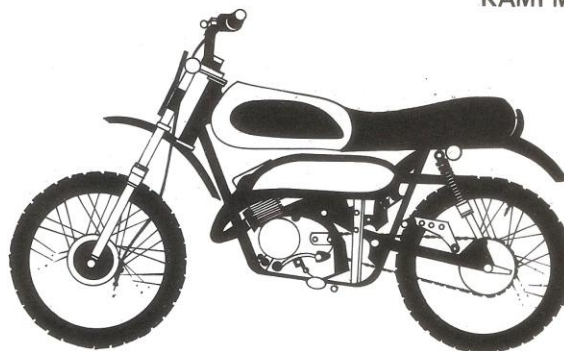
The swinging arms are welded to the transverse tube running over the swinging arm pivot bolt. The bolt is mounted in the brackets. Since the arms are welded to the transverse tube, there is



KAMI JX



KAMI MX



no cross brace to keep the arms from acting independently. The lower shock mounting is in a bracket that extends about 2½" upwards from the rear axle. This gives the shocks an extreme forward angle that does not follow the arc of the wheel.

Wheels on the MX are 15-inch in the rear and 16-inch in the front. Front and rear tires are 2.50 knobbies with a 20-inch diameter in the rear and a 21¼-inch diameter in the front. Overall length of the machine is 64 inches and wheelbase is 43¼ inches. Seat height is 27 inches and handlebar height is 37 inches.

Both the JX and the MX share certain features such as front and rear hub-mounted internal expansion brakes; standard front fork brace (we'd like to see this a feature of most lightweight machines); good kick stands; rearward folding foot pegs; front-mounted number panels; vented gas tank caps with on/off valves for transportation without slopping gas; good No. 420 final drive chain; and mufflers that do a good job of taming the sound waves without greatly affecting performance.

However, from a styling point of view the two machines differ completely. Our favorite was the JX with its nicely shaped gas tank and metal rear fairing and side number plates. Some concern might be felt about cuts from metal fairings but we found the fairings on the Kami JX to be well rounded. Of course, this machine, at \$344.95, is \$25 more expensive than the smaller MX (\$319.95) but we feel that the larger size and the features of the JX more than justifies this extra expenditure.

There are some differences in the suspension of the two machines, also. The bigger JX has more expensive rear shocks. For the bigger rider these produce a noticeably better ride than the shocks on the MX although the forward

KAMI JX AND KAMI MX

Importer: Kami Sales Corp., 5220 West El Segundo Blvd., Hawthorne, Calif. 90250.

ENGINE

Engine type	Fuji F-480 2-stroke, singl.	Carb	Mikuni 18mm
Bore	48mm	Ignition	Flywheel magneto
Stroke	44mm	Lubrication	Oil mist
Displacement	79.6cc	Fuel capacity	1.5 gallons
Horsepower @ rpm	6.6 @ 7,000	Fuel requirement	20:1 Reg., gas:oil
Compression ratio	7:1		

TRANSMISSION

Transmission type	Four-speed, gearbox	Gear ratios,	
Primary drive	Helical gears	1st	12.32:1
Clutch type	Wet disc	2nd	7.16:1
Final drive	No. 420 roller chain	3rd	4.99:1
		4th	3.86:1

CHASSIS, Kami JX

Frame type	Single backbone, double engine cradle	Tires,	
Wheelbase	47 inches	Front	2.50 x 17 x 22½" dia.
Overall length	69½ inches	Rear	3.00 x 16 x 22½" dia.
Suspension,		Brake(s)	Frt & rear, int. expan.
Front	Telescopic fork, hyd dmp	Ground clearance	10 inches
Rear	Swinging arm	Seat height	29 inches
Wheels,		Handlebar height	37½ inches
Front	17 inch, wire spkd	Dry weight	146 lbs
Rear	16 inch, wire spkd		

CHASSIS, Kami MX

Frame type	Single backbone, double engine cradle	Tires,	
Wheelbase	43¼ inches	Front	2.50 x 16 x 21¼" dia.
Overall length	64 inches	Rear	2.50 x 16 x 20" dia.
Suspension,		Brake(s)	Frt & rear, int. expan.
Front	Telescopic, hyd damp	Ground clearance	8 inches
Rear	Swinging arm	Seat height	27 inches
Wheels,		Handlebar height	37 inches
Front	16 inch, wire spkd	Dry weight	128 lbs
Rear	15 inch, wire spkd		

PRICE AS TESTED Kami JX, \$344.95; Kami MX, \$319.95

cant of the shocks on the smaller machine aids considerably in softening things up. The front forks of the JX were raked forward, it seemed, a little more than those on the MX and this produced more stable steering characteristics, although there could be no complaint in this department about either machine. We did notice some oil leakage from the front forks of the JX after two days of hard riding but this later proved to be due to insufficiently-tightened outer fork nuts. These things are to be

expected on pre-production models and we have been assured that inspection of production models will be rigid. Still, both front ends were well above average and provided about 3½ inches of well-dampened travel.

The sharp-eyed reader will notice some inconsistencies about the air-cleaner arrangements on the two machines. Bill Butler of Fun'n Fast was given the job of coming up with a good air cleaner arrangement but did not have time to

Continued on page 72

There are front ends and there are front ends. What we mean is, all that telescopes is not great. Even if it is hydraulically dampened, it isn't, necessarily, ideal.

The basic type of telescopic front forks is mechanical. These forks employ springs only to provide the cushioning. They are simple, inexpensive and the least effective. They rely solely on the compression of the spring to absorb shocks. Some use progressively wound springs, that is to say, springs with tighter wound coils at one end, to provide an increasing resistance to compression. However, in severe shocks all the spaces between the coils can be closed and the

plunger that restricts the return flow of oil so that the return rate is also dampened. Because trail shocks seldom occur one at a time, the design of the better forks includes bypass valves. This allows the hydraulic fluid free-flow, back and forth, so that it is always available to control repeated and rapid shocks. Obviously, some pretty sophisticated design engineering is required to produce a set of good hydraulically dampened telescopic front forks. That is why there are large differences in the price of front ends.

No matter how good the front forks are, they cannot compensate for inadequacies in the geometry. There is a difference between suspension and handling, although both are interrelated. However, a machine that has good geometry and only so-so suspension can often be improved by juggling with springs and oil consistency (provided they have hydraulic dampening). This is a time-consuming project for the individual and does not always produce the desired results.

Owners of popular machines sometimes have the option of installing "front end kits", designed commercially, to improve the front suspension. Two such machines are the Yamaha Mini-Enduro and the 100cc Hodaka, whether of the Ace 100 type or the Super Rat. We have chosen, as examples, two Mini-Enduro and two Hodaka kits to examine the ease of installation and the benefits derived.

The Hodaka kits were used to complement the series of articles on "Super Ratting" the Ace 100 engine and because the older models of the Hodaka present an inexpensive step-up from mini-cycles. Used Hodakas are often available for a song and, because of their original rugged construction, they usually do not require much work to bring up to "mint" condition.

The Mini-Enduro is, of course, one of the most popular mini-cycles on the market. However, in their stock form the front ends leave something to be desired for really rough use. And most get a lot of that. The single spring concept is okay for average use but is one of the first things that goes in a machine prepared for competition.

Tailoring all components on a machine to the rider's needs is the smart way to go. Modifications, which usually cost money, do not make much sense if the rider is not going to make use of them. For this reason we have shown two types of front end modification for both machines, in two steps. The reader should decide which to use.

FRONT END KITS

Perhaps the way to a better handling machine

forks will "bottom" or, in effect, become rigid. Also, there is no control of the return, or reaction, of these springs. This means that they oscillate, or "bounce", as they pass over obstacles. By careful design of the springs and use of friction bushings, the effects of these shortcomings can be lessened but mechanical telescopic forks remain a rudimentary form of front suspension. Still, they are much better than no front suspension at all.

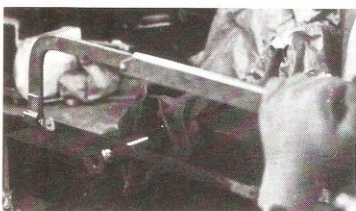
The second type of telescopic front fork uses springs in much the same way but there is also a reservoir of oil at the bottom. In this type of fork, as the springs compress, a plunger with a small hole (orifice) comes into contact with the oil, preventing the springs from bottoming. The oil (hydraulic fluid) does not compress appreciably but is forced through the orifice as the down stroke continues. This is known as hydraulic dampening.

However, there are considerable differences in hydraulically dampened telescopic front forks. Some provide dampening mainly on the down stroke. Others have a second chamber above the

MINI-ENDURO FRONT END KIT— STAGE ONE

This unit comes from Fun'N Fast, 18143 Napa Ave., Northridge, California 91324. Cost is \$19.95. The major advantage of the kit, over the stock unit, is that it provides springs in both legs and improved dampening. Travel is slightly improved, also, but not tremendously so.

However, there are definite improvements in the handling of the machine since both legs act with the same degree of suspension. There is less tendency towards deflection of the front wheel when a rock is hit with a glancing blow and the feel is more predictable when landing from a jump. The improved dampening shows in less oscillation, consequently keeping the front wheel more firmly glued to the ground. The kit consists of two dampening plungers and two properly calibrated springs.



TOP - All the equipment on the front forks has to be removed for the installation of the front fork kits. This may be a good time to decide whether or not to leave it off.

MIDDLE - The instructions call for hacking off a portion of the plunger on one side. Aside from this the work is all "bolt-on".

BOTTOM - The Fun'N Fast Yamaha Mini-Enduro front fork kit.

MINI-ENDURO FRONT END KIT— STAGE TWO

This front end kit takes the Mini-Enduro about as far as it can go without major cutting and welding. At least, we are not aware of another, more extensive, modification on the commercial market. It is manufactured by Torque Engineering Inc., 19755 Bahama St., Northridge, California 91324. In line with its sophistication, it is relatively expensive (\$46) but, as Pete Foster of Torque Engineering points out, it is only a few dollars more expensive than a new stock front end.

We were extremely satisfied with the change that the Torque Engineering front end wrought in the Mini-Enduro suspension. It produced about 1½-inches of extra travel Torque Engineering modestly claims 1-inch but it is our feeling that we will get even more than our 1½-inches after a few more miles hard riding. So far we have had the new front end for only two week-ends of riding. Right now we get about 4-inches of travel, which is astounding in a machine of this size. In fact, if we get much more travel we'll have to start

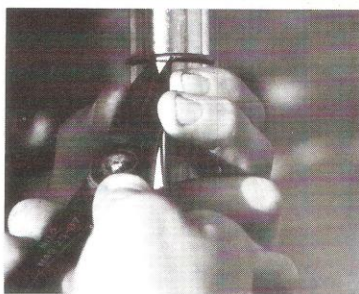


ABOVE - Removing the outer fork nut can be achieved by wrapping it with a piece of rubber inner-tube and using a wrench, as shown. The same thing can be done with an adjustable pipe wrench with jaws. This job can best be done after removing the fork tube and clamping the axle bearing section in a vise. Most outer fork nuts can be tackled in the same way.

worrying about the clearance between the fender and the top of the tire.

One of the important features of the Torque Engineering kit is the replacement chrome-moly upper legs. These upper tubes are precision ground from bigger diameter tubing and effectively eliminate the threat of bent forks. Other new parts of the kit are well-designed dampening plungers and new springs on both sides.

Dampening was much improved. There was a super-fork feeling about the impossibility of inducing bottoming. The return rate was controlled nicely and there seemed little deterioration of dampening over a continuous series of whoop-dee-dos. Naturally, this did nothing but improve the overall handling.



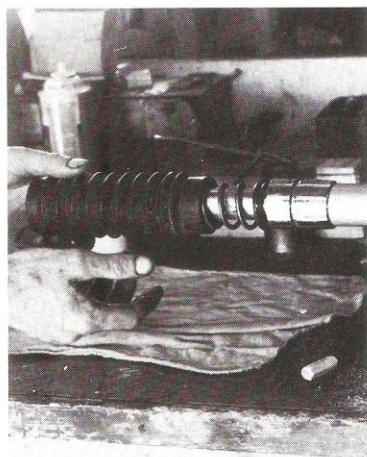
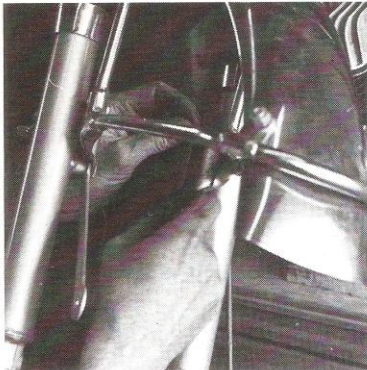
TOP - With the lower leg exposed, it is a simple matter to remove all the stock internal components. These can be discarded as they are no longer required.

BOTTOM - The only part of the internal components retained for use in the Torque Engineering kit is the retaining ring on the upper fork tube. It is a bear to remove and to re-install on the new fork tubes without scratching up the metal. This was the only difficult part of the installation and could be eliminated if the manufacturer would install a retaining ring during production.

HODAKA FRONT END KIT— STAGE ONE

The early Hodakas had a front end that had a deservedly evil reputation. The springs were located on the outside of the forks and produced a measly 3-inches of travel. This, on a dirty motorcycle, was nowhere near enough. So it was that a front fork kit was designed.

The Ti-Cro "intensified" Hodaka fork kit is available from Tiger Distributors, Inc., 653 West Broadway, Glendale,



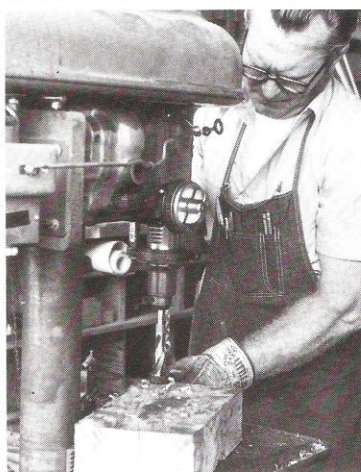
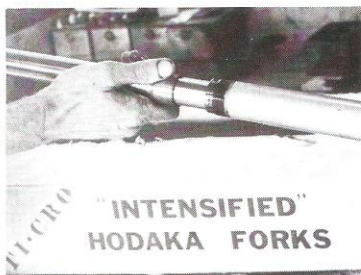
TOP - Removing the stock fender from an older Hodaka. Care should be taken to note the order in which the front brake backing plate anchor arm is attached to the fender mount bosses on the lower fork tube. They have to go back in the same order.

BOTTOM - With the fork leg removed from the machine, it is a simple matter to remove the spring mounted on the outside of the upper leg. The rubber dust boot is not used with the Ti-Cro "intensified" fork kit, neither is the spring.

California, 92134. The cost is \$79.95 which may seem on the high side but it must be remembered that this is a full-size motorcycle front end.

The Ti-Cro front end replaces the "itty-bitty" outside springs with softer, and longer, internal springs. It also includes a new set of internal bits and pieces, upper legs, dampening plunger and so on. There are spring tensioning screws in the over-size cap bolts to take up any subsequent permanent shortening of the springs due to bashing around.

Major benefit of the new forks is an increase in travel. After loosening up for a few hours in the desert we got nearly five inches of travel, which begins to make sense for a dirt bike. Downward dampening was also up to par but the return dampening left something to be desired. Still, the Ti-Cro Hodaka forks turned the old Hodaka into an acceptable dirt machine, which it certainly isn't with the stock forks.



TOP - The new upper legs are installed over the new internal springs and dampening plunger, using the sliding bushing from the stock forks. Care should be taken not to scratch up the legs as this could result in uncontrollable oil leakage.

BOTTOM - The fork crown has to be drilled out to receive the larger cap bolts. The right sized drill costs around \$14; we paid \$1 to have a commercial machine shop do the work.

HODAKA FRONT END KIT— STAGE TWO

If the Hodaka owner wants to go the extra half mile, he can turn the machine into one of the sweetest handling little dirt machines we have come across. This isn't a kit, in the accepted sense of the word. That is to say, the buyer does not have to assemble it. It comes pre-assembled; all you have to do is junk the old forks and install the new ones.

What we are talking about is the leading link front end for Hodakas from Swenco Engineering, 9569 Ninth Street, Cucamonga, California 91730. This front end is extravagantly engineered so the \$105.95 price tag is no surprise.

This is the same type of front end used on the famous Sachs dirt machines that are generally recognized to be one of the best handling lightweight motorcycles on the market. It so happened that one of our test riders, with us when we ran the Swenco front end in a hare

Continued on page 61



ABOVE - The Swenco leading link front end is not a kit but is sold ready for installation. The geometry of the unit can be seen in this shot and it will be noted that the shocks do not follow the angle of the steering head, which is the common practice. However, leading link geometry is an inexact science and, in point of fact, this design works out excellently. At the time of installation, we did not have a finder to fit but a universal mounting plastic fender and bracket was installed later, and worked just fine.

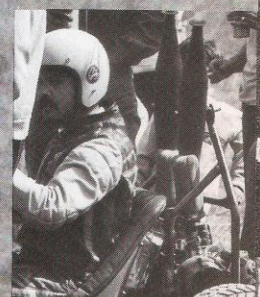
THREE WHEELERS GO ROUND AND ROUND



Two competitors approach a tight turn around the tree.



And things get kinda close. This was typical of the action in close-circuit three-wheeler racing.



Dunecycle's twin McCulloch drag-racer.

Growing interest seems to be developing in three-wheeler racing of all kinds. A recent development for the Western States are short-track three-wheeler events, although they have been a feature of all-terrain events in the Mid-West for some time. The major organization providing three-wheeler classifications in Southern California racing is the Recreational Vehicle Racing Association. The RVRA recently staged a scrambles type of event for three-wheelers at Indian Dunes.

It was an exciting duel for those participating and equally exciting for those watching, although the spectators only

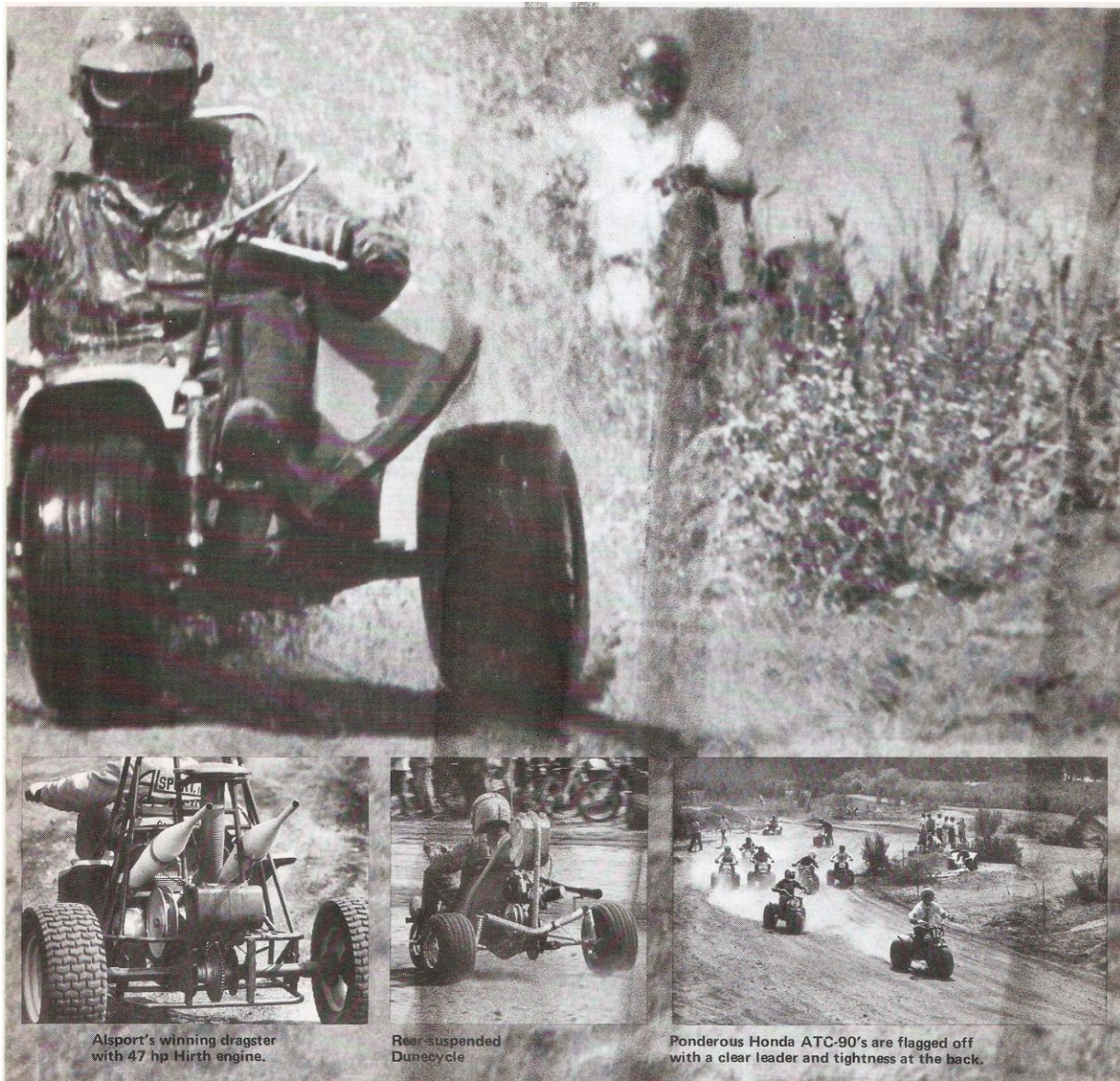
had a short section of the track in view. The competition was fierce and the tightness of the track led to a number of upsets, especially in the bigger horsepower classes. However, nobody was hurt, largely because speeds were relatively slow (in relation to motorcycles, that is). Again this was a result of the tightness of the course and the number of left and right turns. Given enough room, these machines have proved that they can really crank it on in several desert races.

The course included several sharp banks but no real hills. There was, of course, a water section (there almost has

to be in three-wheeler racing) through the bed of a stream but this was mainly a series of large, although disconnected, puddles. Still, the charging machines kicked up a lot of muddy spray, quickly making the competitors look as though they had gone through a much worse ordeal than they had in fact.

A feature of this event was a match drag race resulting from a challenge laid down by the Dunecycle team. The challenge was picked by the Alsport people and the drag was held on an airstrip bordering Indian Dunes.

The Alsport machine was powered by a snowmobile two-cylinder Hirth engine



Alsport's winning dragster with 47 hp Hirth engine.

Rear-suspended Dunecycle

Ponderous Honda ATC-90's are flagged off with a clear leader and tightness at the back.

turning out 47 horses while the Dunecycle machine had a 1944 Velocette motorcycle engine with about 30 horses, so it was really no contest. The Alsport machine walked away with it. While the Dunecycle frame was more or less stock with rear suspension, the Alsport was a special space-frame racing machine with three hydraulic disc brakes. It is being sold to people who want to win races for about \$1500. It was really all for fun and even the Alsport people acknowledged that the results didn't really prove anything except a 47 hp machine will beat a 30 hp machine in straight-line competition.

Still, drag racing with three-wheelers might provide an interesting competitive outlet. Certainly, closed track racing is

going to prove exciting, despite the original "open-country" justification for the machines.

Results: 5 hp, stock, 1) Ron Meyre, Dunecycle, Anaheim, Calif.; Roy Losi, HPE Cat, Chatsworth, Calif.; 3) Bennie Meredith, Dunecycle, La Canada, Calif.

14 hp, modified, 1) Gerry Rupp, Dunecycle 10 hp, Saugus, Calif.; 2) Ron Cawlyer, Dunecycle, 14 hp, Hanford, Calif.; 3) Frank Heintz, Dunecycle 14 hp, Santa Barbara, Calif.

Modified flatheads, 1) Bill Stull, Dunecycle 5 hp, Whittier, Calif.; Adrian Taylor, Dunecycle 5 hp, Santa Ana.

Open class, 1) Jerry Smith, Alsport 14 hp, San Bernardino, Calif.

Zero to 160cc class, 1) Fred Wing, Honda ATC-90, Torrance, Calif.; 2) Tomas Lavgen, Honda ATC-90, Hanford, Calif.; 3) Bruce Wing, Honda ATC-90, Torrance Calif.

Ages 13 and under, 1) Bruce Delia, age 12, Dunecycle 5 hp, Riverside, Calif.; 2) Albert Behr, age 12, Alsport 3 hp, West Covina, Calif.; Keith Cochran, age 12, Sears 4 hp, Buena Park, Calif.

Powder puff, 1) Joy Nolet, Dunecycle 5 hp, Colton, Calif.; 2) Shannon Anderson, Dunecycle 5 hp, Whittier, Calif.

Four-wheel ATV, 1) Gil Losi, HPE Cat 4 hp, North Rialto, Calif.



A radical realignment of Bonanza's production facilities is evident from our latest test machine, the Cyclone Mk II from the San Jose, California, factory. The Cyclone Mk II is like nothing bearing the Bonanza name we have seen before. The former Bonanza mini-bike design has been around for so long that it creates a shock to think that somebody in the organization feels it could be done better.

Yet, "better" is how we would describe the new design. Certainly, it is better, from a manufacturing point of view, because of its greater simplicity.

The new frame design features a double tube backbone and single loop engine cradle. Those readers who have older Bonanzas will note that their frames are basically two loops tied together by transverse members. This former design is basically the same type of frame used for the first mini-bikes some ten years ago. The single engine cradle loop has been in use by other manufacturers for some time but Bonanza uses it differently.

Instead of welding the front of the cradle to the bottom of the steering column, the usual practice, Bonanza runs it up to the top of the steering head. The two backbone tubes run from

the bottom of the steering head to the back of the seat, without any bends, in a straight "V". The backbone tubes pass on either side of the engine cradle tube, forming a triangle to support the steering head and bracing to prevent side-to-side "whipping" of the engine cradle.

It is a novel arrangement and obviously has much to recommend it. The only comment we would make is that a well-formed gusset would improve the appearance of the area and might serve to hide some of the rough-looking welds. The size of the steering head inspires confidence and it has ball bearings top and bottom.

The engine cradle loop goes down the front of the engine, under the engine mount plate, and back up to a transverse tube under the seat. The transverse tube is welded to the backbone members on each end and the engine cradle loop is welded to the middle. The arrangement gives solid support to the fiberglass seat bottom.

The engine mount plate is an important structural part of the design as it provides mounting for the jackshaft, swinging arm, foot pegs and kick stand, as well as the engine. It is a sturdy box member angled from the bottom of the engine cradle loop in the front to a

point a couple of inches up on the back side of the loop. In this way it triangulates the cradle loop.

A carefully fitted transverse tube, to hold the jackshaft, is set down about halfway into the plate. Bearings are fitted into either end of the tube to give the jackshaft full support. The only thing we didn't like about this arrangement is the collar and set-screw used to hold the free end of the jackshaft. These set-screws have a habit of vibrating loose unless care is taken to seat them properly and loads of Loctite used to prevent them from turning.

A potential source of problems with the old Bonanza style of mounting swinging arms has been completely solved with the new design. The old style had the pivot bolt mounted in a plate and they could, and frequently did, develop egg-shaped holes if the bolt got slightly loose. The new design, however, has ample bearing area and the problem should be a thing of the past. The swinging arm terminates in a short bearing tube through which the bolt passes into a collar welded to the engine mount plate. More than enough bearing surface yet simple in concept.

Likewise, the old method of mounting the kickstand onto one of the engine



**Off With
The Old And
On With The New**
**BONANZA
CYCLONE
MK 11**

MINICYCLE
TEST

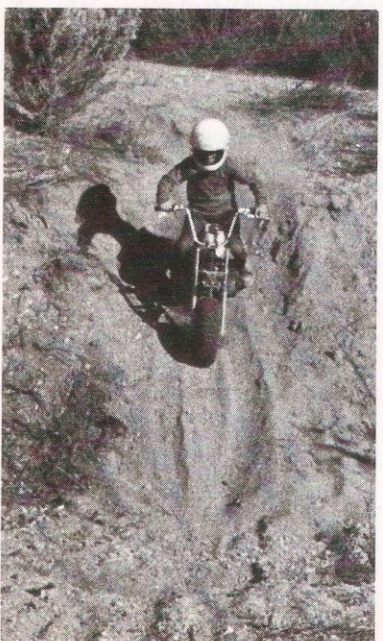
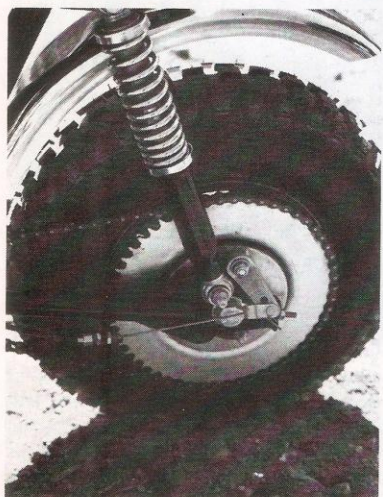
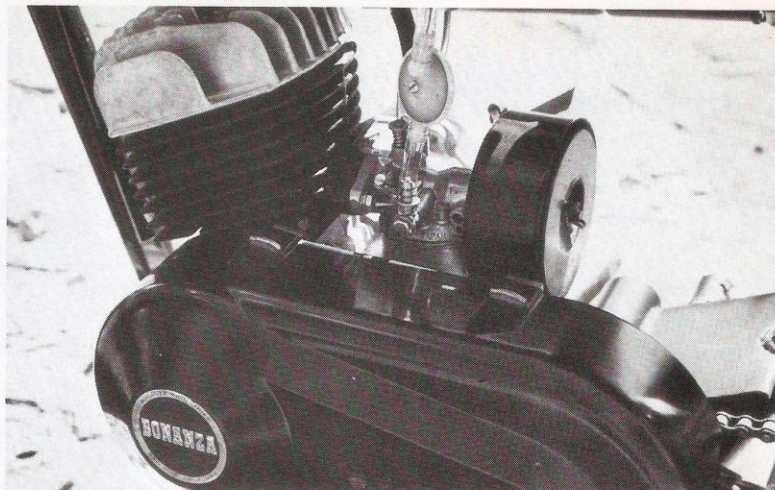
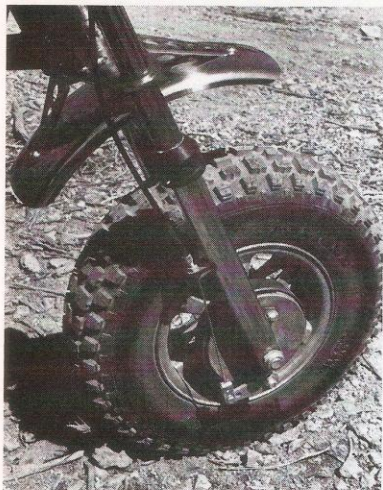
mount bolts left much to be desired as they invariably worked loose and wouldn't support the machine. In the Cyclone Mk II, the kickstand is mounted in a short tube that passes through the engine mount plate, providing loads of lateral support. The only problem remaining is to come up with a kick stand that has a foot on the end to prevent it from digging into soft ground.

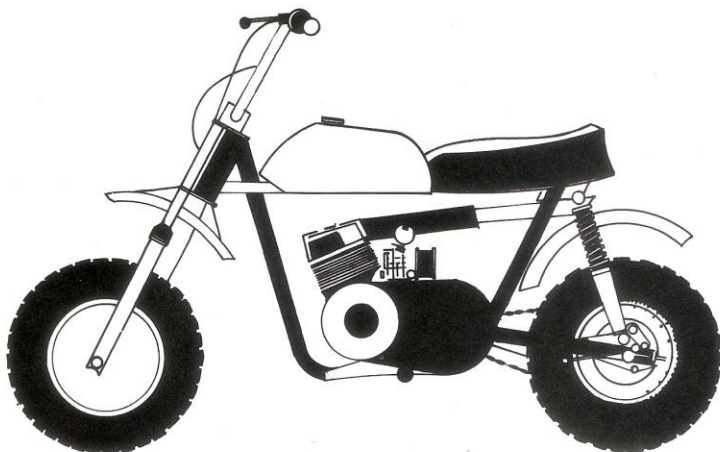
About the only carryover from the old design is the foot pegs, which have a habit of gradually collapsing under rugged use. The bearing rod for the foot pegs seems adequate, although a little on the long side, but the aluminum pegs themselves have to go. Bonanza tells us they are working on the problem.

Suspension at the rear is via two adequate, though not awe-inspiring, shock absorbers. At the bottom they are mounted on a tab welded to the swinging arms just forward of the axle mount. At the top they are mounted in a tab welded to the backbone members. Various mounting holes would permit some adjustment. The swinging arms have a transverse tube between the tire and the back of the engine cradle to prevent independent movement of the arms.

At the front there are well-raked telescopic forks similar to the MX type seen

MINICYCLE / 33





CYCLONE MK II

Manufacturer: Bonanza Industries Inc., 1775 South First St., San Jose, Calif. 95112

ENGINE

Engine type	Fuji two-stroke, sngl	Carb	Mikuni floatbowl
Bore	52mm	Ignition	Flywheel magneto
Stroke	45mm	Lubrication	Oil mist
Displacement	96mm	Fuel capacity	1 gallon
Horsepower @ rpm	6 @ 6,000	Fuel requirement	20:1 Reg., gas:oil
Compression ratio	N/A		

TRANSMISSION

Transmission type	Torque converter	Final drive	No. 41 chain
Primary drive	Belt	Gear ratios	Infinitely variable
Clutch type	Auto cenfrifugal		6:1 high, 19:1 low

CHASSIS

Frame type	Single backbone double engine cradle	Tires,	
Wheelbase	42½"	Front	4.00 x 8
Overall length	59½"	Rear	4.00 x 8
Suspension,		Brake(s)	Frnt & rear, int. exp.
Front	Telescopic forks	Ground clearance	6"
Rear	Swinging arm	Seat height	26"
Wheels	8" aluminum split rim	Handlebar height	32½"
		Dry weight	96 lbs.

PRICE AS TESTED **\$325**

on the Bonanza competition mini-bikes of previous years. However, the forks on our test machine did not have any internal bearings for the upper legs which telescope into the lower legs. The design seems elementary with a simple spring to provide the cushioning. The lack of internal bearing guides for the upper legs, combined with the considerable rake of the forks, means that the edge of the lower legs gouges the sliding area of the upper legs as they bounce up and down. Something has to be done about this.

Wheels on the Cyclone Mk II are the 8-inch die cast aluminum split-rim units introduced by Bonanza two years ago. Mounted, front and rear, are 4.00x8 Carlisle knobbies with rounded sections. More than enough braking was provided for our test machine by front and back internal expansion brakes, both oper-

ated by hand levers on the handlebars. Threaded cable stops at the ends of both brake cables provide easy adjustments to take up cable stretching. The only other control on the bars (aside from a quarter-turn throttle) was a welcome pushbutton ignition kill switch.

Mounted over the double backbone frame members is the famous Bonanza fiberglass gas tank equipped with a fuel shut-off valve. Holds about a gallon with an in-line fuel filter. There's the eye-catching new Bonanza emblem blazed across the tank, just in case there was any doubt in the watcher's mind. Behind the tank is a comfortable seat, although some of the smaller riders found it a little wide on the front end.

The fenders, kinda on the broad side to accommodate chunky tires, are polished and chromed steel with the front one being mounted, rakishly, on a

perforated, motocross style bracket. Overall finish on the machine was good although the black paint job, good though it is, is more functional than beautiful.

Now to the power plant. The engine is a Fuji two-stroke with 100cc capacity. It was in a very mild state of tune and, we suspect, built more for longevity than excitement. Still, its rated six horses at 6,000 revs would seem to be ample for the size of machine and its intended users.

Our test machine was a pre-production prototype and the exhaust manifold was obviously not intended for the engine. The bend coming out of the engine was so sharp that it just had to be restrictive. Two-strokes don't take too kindly to this sort of treatment and it probably cost us quite a bit of the available power.

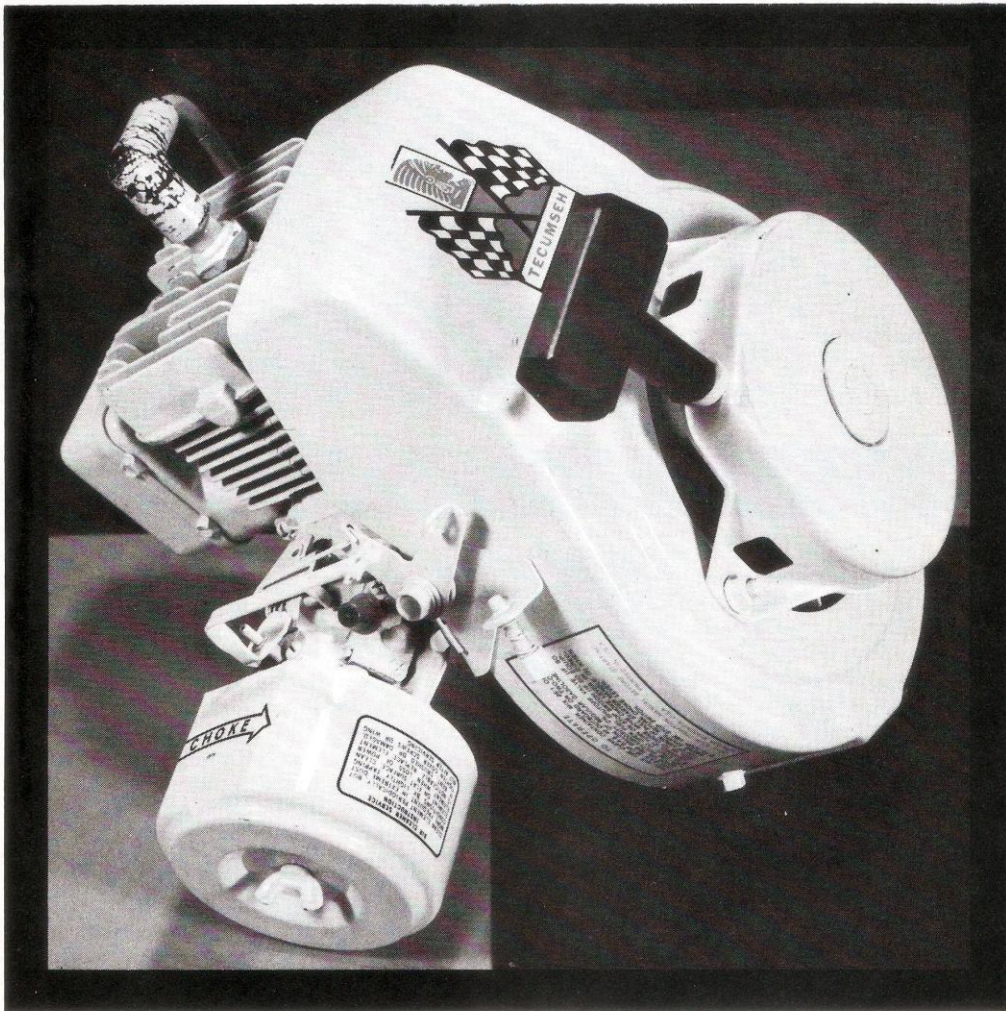
Conversations with Bonanza engineers, following the test, revealed that they had a new exhaust manifold with a more gentle bend in the works and they were considering using the new Taylor Products muffler, which seems like an excellent choice. The spark arrestor/muffler on the test machine did a good job of quieting the engine but it, too, was probably overly restrictive.

An impressive feature of the Fuji 100cc engine was the amount of finning for the free-air cooling. This should ensure its ability to run forever, even at idle speeds in the California desert, without overheating. Starting the thing was another joy. The pull rope felt like there was almost no compression on the other end and even a weak-kneed eight-year-old could easily get the thing spinning away. The carb was a 16mm Mikuni that seems a little on the small side for a 100cc engine. It was the float bowl type and had a little lever on the side for choking. The air filter was a paper cartridge that is not really suitable for dusty conditions.

Drive unit on the Cyclone Mk II was a Comet torque converter. It was the asymmetrical type with both moveable sheaves working on the outside of the driver and driven pulleys. This allows the jackshaft sprocket to be mounted inboard of the driven pulley, on the same side as the torque converter. Thus the drive train is all on one side, although we don't know if it makes much performance difference, one way or the other. The gear ratio range is from 6:1 in high to 19:1 in low. This seems like a nice selection but some adjustment of the engagement speed appears needed. As it stood, it was no ball of fire at

Continued on page 70

A PEEK INSIDE THE NEW TEKE TWO BANGER



ORMEL DUKE
LOOKS AT THE
TECUMSEH'S 817
TWO-STROKE FOR MINI-BIKES

By O. F. DUKE

Hey, have you heard about the new AH-817 by Tecumseh? That new two-stroker for mini cycles that grinds up to—

Wait—wait—wait! Hold up, man! What's a Tecumseh? What's this AH-817 thing? What excitement are you off on now? Tell me, quick.

I was telling you quick until you shut me off at the corner. Now, if you will kindly put your kick stand down and settle back, I'll give you the whole bag from aardvark to zymurgy.

Aardvark? Zymurgy? I thought you were going to tell me about that, uh, uh,

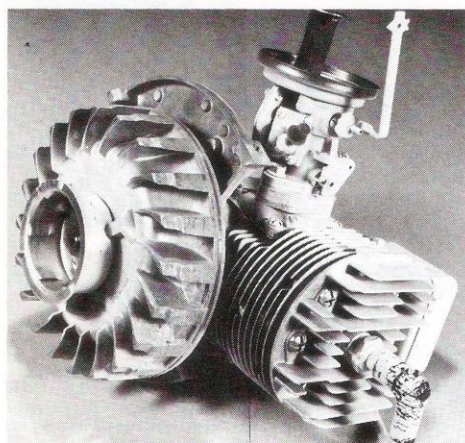
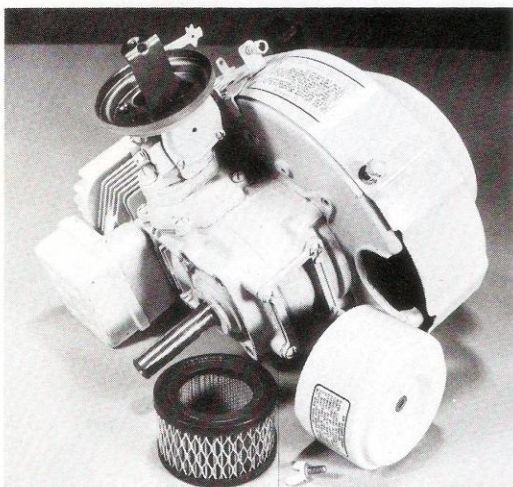
that, uh, that 817 thing? Now what are you off on?

Fellah, I'm going to tell you if you will just listen. OK? Here we go—

A long, long time ago, long before mini cycles and when karting was still using just about any kind of a popper that could be found, there was this outfit called Power Products. Now, they put together a real respectable engine which karters knew as the AH-58, and that little two-stroker sure took home its share of the trophies in those days. Somehow, though, that little engine dropped from the scene at just about the same time the first mini bikes start-

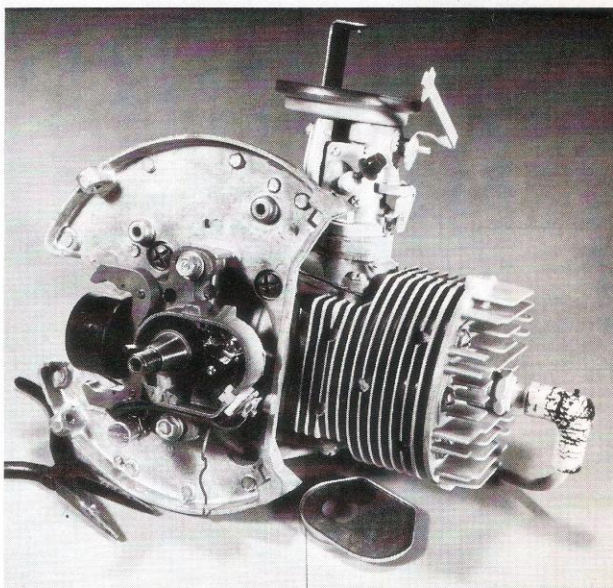
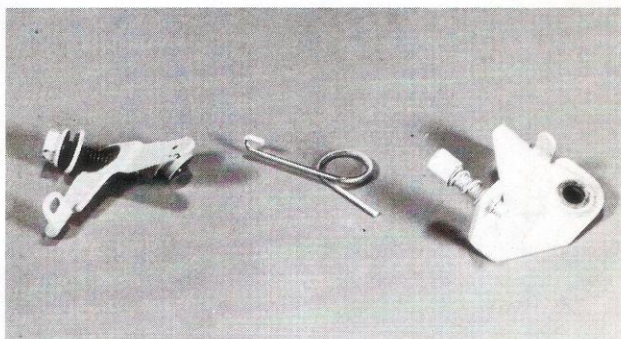
ed putt-putting around the back lots. Now, a big brother to that little 5.8 cubic inch screamer, the Tecumseh AH-817, is among us to put some real zip into mini cycling.

First of all, to show you what I mean, that 817 figure represents a displacement of 8.17 cubic inches, or 133cc's, whichever you prefer. On the corrected horsepower curve, this adds up to five solid horses at 5,700 revs per minute! Along with this, the 817 twists out slightly over five foot-pounds of torque at about 4,500 revs, and the torque curve is fairly flat from 3,500 to 5,500 revolutions per minute. When all of this



TOP LEFT - Pleated paper filter is big-time approach for mini-cycle engines. No more choked off air supply by oil-soaked sponges.

TOP RIGHT - Throttle return mechanism is positive, designed to provide smooth, not-too-rapid throttle control to prevent jerky starts.



BOTTOM LEFT - With shroud removed, the air moving capabilities of the flywheel fan are readily seen.

BOTTOM RIGHT - The conventional ignition are readily available for adjustment following removal of the flywheel.

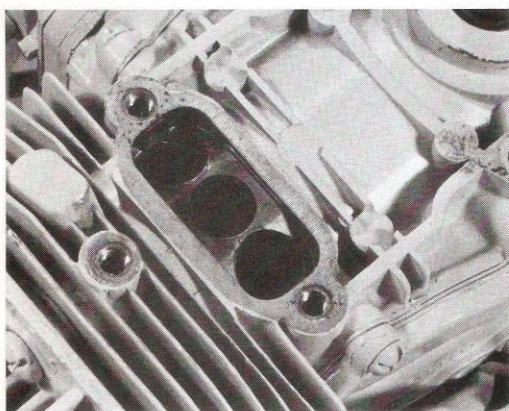
is added together, it means that you can cruise all day long without working the engine too hard; that you can crank it on up to six grand if you want to go real quick; or you can climb hills almost to the point where all the blood is in the back of your head.

To do this, Tecumseh Products has put together an over-square (Bore: 2-7/16-inch x Stroke: 1.3/4-inch) two-stroke cycle engine that weighs in at just about 12 pounds. To make sure that it will fit into the popper department of your bike, the people have kept it small and compact. To show you, check these:

From the bottom of the case to the top of the plug, the engine is just 11-3/4-inches. From the tip of the air cleaner wing screw to the far side of the case, it stretches only 11-5/32-inches. Then, from the outside of the recoil starter assembly to the far end of the PTO shaft, it's a mere 9-27/32-inches. And now that you know what the outside looks like, let's take a look into the innards at the things that go around and up and down—

Before starting to unbutton the engine, though, there was a guideline that was established. Simply, just what tools

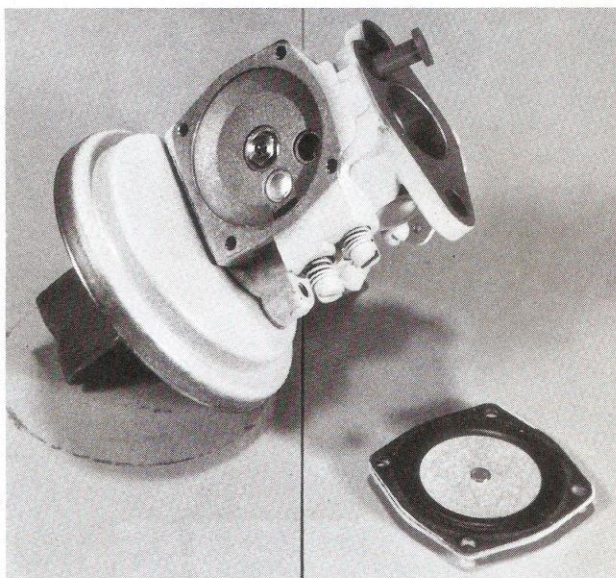
are required? It's one thing to have a garage full of special equipment that makes it possible to cope with any situation that might arise; it is still another to head out for a week-end of fun riding—and know that you can meet just about any problem without carrying along a van of tools. Thus, disassembly of the AH-817 got under way with only the following tools on hand: (i) A standard 3/8-inch drive socket set; (ii) a standard 1/4-inch drive socket set; and (iii) two screwdrivers, a ball-peen hammer, a small plastic head hammer, waterpump pliers, and a 14mm spark-



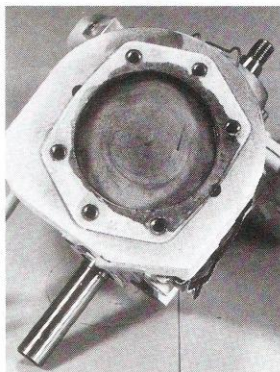
TOP LEFT - Three sizeable exhaust ports permit rapid removal of exhaust gases during scavenging portion of power cycle.

TOP RIGHT - The small but well-designed carb incorporates both diaphragm fuel regulation and an integral fuel pump (shown pulled from cavity).

ABOVE - The back transfer ports are accessible by simply removing the back cover plate.



LEFT - Although there appears to be an eight screw head hold-down pattern, only six screws are actually used. This is discussed in the text.



ABOVE - To form the correct squish clearance, the cylinder head fits down into the cylinder bore. This is not a metal-to-metal fit common to many large bike engines.

plug wrench. And the first thing used? Fingers—to remove the wing screw securing the air cleaner assembly.

Once off, inside the can was found a pleated paper air cleaner of the type commonly used for automotive engines. Although miniature by comparison, the area of the cleaner is more than adequate to properly breathe the engine. A plus here is that there is but minimum air restriction such as is found in the commonly-used oil-soaked "sponge." The filter is rubber-sealed on both ends and is sized to assure that there is seating without leaks which would permit

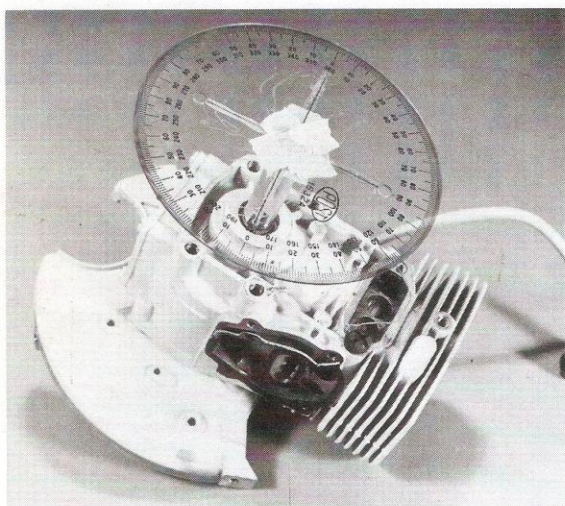
dirt and grit to enter the engine induction tract.

Next off was the flywheel shroud assembly, which included the throttle bellcrank and return spring. The arm lengths of the bellcrank, plus associated linkage to the carburetor were such to provide fine control of the carburetor without either under- or over-twisting of the handlebar throttle control. Although this may not sound important, a carburetor that opens too fast is just as dangerous as one that requires so much twisting of the throttle grip that the rider is left with a hand in an awkward

control position. Equally important is the sturdy, plated throttle return (dead man control) spring which forms part of the assembly. The spring on the unit under check was adequate to pull back all but the extremely corroded grips or badly damaged cables.

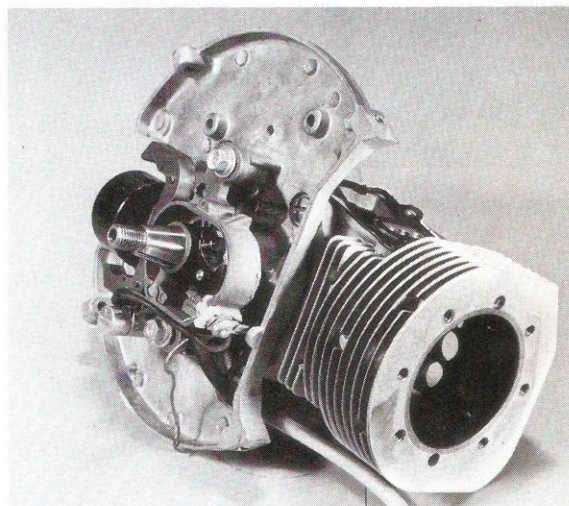
With the shroud off, details of the pull rope starter assembly were apparent. Here, as the starter rope is tugged, a single pawl moves outward to engage the starter cup secured to the end of the crankshaft. The flywheel proper, which also provides the base for the magnetic

Continued on page 62



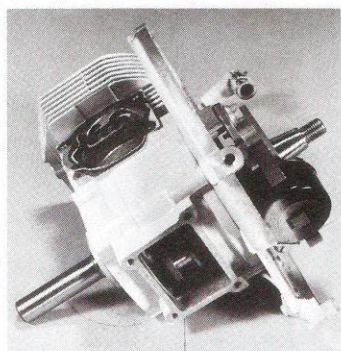
TOP LEFT - A jerry-rigged degree wheel was made up to check port timing, using a bent paper clip for a pointer.

TOP RIGHT - With the flywheel removed, the ignition breaker-points and condenser set-up can be seen.



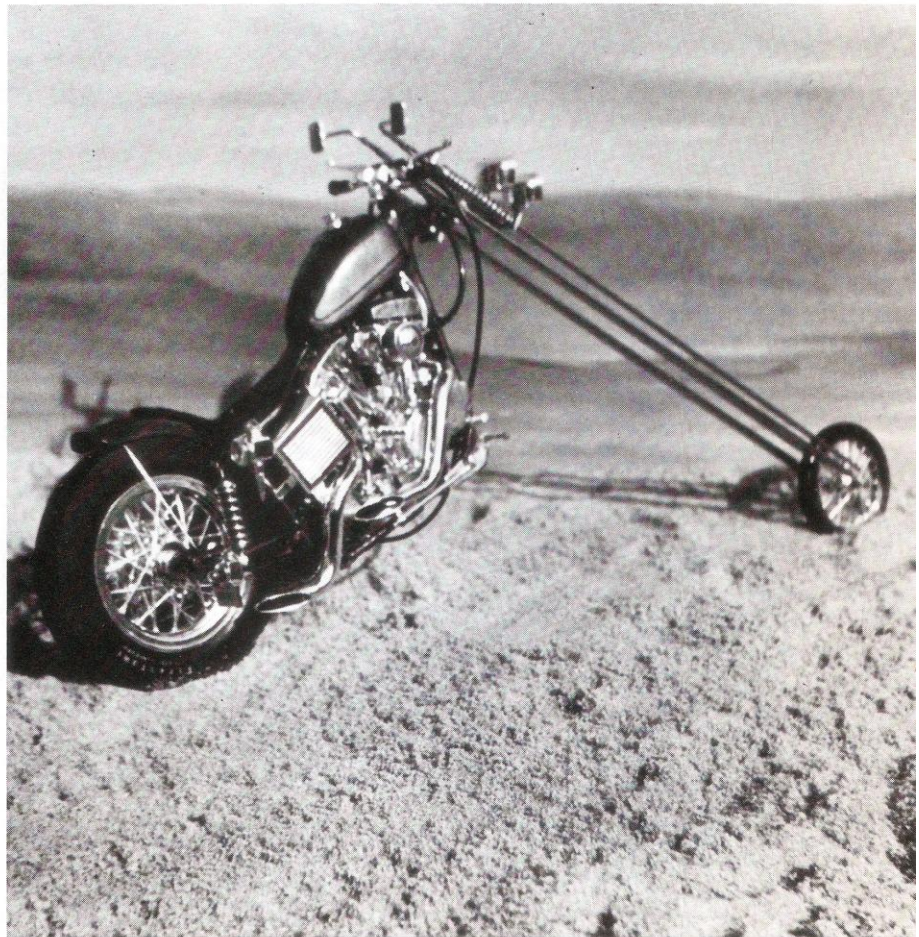
BOTTOM LEFT - The well-finished crankshaft throw is visible in this end view of the AH-817.

BOTTOM RIGHT - Piston rod and piston assembly - minus 66 tiny needle rollers. Rings are not pinned.



WINNERS NAMED IN MODEL CONTEST

1



Honda CT-70 goes to New Jersey; PABATCO F-480 engine to Texas; and Bell helmet to Massachusetts

By Brick Price

Very interesting! We might have expected at least one of the top three winners in our MiniCycle/Honda Model Making Contest to be from California. Wouldn't you? (The contest was announced in the February, 1972, issue and entry closing date was March 31, 1972.) Well, somehow we got beaten out at our own game by Joe Baebi of

New Jersey.

Joe's entry was picked from more than 500 submissions as the winner for many reasons including originality, neatness, quality, painting, photography, feasibility and a host of other things. On a 1-10 scale, Joe had 9's and 10's in most categories. A surprising number of entries followed exactly the methods and the model used in the article which an-

nounced the contest. Some of them were very well done but lost out in the "originality" department. Creative model-making is an art as well as a craft, and our winners seem to be especially gifted. Congratulations to the winners and thanks to all those who entered.

The following are critiques of the winning entries.



FIRST PLACE WINNER: Joseph Baebi, Maplewood, New Jersey, is the talented winner of our CT-70 contest. Joseph's Harley Chopper is one of the most outstanding motorcycle models I have ever seen in a contest. The time required to build the model was approximately 42 hours (not bad hourly wages for Joe when you consider the prize) which is slightly over the 40-hour average work week.

The lo-o-o-o-ng front forks are made out of nickle-plated brass tubing, jewel-

er's screws and working springs.

The headlights, tail-lights and license plate light are all operative using Grain-O-Wheat and Grain-O-Sand light bulbs. Joe bought these bulbs at a model train store and powers them by a hidden battery.

The basic model is a Revell 1/8" scale Harley Davidson Electra Glide. The tank came from an MPC Bronson model and was molded into the frame using modeler's body putty.

The paint job is fantastic. Joe started by painting the entire frame and tank with metallic turquoise diamond flake. The tank edges were then air-brushed with metallic burgundy and striped with a thin strip of tape. Green was then sprayed on and the tape was removed to expose the turquoise. The results are very dramatic.

The snazzy-looking seat is a custom job made out of scrap plastic, covered with crushed velvet.

The coach/brake lights came from a popcorn wagon and were hollowed out to accept the lights.

The handlebars and highway bars are made out of square tubing.

As a final touch, Joe made sure that all wiring, fuel lines and cables were duplicated using thread and tubing.

FIRST PLACE PRIZE: A golden Honda CT-70 to Joe from the American Honda Motor Corporation of Gardena, California. The CT-70 is one of the most popular mini-cycles on the market and should provide you with many happy hours of riding, Joe. Are you going to customize it?



2

SECOND PLACE WINNER: Mike Love of San Antonio, Texas, had the idea that if three is too much, then six ought to be just right.

Everyone knows that a Kawasaki III is a terror and many top dogs in drag racing have taken to running two such engines in a light-weight frame.

The source of parts for Mike's model

was a pair of Revell Kawasaki Mach III dragster kits in 1/8" scale.

The frames were sectioned together to form one long frame.

The front forks and rear struts were shortened 1/4" for lower ground clearance.

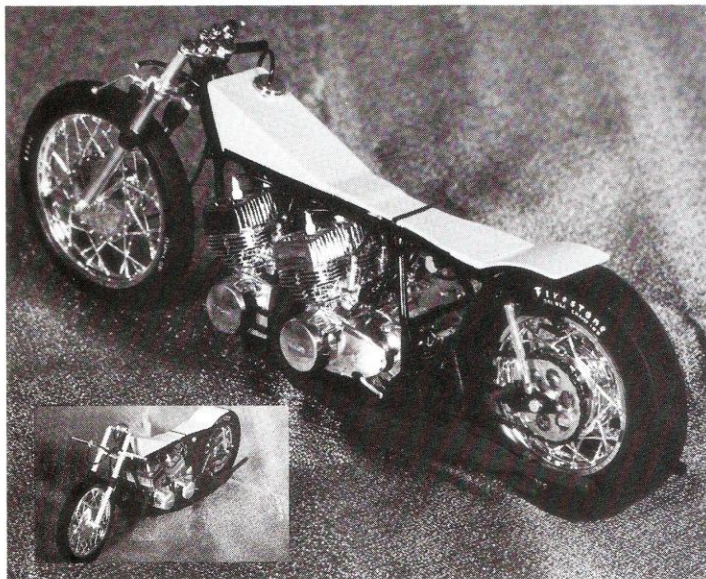
The tank-seat-fender combo was made from Plastruct sheet plastic with fittings from the Revell bikes.

The back of the transmission was cut from the front engine and the two engines are connected by a chain drive.

The shift linkage was eliminated since direct high-gear drive is employed.

The exhaust system is really wild! The bundle-of-snakes effect is the result of custom fabricating the pipes out of Plastruct tubing. The finish on this great model is several coats of Testor's yellow enamel.

SECOND PLACE PRIZE: Well, Mike, we just happened to find a Fuji F-480 two-stroke engine. This is the one now being used in the hotter mini-cycles and if you are as clever with full-size customizing as you are with models, the F-480 should give you quite a good start. I'm sure that PABATCO, who imports this mill and donated it to our contest, would be interested in what you decide to do with it so keep in touch, Mike.



3



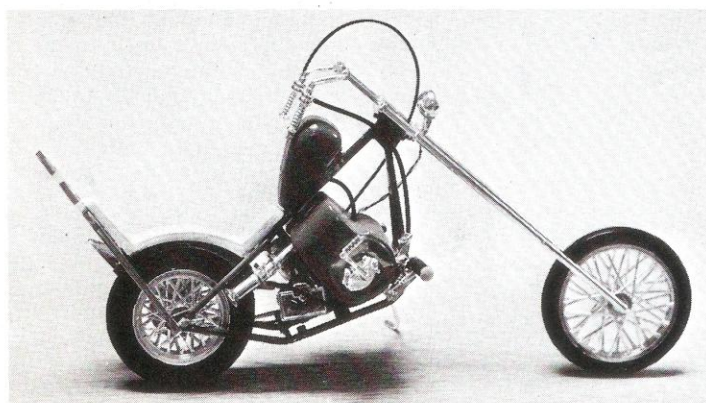
THIRD PLACE WINNER: Dan Guy of Lenox, Massachusetts, had the only unusual mini-bike entry in the contest and shows a lot of originality.

The engine is the old familiar Briggs and Stratton engine found in many mini machines, but that is where the similarity ends. The model is built entirely using parts from Revell's Rough Rider and MPC's Chopper Mini. The result is a model that has the look of a motorcycle, ala Mini-Enduro, but with the industrial engine of a mini-bike.

The paint scheme is yellow and purple with detail painting in silver and black.

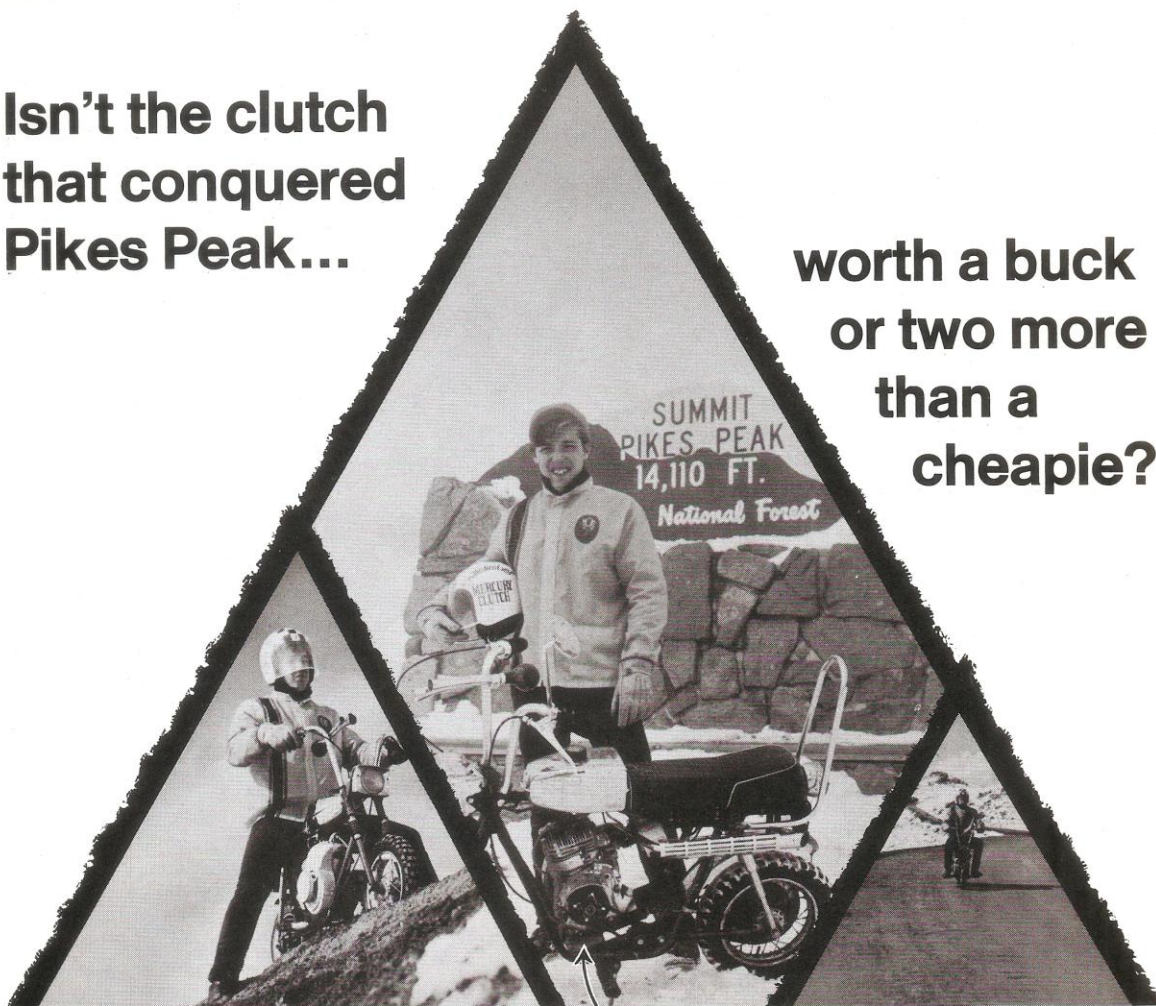
If you look carefully you will be able to see the "wiring" made out of thread.

THIRD PLACE PRIZE: Dan, we will be sending you a certificate for a Bell-Star helmet from Bell-Toptex, Inc., Long Beach, California. This great lid will prevent the scrambling of your creative brain and the certificate will enable you to get the right fit which is important to the safety aspect of all helmets.



Isn't the clutch
that conquered
Pikes Peak...

worth a buck
or two more
than a
cheapie?



Mercury Hillclimber

C'mon, you guys. Let's tell it like it is. The Hillclimber mini bike clutch has done something no other clutch could ever think of doing—it took a 125 lb. mini bike and a 165 lb. highschooler (that's 290 lbs.) up to the top of Pikes Peak*—14,110 ft.—some snowmobiles can't even do that! The trail was wet, and muddy. It was cold; snow was on parts of the trail. There were curves and turns and switchbacks and miles of long clutch killing 35° grades—up and up and up. After 20 miles of this torture, we examined the clutch. Hardly a sign of wear. This is the kind of clutch that's going to give you the riding enjoyment you deserve—month after month. That's why only Mercury has the guts to give you a 6 months

warranty. Now—be fair. Isn't the Hillclimber worth a couple of bucks more than a ting-a-ling cheapie? Why sit it out when you could be riding the range with The Hillclimber!

**Mini Bike Test permitted under special arrangement with City officials.*

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**Big
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Already-Fine
Design**

**MOTO-
SKEETER**

**550
&
650**

Last year we did a test of the first mini-bike model introduced by Moto-Ski Ltd., of La Pocatiere, Quebec, Canada. At that time we were considerably surprised at the number of innovations coming from a snowmobile manufacturer new to the mini-cycle scene. It's not less than a year later and Moto-Ski has gone all through their design and come up with entirely new concepts.

The two Moto-Skeeter test machines featured in this story, the models 550 and 650, display approximately the same dimensions of last year's models. They could best be called full-sized mini-bikes or compact mini-cycles. But beyond the size and the use of certain components, such as the gas tank and handlebars, the new Moto-Skeeters bear little resemblance to the former offerings.

The new models feature leading link front suspension which is, perhaps, the best way to go for lightweight machines. Designing a working combination for a leading link front end is mainly a matter of cut-and-weld until a solution is found. It is a time-consuming and not a very exact science.

Our first impression of the Moto-Skeeter front end was that it needed some more work. This was a purely visual impression. Most good leading links have the shocks lined up with the angle of the steering head and the front axle located ahead of the bottom shock mount. On the Moto-Skeeter this isn't so. The shocks are at a slightly sharper rake than the angle of the steering head and the axle actually runs through the bottom mounting points.

Still, as we said, leading link geometry is an inexact science and the Moto-Skeeter arrangement works very well in practice. We'd still like to know, however, if there would be any improvement by lengthening the swing arm. It would be interesting to see what would happen with the axle advanced about two inches and the bottom shock mount moved forward about half an inch, so that it is in line with the steering head angle. This would lengthen the wheelbase and there would be, undoubtedly, some sacrifice in maneuverability. On the other hand, it would probably increase the amount of travel for the front wheel, soften the ride, and produce a greater degree of stability. Another possible improvement might be to have the swing arm wrap around the back of the tire so that it is in one piece. This helps prevent wheel deflection, compared with the two independently acting swing arms found on the Moto-Skeeter.

Conjecture only and, in point of fact, the existing front end did a much better job than most front ends on similarly-sized machines.

Rear suspension on the new Moto-Skeeters is, also, entirely different from last year's models. Last year they had a swinging seat, pivotted at the front and cushioned by one centrally located shock. It worked surprisingly well, considering that it was a compromise on the swinging arm arrangement, and had the virtue of providing a soft ride. Still, as with all suspended seat arrangements, there was no rear suspension when the rider was standing on the pegs.

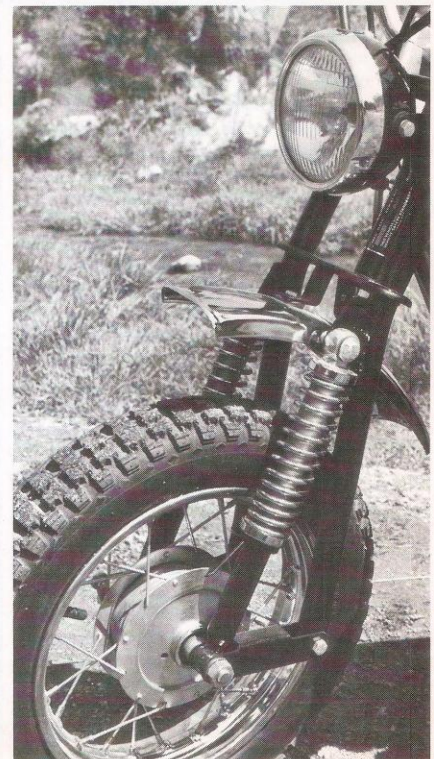
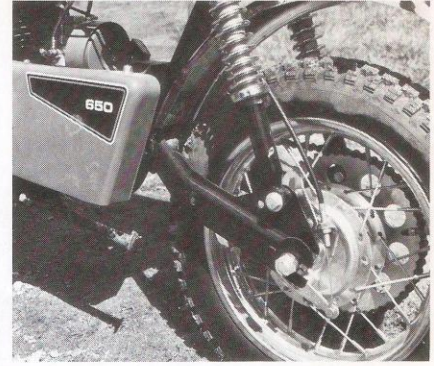
This year Moto-Ski has gone to the more professional swinging arm rear suspension. This has definitely improved handling, especially over rough, stand-up, terrain, but the sit-down softness has been sacrificed. If we had to express our druthers, we'd take the swinging arm for its greater strength, true suspension and more predictable handling. However, two shocks give a much stiffer ride than one, if they are of the same spring rate. To tell the truth, we lazy test riders miss the squishy comfort of last year's machines.

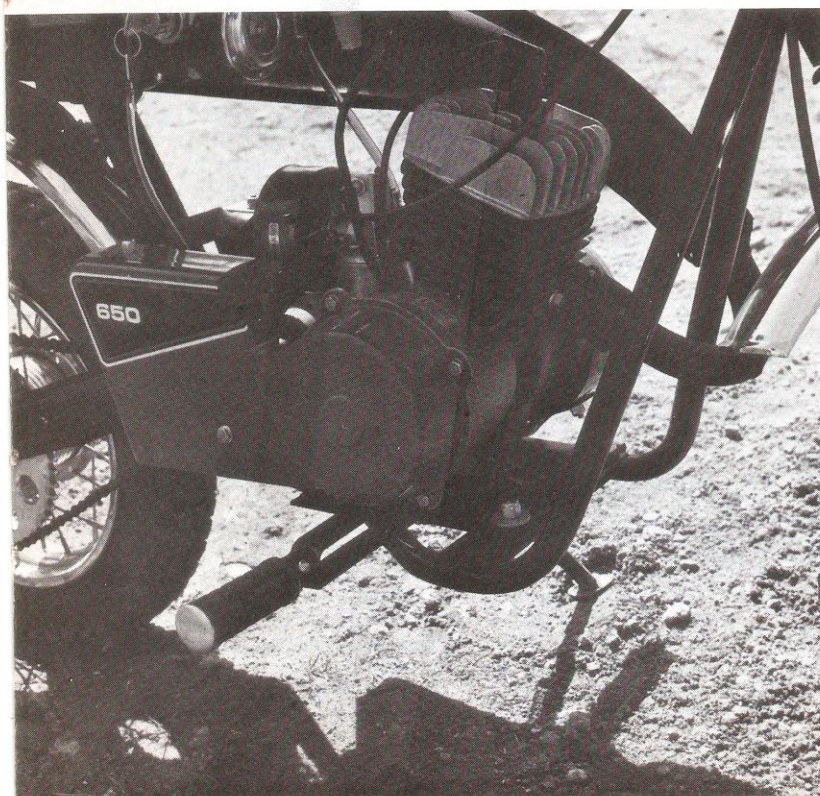
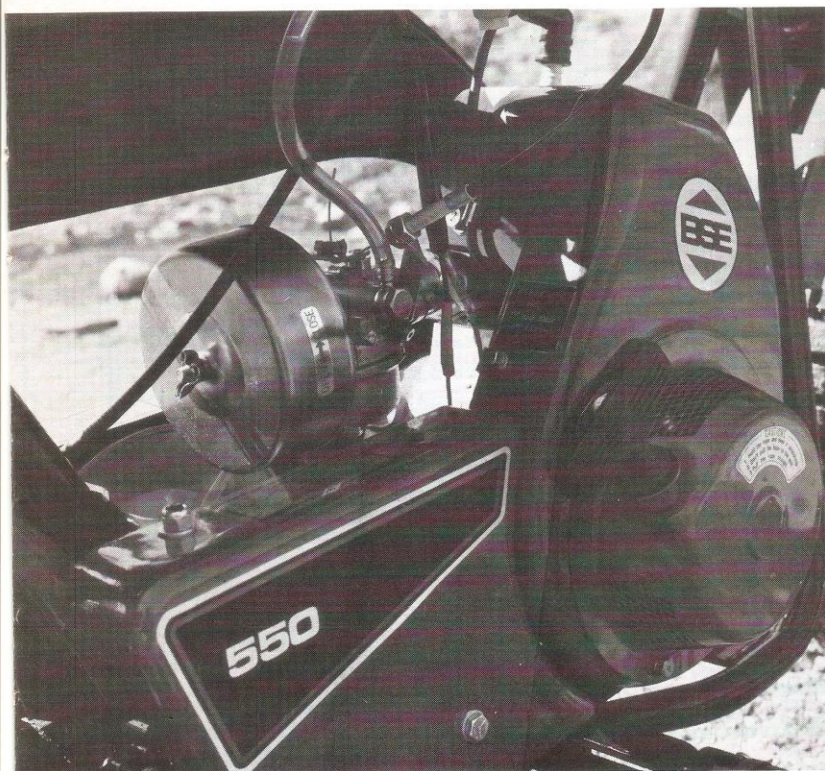
The swinging arm is constructed from pressed steel into a channel section and looks strong enough, although there is a rather sharp bend into the transverse tube pivot point. The pivot point is mounted in a box bracket behind the engine loop down tube and could do with more bearing area. Stamping the arms allows the bottom mounting ear for the shocks to be created out of one piece. The ear is drilled for two positions to allow for some adjustment of the springing rate. Last year the adjustments were at the top. The upper mount for the shocks on our test machines was in a flat piece of steel bent under the steel seat bottom and attached to the frame backbone member.

The frame, of course, has been totally redesigned from the former rigid rear axle arrangement. Now it has a single backbone, double engine cradle, design. The major change, and one we haven't seen before, is that the engine cradle has two forward down tubes (standard practice) but under the engine mount plate they are bent so that they run together, up the back. The major reason for this, as far as we can see, is to allow freedom of design when dealing with the power transmission components. Everything seems okay with the idea.

The main backbone member joins the steering head just above the down tubes of the engine cradle and it would seem as though the steering head column







would have more support if they were farther apart. Not that we had any problems with it as it was, nor did we expect any. There is a triangulating gusset between the backbone member and the down tubes. The backbone member runs under the tank and connects with the engine cradle members at the plate which provides the upper shock mounting.

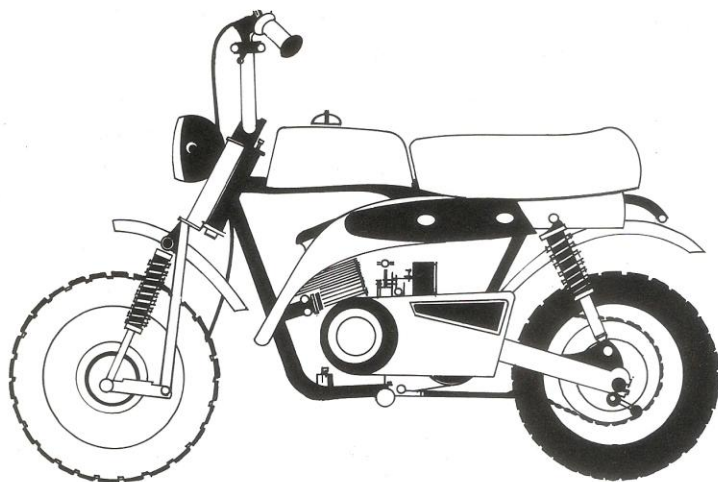
Following current market practice, the wheels have been changed from the previous eight-inch split rim, pressed steel, units to 12-inch wire spoked wheels with solid rims. They are mounted, front and rear with 3.00 section tires, or semi-knobby, tires. This results in more ground clearance and higher seat, compared with last year.

The Moto-Skeeter 650, which is a street-legal model, is equipped with hub-mounted internal expansion brakes, front and rear, both operated from the handlebars. The Model 550, which is an off-road mini-bike only, has a single brake at the rear. Both machines have sufficient braking although a front brake for the 550 would be welcomed. Polished chrome fenders are used at both ends and the brackets have rubber shock mountings.

Besides the brakes, the major differences in the two machines is in the engines. The 650 has a free-air cooled (motorcycle style) BSE (looks like a Fuji) 100cc engine. It is a slightly hotter version of the fan-cooled (shrouded like the normal industrial engine) engine in the 550. The 550 engine turns out a steady but unspectacular 5.5 hp at 550 rpm while the 650 engine is rated at 6.5 hp.

Both engines have similar-looking Mikuni floatbowl carbs although the 550 has an 18mm throat while the 650 has a 20mm throat. Last year the Moto-Skeeter had a funny-looking muffler that bolted onto the front of the engine but the mufflers on the new machines look more normal. They exit from the exhaust manifold in easy sweeps (unrestricted) and lead into large chambers. From there the gases exit through a little downturned stinger behind the back of the seat. They do a good job of muffling the sound, so much so that we wonder if there would be a power increase if they were fitted with a true expansion chamber and a good silencer. One suggestion would be to increase the length of the chromed heat shield forward a bit. It is possible to get singed pants when riding on the forward part of the seat.

Power transmission from both engines is via torque converters that resemble



MOTO-SKEETER 550 & 650

Manufacturer: Moto-Ski Ltee, La Pocatiere, Quebec, Canada

ENGINE, Model 550

Engine type	BSE 2-stroke, singl.	Carb	Mikuni 18mm floatbowl
Bore	50mm	Ignition	Flywheel magneto
Stroke	50mm	Lubrication	Oil mist
Displacement	98cc	Fuel capacity	1 gallon
Horsepower @ rpm	5.5 @ 5,500	Fuel requirement	25:1 Reg. gas:oil
Compression ratio	N/A		

ENGINE, Model 650

Engine type	BSE 2-stroke, singl.	Carb	Mikuni 21mm floatbowl
Bore	52mm	Ignition	Flywheel magneto
Stroke	45mm	Lubrication	Oil mist
Displacement	96cc	Fuel capacity	1 gallon
Horsepower @ rpm	6.5 @ 6,200	Fuel requirement	25:1, Reg. gas:oil
Compression ratio	5.5:1		

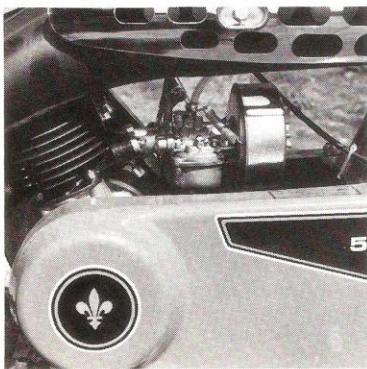
TRANSMISSION

Transmission type	Torque converter	Final drive	No. 41 chain
Primary drive	Belt	Gear ratios	Infinitely variable, 5.4:1 high, 17:1 low
Clutch type	Auto centrifugal		

CHASSIS

Frame type	Single backbone, double engine cradle	Tires,	
Wheelbase	40 1/2"	Front	3.00 x 12
Overall length	60"	Rear	3.00 x 12
Suspension,		Brake(s)	Frt. & rear, int. exp. (rear only Model 550)
Front	Leading link	Ground clearance	8"
Rear	Swinging arm	Seat height	28.7"
Wheels	12" spoked	Handlebar height	40"
		Dry weight	121 lbs. (550), 123 lbs. (650)

PRICE AS TESTED \$319 (550); \$359 (650)



Comet units but that are embossed with a "Moto-Ski, made in Canada" sign. At first it seemed odd, even unbelievable, that they would make their own torque converters. After all, the market for mini-bikes in Canada must be considerably smaller than in the U.S. But maybe it is not so strange when it is remembered that Moto-Ski is also in the snowmobile business and they have a direct financial connection with the giant Bombardier snowmobile people. Of course, snowmobiles use torque converters and were doing so long before they were made for mini-bikes.

If, indeed, the torque converters are similar to the Comet units, the gear ratio range is from 5.4:1 in low to about 17:1 in high. This is a perfectly satisfactory gear ratio range although the emphasis is on top end speed (with the 19-inch diameter tires, and given ideal circumstances, we'd figure around 50 mph to 55 mph). This is probably okay for the street but we'd prefer to get some of the power lower down for dirt use.

Talking about street usage, the dual-purpose 650 is equipped with a battery, full street lighting, reflectors, license bracket, clip-on rear-view mirror, and all. The only thing missing is a speedo and that is not necessary for licensing in most States and probably Canada. An interesting thing about the lighting setup on the 650 is the pull/push switch on the ignition switch bracket. This operates the lights while the engine is not running. A third position on the ignition switch juices the lights while the engine is running. On the right-hand side of the handlebars is a horn button and lighting control cluster. Integral with the twist grip throttle mount on the other side of the handlebars, on both machines, is a push-button ignition kill switch.

The handlebars are the same ones used last year and are the high rise type not particularly loved by the MiniCycle test crew. However, on the Moto-Skeeters they seem strong enough to take all kinds of punishment, even though they do not have cross brace. The grips are definitely angled too far to the rear and do not fall to the natural wrist position.

Also the same as last year are the tanks, about 1-gallon metal units that leave a little to be desired in the styling department. Behind the tanks are well-padded seats, about four-inches thick, that compensate greatly for the stiffer-than-last-year rear suspension. Missing, however, was the nicely whimsical trapdoor compartment at the rear of the seat. This was a nice place for tools and so on. On today's models you unsnap the naugahyde seat covering, lift up the foam rubber, and find the tools laying on top of the seat bottom. The handlebar/seat/foot peg relationship is acceptable but probably more suited to street and easy trail use. For riding over a lot of rough stuff, we would have preferred the folding pegs to be about two-inches further to the rear to make standing a little easier.

On the weekend we tested the Moto-Skeeters, we had a number of interesting machines with us, most of them bigger. So, for the first few hours, the

Continued on page 71

HOW NOT TO ENTER AN ENDURO

or how MiniCycle's team got wiped out

By Pat Mackie

The first mistake is in giving your friendly race organizer your real name. Especially if it's your first enduro. Better to enter under an alias. That way people may not recognize you when you're making a fool of yourself. Of course, it's a little tough to hide your identity when you're associated with a magazine, but we should've tried.

We really didn't stand a chance, though. Brian Cochran, the organizer of the recent California Small Bore Enduro, was too sneaky. He called on the telephone to throw down a challenge that we couldn't very well walk away from. "You guys are always writing about desert racing," he said, "how about entering our enduro, just to see what it's really like."

We'd been riding around on the desert for more years than we care to remember and we thought we knew what we were doing, although we'd actually entered very few desert races.

"Sure," we said nonchalantly, "maybe we'll enter a whole team. Call it the MiniCycle Racing Team." It was a case of acceleration of the mouth before having the mind in gear.

Anyway, we called around to our test riders and put the proposition to them. The first question in each case was about the type of machines we would be running. "Oh, any test machines that we happen to have around," was our airy rejoinder. That caused some "pregnant pauses" on the other end of the telephone but Greg Lersch and Rick

Henricksen are nothing if not adventurous and a riding weekend was a tidy inducement.

As it so happened, we had three machines handy that were more or less ideally suited for a prolonged, 80-mile, desert ride. Left over from testing was the Honda SL100, the Harley-Davidson Baja 100 and the Montesa 125. The Montesa just squeaked under the 125cc upper limit on the Small Bore Enduro. There was some considerable discussion as to who would ride what and finally Henricksen got the Montesa, Lersch was mounted on the Harley and Mackie wound up with the Honda. Of the three, the Honda was the least well prepared for desert riding, having only mildly knobby trials type tires and an equally mild state of tune. Still, as it turned out, it was the only machine that ran the bone-grinding 80 miles without trouble.

The Honda was also the only machine equipped with a speedometer. A good speedo, preferably one with a trip odometer (which the Honda did not have) is essential for an enduro event. In an enduro, you do not ride against each other but against a clock. What happens is that the organizer, in this case dirty Brian Cochran, sets out to find the most impossible trail through the most difficult terrain he can find. The trail is marked with ribbons, tied to handy bushes. Then he sets up checkpoints and establishes an optimum time for riding the distance between the checks. A card is given each of the entrants showing the distance between the checks and "zero

points" time of arrival for the first group of riders at each of the known checkpoints. This is known as the "key time."

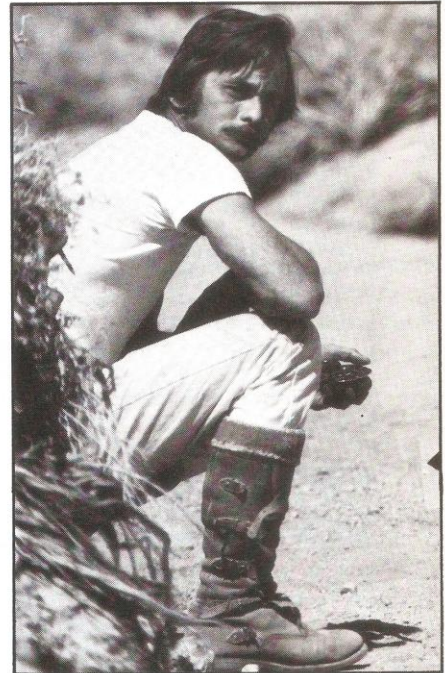
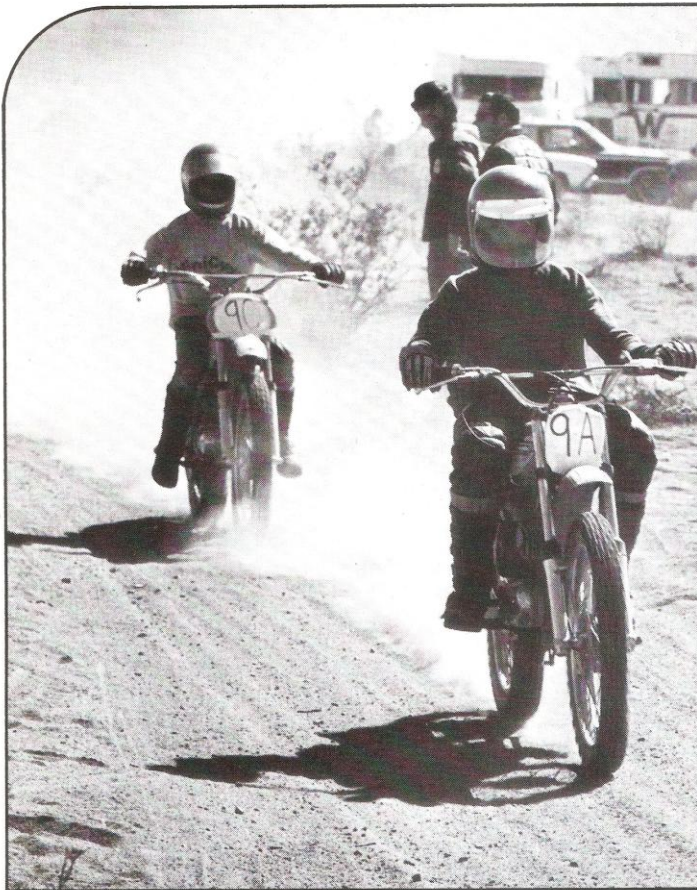
The entrants are split up into groups and each group leaves one minute behind the previous one. Thus, each contestant knows his "ETA" by adding his starting time to the key time. The instruction card also carries average speed between checkpoints in mph, however, this doesn't help very much because there are rough sections that slow things down and "easier" sections where time can be made up. The smart enduro rider gets his instruction card and figures out how far he should travel in each minute. By checking his odometer (the "mileage meter" in the speedo) he can see how far behind or ahead he is for each passing minute.

Getting ahead of the key time is bad because of the skeleton in the enduro closet. This takes the form of the "secret check." Known checks are easy to deal with. If you're running much too early you just camp outside the check point until it's time to ride through. Secret checks, on the other hand, can be anywhere within three miles of known checks.

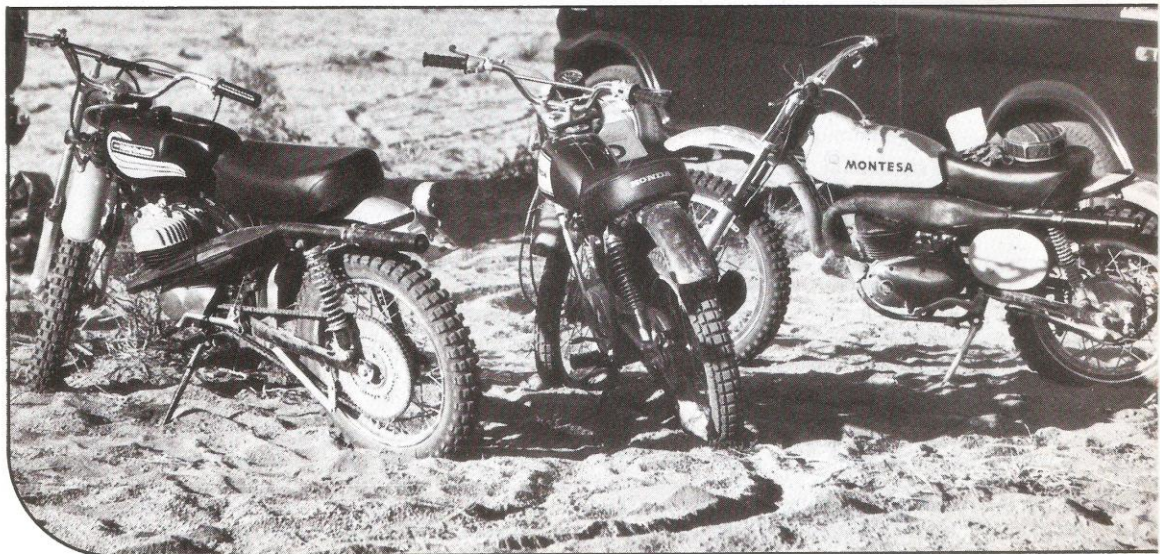
At known check points you can arrive 15 minutes early without penalty but two points for every minute early and one point for every minute late are added to your score at secret checks.

So, it is fairly obvious that the enduro

*Story continued on page 65
Photos continued on next page*



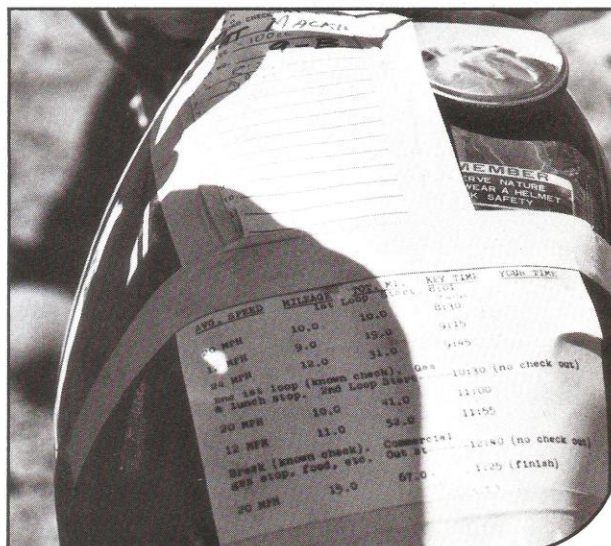
HOW
NOT TO
ENTER
AN
ENDURO



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CLOCKWISE FROM TOP LEFT - Greg Lersch leads Rick Henricksen into the pits on completion of first loop, somewhere back there in that cloud of dust is Pat Mackie. Nasty guy Brian Cochran at secret check with timepiece from crashed Korean bomber (he's bad luck to everybody). He tries to offset his evil reputation with clearly-marked checks like this. Small boys are roped in to mark score-cards at check points along the route. A-ha, there he is, ol' editor Pat Mackie, churning along, doing everything wrong. Route card taped to tank and ahead of it the score card that got lost - wrong place to tape it. Fresh and ready for the fray, the enduro mounts ridden by the ill-fated MiniCycle Racing team, our thanks to the manufacturers although they might have screamed if they had known what we were going to do to these bikes.

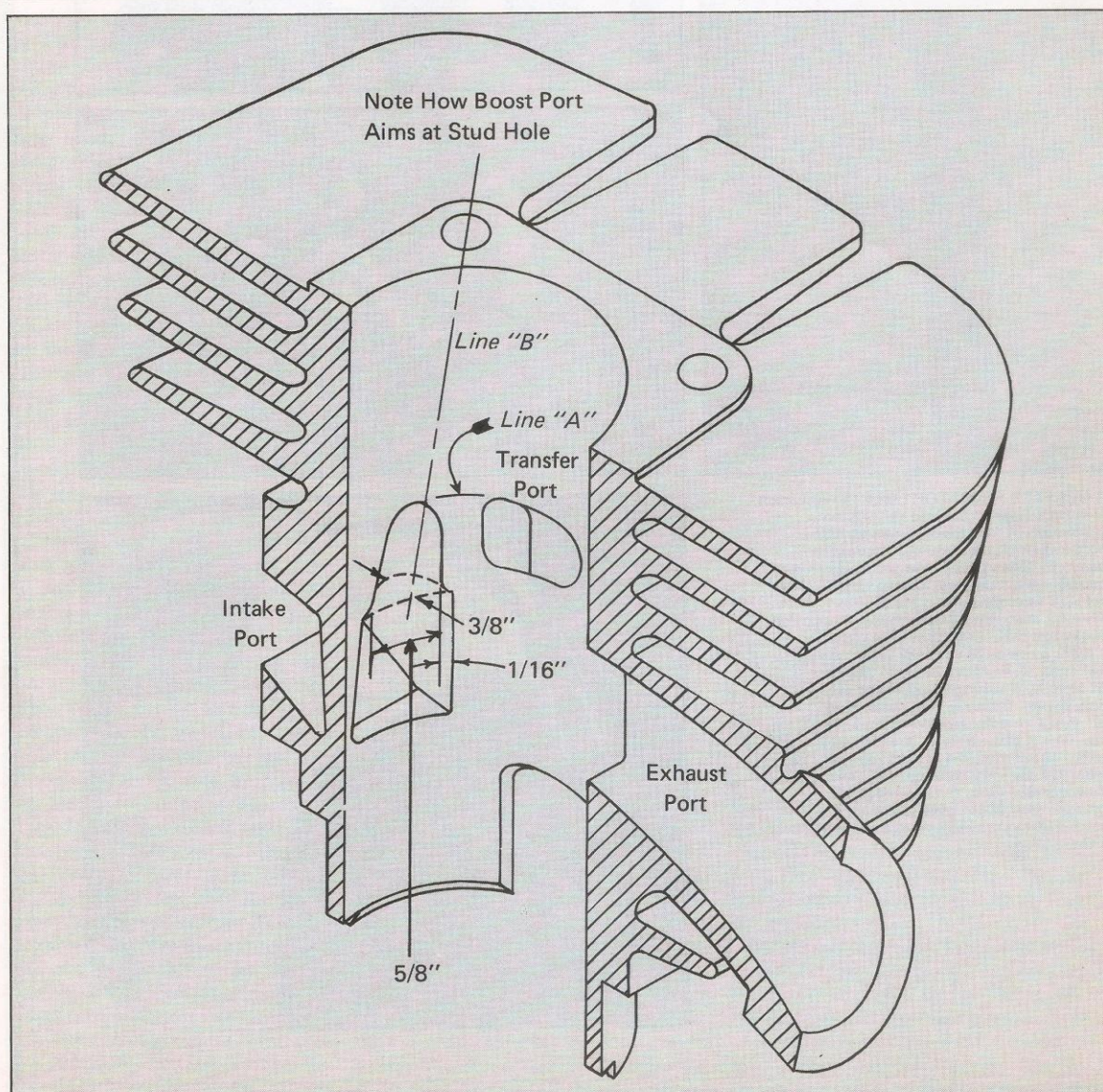


TOWARDS THE SUPER RAT

One better over the Stock Rat—Reed Valving

PART III

(Editorial Note: In the previous articles in this series, we have dealt with the up-grading of the Hodaka Ace 100 engine to Super Rat specifications. Aside from fine tuning, there is only one further major step to be taken with this engine and that is reed valving. This article deals with the procedure. Reed valves are pretty much what the name implies, flexible metal "reeds" set into the intake manifold that open on the up-stroke of the piston to allow the fuel charge to enter. On the down-stroke (crankcase compression) they snap shut. Unlike a piston-ported engine, there is no timing "overlap" and the maximum use is made of the time allowed to "inhale" the fuel charge. Because of the positive entrapment of the fuel charge



in the crankcase there is more compression and more rapid transfer of the charge to the firing chamber. Some Hodaka modifiers regard reed valving with suspicion. The large window ports cut into the piston skirt, they say, shortens piston life. Most, however, agree with Jerry Swenson of Swenco Engineering, who prepares hot racing Hodakas but does not use reed valving. Jerry says that there is not much danger of hairline cracks in the piston, provided the job is done correctly. He points out that there is little contact between the piston skirt and the cylinder walls during the com-

pression stroke. Most cycle mechanics are highly opinionated and tend to have closed minds about anything that they do not, personally, use. Jerry, on the other hand, is willing to consider anything. He does warn, however, that once the reed valving job is done, considerable care has to be taken in tuning to get the full benefits. Timing has to be exactly right and both the main and pilot jets of the carb should be enlarged. It may take some experimentation to find the right combination. However, once the right combination is found there should be a noticeable increase in torque in both the low and mid-range rpm. Whatever the pros and cons of the argument about piston life, there are those who will say the increase in usable

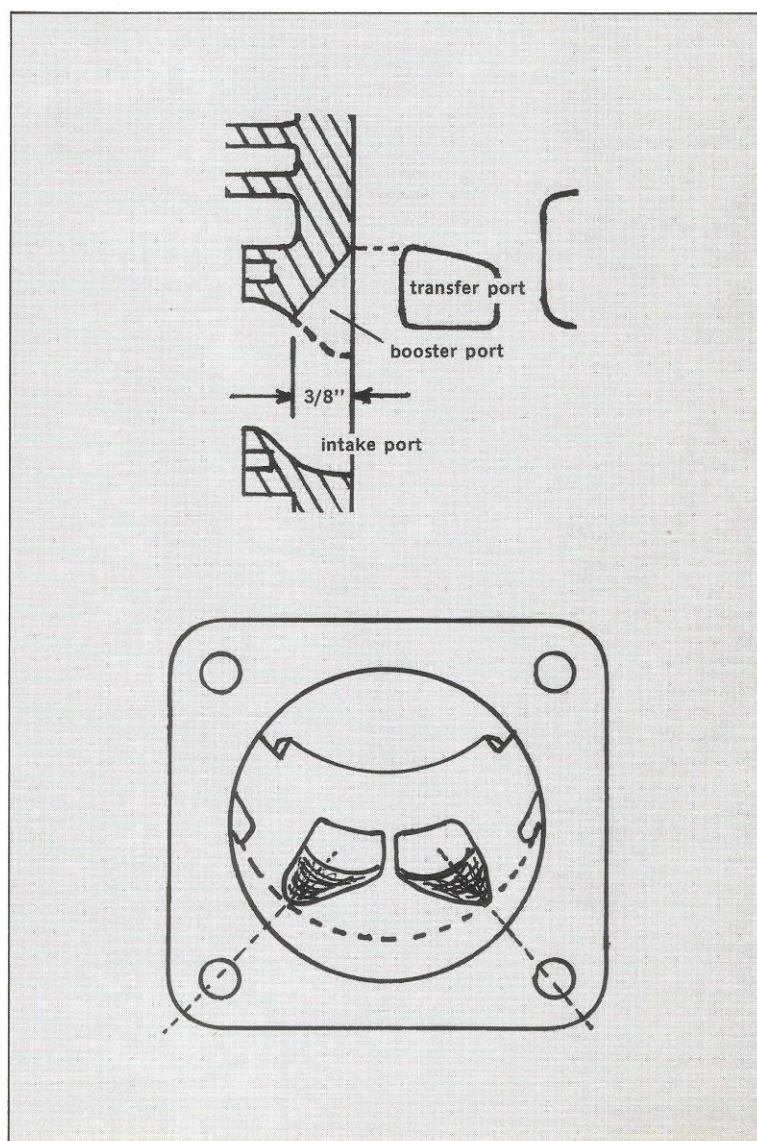
power is worth the risk to a \$10 piston. Nevertheless, reed valving the Hodaka falls into the category of exotic modification. MiniCycle does not, as a rule, recommend such modifications except in special circumstances, such as out-and-out competition. Still, we feel that reed valved Hodakas have proved themselves sufficiently to be a reasonably safe bet.)

Reed valving is one step beyond the Super Rat. The Super Rat engine is a super reliable and competitive mill for any dirt bike. However, there is always some engine or other nibbling at the Super Rat's heels and, sometimes, show-

LEFT - Diagram showing correct layout for booster port work in reed valving the Super Rat cylinder. The modification work shown in Part One of this series will bring the Ace 100 cylinder to essentially the same specs. Line "A", drawn from the top of the transfer ports, gives the upper limits of the booster porting and line "B" indicates the direction of the ports. Line "A" is at the same height as the top of the transfer ports and line "B" runs at an angle from the bottom of the intake port (see text for exact measurements) to the centerline of the stud hole.

TOP RIGHT - Cross section view of cylinder shows the taper of the booster port up to the line at the same height as the top of the transfer ports.

BOTTOM RIGHT - View from top of the cylinder showing direction of grinding line that intersects with the stud hole. Shaded area indicates the booster (sometimes called finger ports because they roughly conform to the shape of the finger tips) ports.



ing its own heels to the Super Rat. Thus the search for a little more poop from the Hodaka's miniscule 100cc is constant. This has led to increasing interest in reed valving.

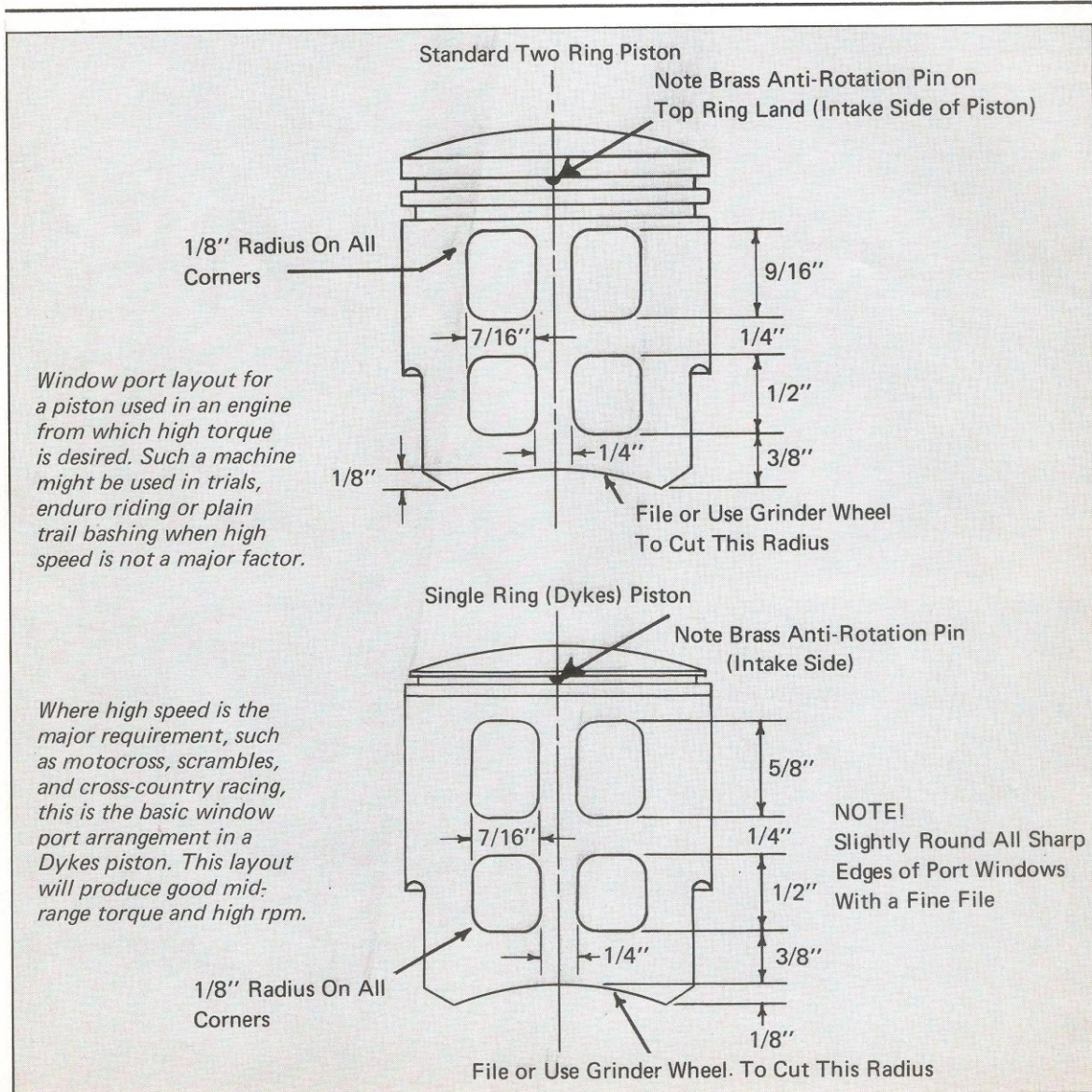
There are some who swear by Hodaka reed valving and there are others who swear *at* it. There seems a consensus of opinion (although not unanimous) that reed valving the Super Rat engine produces more power and spreads that power over a wider band. However,

power alone is not always the determining factor in racing. In fact, it may be that it does not *usually* decide the outcome. In some types of racing, especially prolonged racing such as hare and hounds, reliability may be the most important factor, within reason.

That is not to say that reed valving the Hodaka engine means you *necessarily* have to have an inexhaustable supply of pistons. There is plenty of evidence that some people get service out of reed valved pistons. However, a glance at the holes cut in the intake side of the piston would make it seem logical that you couldn't expect the same longevity as a stock piston.

On the other hand, events such as motocross call for maximum output over a relatively short span of time with long pauses between heats. Usually there is enough time between heats to pull the head from the engine, examine the piston, replace it if necessary, and still have time for a hamburger. In this case, reed valving done properly would be safe.

Perhaps a few words about reed valving, in general, would not be amiss. In a piston-timed it is the piston, passing up and down the cylinder, that opens and closes the intake, transfer and ex-



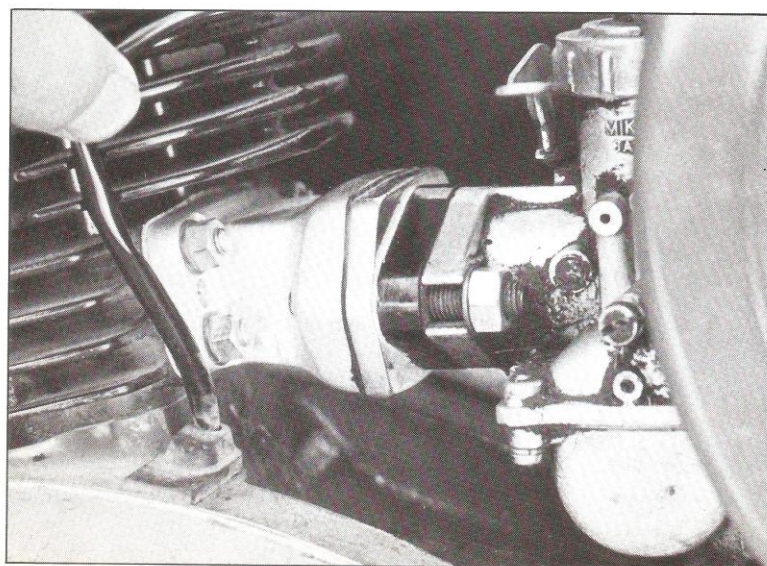
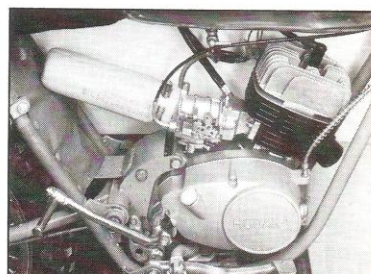
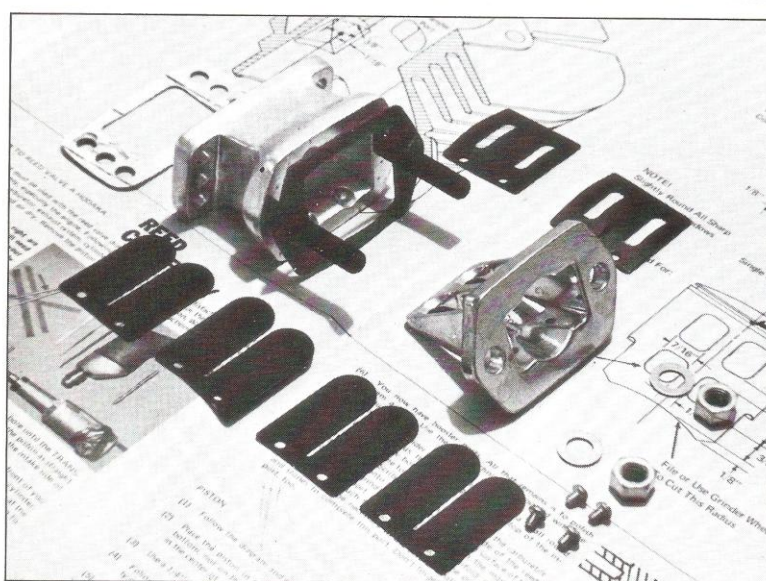
haust ports. This action takes the place of the valves on a four-stroke engine. However, in reed valving the intake charge is fed into the crankcase via flexible reeds fastened, to a V-shaped cage, at one end. As the fuel charge is sucked into the crankcase by the partial vacuum caused by the piston on the up-stroke, the reeds flap open. Then, as the piston descends and pressure builds up in the crankcase, the reeds are slammed shut against the cage, forcing the fuel up through the transfer ports. Usually, there are four reeds to a cage.

Karters have been using this method for more than ten years to get a phenomenal amount of power out of their tiny racing engines. Recently, some motorcycle manufacturers have discovered this "new" method of induction and used it well. In this case the pistons have been made to have holes in them and they are well-bridged internally to provide support. The problem with modifying a piston not designed for this use

is that the piston skirt could become damaged, and even collapse, if the work is not done properly.

Reed valving is not to be undertaken without careful consideration and very careful execution. The cylinder has to be booster (or "finger") ported and the piston has to be well-holed. If, later, you want to go back to piston port timing you'll have to scrap both the cylinder and the piston. However, once you've made your decision, PABATCO's technical men have a few words to show

Continued on page 67



TOP LEFT - Hodaka's reed valve kit includes the manifold, reed cage, four reeds and two reed retainers (flopper stoppers). Gaskets and fasteners are included. Cost is around \$21.

BOTTOM LEFT - A reed valved Super Rat is instantly recognizable by the elongated manifold.

TOP RIGHT - G.E.M. Products, 496 East St. Charles Road, Carol Stream, Illinois 60187, has a comprehensive line of reed valving parts for the Super Rat. Shown here is the G.E.M. reed valve set-up on a stock Super Rat.

BOTTOM RIGHT - G.E.M.'s Hodaka reed valve set-up using a pumper carb with a Filtron air cleaner. This type of air cleaner should not be run through water and protection from dirt kicked up by the rear tire, as shown, should be provided.

MBG MISCELLANY

CLUTCH SWEEPSTAKES

One hundred forty-four boys or girls will win a variety of exciting prizes in the Mercury Clutch National Sweepstakes. Top prize is an expense-paid vacation for a boy and his parents at Disney World or Disneyland depending on the home of the winner. The three-day/two-night trip includes air transportation, hotel and admission to all rides at the park. Other top prizes include: three 15-ft. aluminum canoes, three cassette recorders, five table tennis tables & paddle sets, five all-inclusive fishing kits, 25 Mercury Hill climber clutches, 100 special Pikes Peak Patches, 50 Pikes Peak Posters. Every purchaser of a Hillclimber mini-bike clutch is automatically entered if he completes and mails a Warranty Card packed inside the clutch. Non-purchasers may enter by following directions found in Mercury Clutch advertisements. Contest runs from Jan. 1, 1972, to Oct. 31, 1972 and is open to all boys and girls aged 8-16 within the Continental United States. The Mercury Hillclimber Clutch recently carried a 165 lb. rider and 125 lb. mini-bike to the top of Pikes Peak—14,110' high. As a supplement to the Sweepstakes, Mercury Clutch will also award prizes to the retail dealers named on the first 19 warranty cards. For more details write: Dept. MC, Mercury Clutch, Division of Aspro, Inc., Canton, Ohio.

NEW MINIBIKE ENGINE

Fichtel & Sachs AG. are introducing the new SACHS 80 B minibike engine to power both trail and road minibikes. It has a real motorcycle look, produces 5.2 hp at 6,200 rpm and accepts a torque converter, making the minibike fully automatic. The engine derives from the famous Sachs 80 S having a new crank case assembly. This proven powerplant has been field tested and has a power range that fits any trail condition. Write: Dept. MC, Sachs Motor Corp., 9615 Cote de Liesse Rd., Dorval, Quebec, Canada.



CYCLE LAPEL PINS

Proud of your bike? Let people know your choice by wearing one of these handsome baked enamel lapel pins. Colorful designs are available for nearly all brands of cycles, including: Honda, Yamaha, Triumph, Kawasaki, Bultaco, Husqvarna, BMW, BSA, Suzuki, Penton, Moto Guzzi, Harley, Puch, Indian, Jawa, Enfield and many more. A great gift item! Price: \$1 each or six for \$5. Add 50¢ for handling. Order from Dept. MC, Racecrafters International, Box 347, Los Angeles, Calif. 90028



BIKE CARRIER

To answer the call of bicycle and mini-bike riders who want a safe, durable, attractive and universal carrier for their car, Wallfrin Industries' La-Cal Automotive Division has come up with the one carrier that does everything. It's the Model 129 La-Cal Bicycle Carrier which fits all American and foreign automobiles and can hold either two bicycles or one mini-bike.

The Model 129 Carrier easily adjusts to most bumper sizes, compliments car finishes with its plated finish and has plastic-coated hooks with strong web straps. Write: Wallfrin Industries, Inc., Dept MC, 1535 Hart Place, Brooklyn, New York 11224.



E.S.I. PARTS & ACCESSORIES

Engine Specialites, Inc. has just published an 84-page catalog featuring standard, custom and competition parts and accessories for minibikes, mini-cycles, go-karts, snowmobiles and motorcycles.

Along with the most-wanted, new speed, and street equipment the E.S.I. catalog also shows a complete selection of standard parts, tools, tires, batteries, lubricants, etc.

Riders and dealers can order the new catalog by mail from E.S.I., Dept. MC, P.O. Box 260, Cornwells Heights, PA 19020. Catalog cost is \$1.00.

SMALL, FULL-COVERAGE HELMETS FOR MINI-CYCLISTS

Trackstar Products presents their 4,000 (integral) full face coverage helmet, including small and extra small for young mini-cyclists. Certified to 1970 Snell Foundation and USASI Z90.1 standards, this helmet represents the ultimate in advanced safety and styling. It is now being used by USAC Championship Trail driver Wally Dallenbach and many of Europe's leading drivers. Shell Construction is of aircraft fiberglass quality for maximum protection. Supplied in colors—white, yellow, or orange in sizes extra-small, medium, large and extra-large. Flip-up shield is designed to hold 5 tear-away lenses. Available at Trackstar Distributors nationwide or write: Dept MC, RSE, P.O. Box 314, Floral Park, N.Y. 11002.



SHIELDS FOR BELL STAR

Helmet House Ltd. of Los Angeles, California is now offering high quality, low cost flip shields for the Bell Star. They are made from fully approved, high grade plastic stock and are available in six popular shades: clear, smoke, amber, yellow, green and blue. And they come either with or without snaps for visors. All fittings and snaps are highly polished chromed steel. Shields w/visor snaps, \$3.00; Shields w/o visor snaps, \$2.00; Vista Visor, \$1.50; 3" Vista Shield, \$1.00; Tear-Off Shields (5-Pak), \$1.50; Write: Dept. MC, Helmet House Ltd., 12010 W. Pico Blvd. Dept. BS-11, Los Angeles, Calif. 90064.



COSMO HANDLES WARDS MACHINES

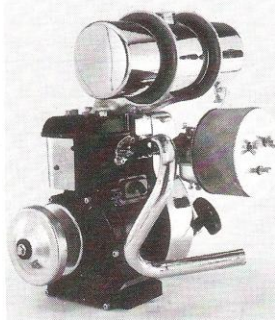
Cosmopolitan Motors now handles the United States distribution of parts for the Montgomery Ward Riverside and Mojave motorcycles. These motorcycles, manufactured by Benelli of Italy, were sold by Montgomery Ward from 1964 to 1970. Parts for all models will be available. For further information, contact your nearest Benelli dealer, Montgomery Ward outlet, or send \$1.50 for a parts book and price list, being sure to name specific model, to Dept. MC, Cosmopolitan Motors, Hatboro, Penn., 19040.



FIRE POWER

Dyno-tested engine goodies for Tecumseh and Briggs & Stratton engines are now available from A.P.E. Products. High performance cams, tuned exhaust, high strength valve spring sets, manifold and big bore carburetor kit, high compression head, heavy duty air cleaners and remote tank kit for three-wheelers. Also a full line of chrome parts to add sparkle to your engine.

All speed parts manufactured by A.P.E. Products have been tested in the field for over a year. A five-hp Dunecycle using A.P.E. speed parts won first in the open class race held by the N.R.V.R.A. at Indian Dunes, California. This same Dunecycle entered a two-cycle class against McCulloch and JLO powered three-wheelers and finished in second place. For information write: A.P.E. Products, 13727 Excelsior Drive, Santa Fe Springs, Calif. 90670



INFLATION CONQUERED?

Simplex, America's oldest lightweight motorcycle manufacturer (since 1935) offers proof that inflation can be controlled. The retail delivered price of their 1972 Model is \$278.00, identical to the price of their 1947 Model, even though today's dollar has shrunk one third in value.

The old model had a 3 hp engine, the new has a 5 hp engine. The old model had a rigid frame, the new has swinging arm with dual shock absorbers. The old model had 2½-inch tires, the new has 3¼-inch tires. The old model was belt driven, the new uses No. 40 chain. The old model had painted wheels and fenders, the new has chrome. The old model had an unapproved muffler, the new has USDA-approved muffler.

So Simplex is concentrating on one model, by using standard, high production, high-speed components, by using the best modern equipment. Write for full particulars to Simplex Manufacturing Company, 4000 Toulouse Street, New Orleans, La. 70119.

FULL COVERAGE HELMET

"The combination of 'safety-first' features with unique styling and brilliant design patterns and color has resulted in quick acceptance of our Electro 2 full-face helmet," Electrofilm's Lee LaGorio observes.

The Electro 2 is available in six solid colors, in the gold or silver based "Peacock," in eight colors in the solid metal flake "Stardust," in the "Eclipse," custom stripes—silver metal flake base and a choice of six colors, and three patterns of the "Flag Group." Write: Dept. MC, Electrofilm, Inc., 7116 Laurel Canyon Blvd., P.O. Box 3930, North Hollywood, Calif. 91605.

"SPRINT" CHARGER

Central Cycle Supply, Inc., South Bend, Indiana recently commenced manufacturing the "Sprint Charger"—added to their line of Charger mini-cycles and go-karts. The "Sprint Charger" includes features such as a torque converter. #420 motorcycle chain, and 10" rims. Powered by a 7.75 cu. in. engine, the Sprint has a 2-quart engine-mounted fuel tank and banded rear wheel brakes for reliable stopping. Weighing in at 95 pounds, the 7" ground clearance allows for its use almost anywhere.

In addition to the Sprint's performance features, standard on all Charger mini-cycles comes a heavy duty frame, chrome fold-down handle bars with ball bearing steering, rust resistant plated parts, chain adjusters and many more. Write: Dept. MC, Central Cycle Supply, Inc., 51025 U.S. 31-No., South Bend, Indiana 46637.



BONUS FEATURE: Three-Wheeler Specs

FOR FURTHER INFORMATION ON MODELS NOT LISTED, WRITE TO THE MANUFACTURERS LISTED ON PAGE 60

MODEL	A.P.E. Products Dunecycle 200	Dunecycle 200S	Dunecycle 300-S	Dunecycle Spider	Alsport Mini-Tri Sport 30
PRICE	\$387	\$473	\$569	\$599	\$345
DESIGN UTILIZATION	Off-road only	Off-road/street	Off-road/street	Off-road only	Off-road only
ENGINE TYPE	4-stroke single	4-stroke single	4-stroke single	2-stroke single	Tec. 4-strk snl
BORE & STROKE	2-9/16"x2-7/16"	2-9/16"x2-7/16"	3-1/16"x2-17/32"	2.28"x1.83"	2-5/16"x1-27/32"
DISPLACEMENT	206cc	206cc	306cc	125cc	7-3/4 cu. in.
COMPRESSION	7:1	7:1	8.5:1	9.5:1	N/A
CARBURETION	Diaphragm	Diaphragm	Diaphragm	Diaphragm	Floatbowl
IGNITION	Flywheel mag.	Flywheel mag.	Flywheel mag.	Flywheel mag.	Flywheel
LUBRICATION	Splash	Splash	Splash	Oil mist	Splash
ESTIMATED HP	5 @ 3,600	5 @ 3,600	8 @ 3,600	16 @ 9,500	3 HP
TRANSMISSION	Torque conv.	Torque conv.	Torque conv.	Torque conv.	Torque conv.
CLUTCH	Auto. centrif.	Auto. centrif.	Auto. centrif.	Auto. centrif.	Auto. centrif.
PRIMARY DRIVE	Belt	Belt	Belt	Belt	Belt
FINAL DRIVE	No. 40 chain	No. 40 chain	No. 40 chain	No. 40 chain	No. 50 chain
GEAR RATIOS	Infinitely variable 7:1 high 17.5:1 low	Infinitely variable 7:1 high 17.5:1 low	Infinitely variable 7:1 high 17.5:1 low	Infinitely variable 9:1 high 22:1 low	Infinitely variable 5.5:1 high 17.38:1 low
FRAME TYPE	T-bone	T-bone	T-bone	T-bone	Sngl. backbone rear box assy.
WHEELBASE X TRACK	52"x45"	52"x45"	54"x47"	54"x47"	40"x36"
LENGTH	69"	71"	73"	73"	59"
FRT. SUSPENSION	Optional	Optional	Optional	Optional	Rigid
REAR SUSPENSION DIFFERENTIAL	Rigid—low press trs Yes	Rigid—low press trs Yes	Rigid—low press trs Yes	Rigid—low press trs No	Rigid—low press trs Yes
REAR WHEEL	8" pressed steel	8" pressed steel	8" pressed steel	8" pressed steel	8" pressed steel
FRONT WHEEL	6" aluminum	6" aluminum	6" aluminum	6" aluminum	6" aluminum
REAR TIRE	9.50x8	12.00x8	12.00x8	Optional sizes	9.50x8
FRONT TIRE	4.50x6	4.50x6	6.00x6	6.00x6	5.30x4.50x6
TIRE DIAMETER(frt./rear)	18"x14"	21"x14"	15"x21"	15"x optional	12-1/2"x18"
GROUND CLEARANCE	N/A	N/A	N/A	N/A	7"
PEG HEIGHT	11"	11"	12-1/4"	12-1/4"	Adjustable
SEAT HT/MATERIAL	11 1/2"/Fiberglass	12 1/2"/Fiberglass	13"/Fiberglass	13"/Fiberglass	14"/Molded plas.
HANDLEBAR HEIGHT	30-3/4"	30-3/4"	32"	32"	Adjustable
HANDLEBAR WIDTH	N/A	N/A	N/A	N/A	25"
FUEL CAPACITY	3 qts.	3 qts.	5 qts.	5 qts.	1 gal.
WEIGHT	N/A	N/A	N/A	N/A	125 lbs.
INSTRUMENTS	None	None	None	None	One axle
LIGHTS & REFLECTORS	Optional	Optional	Optional	Optional	Optional
STREET LICENSABLE	No	Some states	Some states	No	Some states
TOOLS	No	No	No	No	No
IGNITION KILL SWITCH	Yes	Yes	Yes	Yes	Yes
FOLDING PEGS					N/A
SPARK ARRESTOR	Optional	Optional	Optional	Tuned exhau.	Optional
IGNITION LOCK	No	No	No	No	No
OPTIONS	Engine & seat guard; carrying rack; skid pan; remote tank; low-tone muffler; ski; floatation kit; git kits				Windshield; rollbar carrier with head-

Tri-Sport 100	Tri-Sport 125	Tri-Sport 150	Bonham Corp Dune Gote	Super Gote	Mntgmry Wards Terrain Cycle	Snowco Tri-Scat 7A	Nomad 7A	Tri-Scat 5
\$495	\$549	\$599	\$395-5hp/\$480-8hp	\$460-5ph/\$520-8ph	\$419	\$675	\$438	\$412
Off-road only	Off-road only	Off-road only	Off-road only	Off-road only	Off-road only	Off-road only	Off-road only	Off-road only
Tec. 4-strk snl	Tec. 4-strk snl	2-stroke single	B&S 4-strk snl	B&S 4-strk snl	B&S 4-strk snl	Tec. 4-strk snl	Tex. 4-strk snl	B&S 4-strk snl
2-5/8"x2-1/4"	2-3/4"x2-17/32"	2.756"x2.283"	N/A	N/A	2-9/16"x2-7/16"	2-3/4"x2-17/32"	2-3/4"x2-17/32"	2-9/16"x2-7/16"
12.176 cu. in.	15 cu. in.	230cc	12.57-19.44 cu. in.	12.57-19.44 cu. in.	205cc	15 cu. in.	15 cu. in.	12.57 cu. in.
N/A	N/A	7:1	N/A	N/A	N/A	N/A	N/A	N/A
Floatbowl	Floatbowl	Tillotson HR	Floatbowl	Floatbowl	Pulsa jet	Floatbowl	Floatbowl	Floatbowl
Flywheel	Flywheel	Flywheel mag.	Flywheel	Flywheel	Flywheel	Battery	Flywheel mag.	Flywheel mag.
Splash	Splash	Oil/gas mix	Splash	Splash	Splash	Splash	Splash	Splash
5 @ 3,600	7 @ 3,600	14 HP	5 @ 3,600	8 @ 3,600	5 @ 3,600	7 @ 3,600	7 @ 3,600	5 @ 3,600
Torque conv.	Torque conv.	Torque conv.	Torque conv.	Torque conv.	Torque conv.	Torque conv.	Torque conv.	Torque conv.
Belt	Belt	Auto centrif.	Auto. centrif.	Auto centrif.	Auto centrif.	Auto centrif.	Auto centrif.	Auto. centrif.
Belt/chain	Belt/chain	Belt	Belt	Belt	Belt	Belt	Belt	Belt
No. 50 chain	No. 50 chain	No. 50 chain	No. 40 chain	No. 40 chain	No. 420 chain	No. 40 chain	No. 40 chain	No. 40 chain
Infinitely variable 7.2:1 high 22.75:1 low	Infinitely variable 5.9:1 high 18.67:1 low	Infinitely variable 5.5:1 high 17.38:1 low	N/A	N/A	variable 18:1 low 5.4:1 high	Infinitely variable 1:5 high 16.3:1 low	Infinitely variable 1:5 high 16.3:1 low	Infinitely variable 1:5 high 16.3:1 low
Sngl. backbone rear box assy.	Sngl. backbone rear box assy.	Single backbone rear box assy.	T-bone tube	T-bone tube	Single backbone rear box assy.	Single backbone rear box assy.	Single backbone rear box assy.	Single backbone rear box assy.
61½"x48"	61½"x48"	61½"x48"	48"xN/A	50"xN/A	57½"x46"	58"x35"	58"x35"	58"x35"
81"	81"	81"	68"	69"	75½"	75"	75"	75"
Leading link, Shocks	Leading link, Shocks	Leading link, shocks	Rigid—low press trs	Yes, low press trs	Rigid	Rigid—low press trs	Rigid—low press trs	Rigid
Rigid—low press trs Yes	Rigid—low press trs Yes	Rigid—low press trs Yes	Rigid—low press trs Yes	Rigid—low press trs Yes	Rigid—low press trs Yes	Rigid—low press trs Yes	Rigid—low press trs Yes	Rigid Yes
8" pressed steel	8" pressed steel	8" pressed steel	8" steel	8" steel	8" pressed steel	8" pressed steel	8" pressed steel	8" pressed steel
8" pressed steel	8" pressed steel	8" pressed steel	8" steel	8" steel	6" mag type	6" aluminum	6" aluminum	6" aluminum
11x8	11x8	11x8	9.50x8	9.50x8	21x12x8	N/A	N/A	N/A
9.50x8	9.50x8	9.50x8	3.50x8	6.00x6	5.30x4.50x6	N/A	N/A	N/A
18"/21"	18"/21"	18"/21"	15"/18"	14½"/18"	13"/21"	15"/22"	15"/22"	15"/22"
7"	7"	7"	5-1/4"	5-1/4"	3-1/2"	6-1/2"	6-1/2"	6-1/2"
Adjustable	Adjustable	Adjustable	10"	10"	6"	6"	6"	6"
16"/Fiberglass	16"/Fiberglass	16"/Fiberglass	12"/N/A	12"/N/A	16"/Plywd uph.	13½"/Fiberglass	13½"/Plywd uph.	13½"/Fiberglass
Adjustable	Adjustable	Adjustable	32"	36"	35"	31"	31"	31"
26"	26"	26"	24"	28"	24"	22½"	22½"	22½"
1 gal.	1 gal.	1½ gal.	3 qts. or 4 qts.	3 qts. or 4 qts.	3 qts.	1 gal.	1 gal.	1 gal.
175 lbs.	180 lbs.	200 lbs.	160 lbs.	175 lbs.	195 lbs.	205 lbs.	195 lbs.	165 lbs.
Two axle	Two axle	Two axle/1-all sys	Two axle	Two axle	Two axle	Two axle	Two axle	Two axle
Optional	Optional	Optional	No	No	Yes	Yes	Yes	No
Some states	Some states	Some states	No	No	No	Some states	No	No
No	No	Yes	No	No	No	No	No	No
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N/A		N/A	No	No	Stirrup type	No	No	No
Optional		Optional	No	No	Yes	No	No	No
No		No	No	No	No	No	No	No
/headrest; skidlighting kit; cargo- rest; trailer hitch; dune flag; lawnmower			Yes	Yes	Comp line of accessories	Windshield; ski; chromed roll cage; cargo carrier; others		

MODEL	Snowco Nomad 5	Clark Mfg. Kart	HPE/Muskin Dune Cat four-wheeler	K & P Mfg. Mini Dune Buggy four-wheeler	Alsport Alsport 60 mini-cycle	Roper (Sears) All Terrain Bike
PRICE	\$362	\$270	\$499	\$549/\$499 less eng	\$299.95	\$319.95
DESIGN UTILIZATION	Off-road only	Off-road only	Off-road only	Off-road only	Off-road/street	Off-road only
ENGINE TYPE	B&S 4-strk snl	4-stroke single	4-stroke single	Clinton 4-strk	2-stroke single	4-stroke single
BORE & STROKE	2-9/16"x2-7/16"	2-5/8"x1-15/16"	2-9/16"x2-7/16"	2.50"x1.85"	42x40.5mm	2.62"x1.94"
DISPLACEMENT	12.57 cu. in.	10.5 cu. in.	12.57 cu. in.	9.2 cu. in.	60cc	10.5 cu. in.
COMPRESSION	N/A	N/A	N/A	N/A	9:1	N/A
CARBURETION	Floatbowl	Tec. floatbowl	B&S floatbowl	Clinton fttbwl	Bing	Float
IGNITION	Flywheel mag.	Flywheel	Flywheel	Flywheel	Magneto	Flywheel
LUBRICATION	Splash	Splash	Splash	Splash	Oil/gas mix	Splash
ESTIMATED HP	5 @ 3,600	4 @ 3,600	5 @ 3,600	4½ @ 3,600	4.8 @ 7,500	4 @ 3,600
TRANSMISSION	Torque conv.	Direct	Torque conv.	Torque conv.	4-speed gear box	Torque conv.
CLUTCH	Auto. centrif.	Auto. centrif.	Auto centrif.	Auto centrif.	Dry multi-disc	
PRIMARY DRIVE	Belt	Direct	Belt	Belt	Gear	V-belt
FINAL DRIVE	No. 40 chain	No. 35 chain	No. 40 chain	No. 40 chain	No. 420 chain	No. 40 chain
GEAR RATIOS	Infinitely variable 1:5 high 16.3:1 low	1:6	Infinitely variable 1:6 high 1:20 low	Infinitely variable 1:6 high 1:19 low	1) 1:1 2) 1.4:1 3) 2.03:1 4) 3.38:1	Infinitely variable 1:21 low 1:6.6 high
FRAME TYPE	Single backbone rear box assy.	Single loop	Cont. loop	2" tube	T-pipe loop frm	Double backbone double eng loop
WHEELBASE X TRACK	58"/35"	43"/N/A	45½"/N/A	51"/N/A	41"/N/A	43.25"/N/A
LENGTH	75"	62"	72"	68"	61"	62"
FRT. SUSPENSION HYDRAULIC DAMP.	Rigid	Rigid	Rigid—low press trs	Rigid—low press trs	Telescopic forks Yes	Telescopic forks No
REAR SUSPENSION HYDRAULIC DAMP.	Rigid Yes	Rigid	Rigid—low press trs	Rigid—low press trs	Swing Arm Shock	Swing Arm No
REAR WHEEL	8" pressed steel	5" cast alum	8" steel	8" pressed steel	10" spoked	8" stmpd steel
FRONT WHEEL	6" aluminum	5" cast alum	8" steel	8" pressed steel	10" spoked	8" stmpd steel
REAR TIRE	N/A	4.10x3.50x5	11x8	11x8 compass	3.50x10 4 ply	9.5x8
FRONT TIRE	N/A	4.10x3.50x5	8.50x8	9.50x8 traction	3.50x10 4 ply	9.5x8
TIRE DIAMETER(frt./rear)	15"/	11.5"/11.5"	18"/21"	21"/18"		18"
GROUND CLEARANCE	6½"	2-3/4"	7"	9"	7"	5.25"
PEG HEIGHT	6"	N/A	N/A	N/A	9"	9.5"
SEAT HT./MATERIAL	13½"/plywd uph	N/A	11"	N/A	23"	30.5"
HANDLEBAR HEIGHT	31"	N/A	N/A	N/A	35"	40.12"
HANDLEBAR WIDTH	22½"	N/A	44½"	N/A	27"	28.38"
FUEL CAPACITY	1 gal.	2 qts.	3 qts.	2 qts.	1 gal.	2 qts.
WEIGHT	165 lbs.	120 lbs.	215 lbs.	160 lbs.	118 lbs.	146 lbs.
INSTRUMENTS	Two axle	None	None	None		None
LIGHTS & REFLECTORS	No	No	No	No	Lights F&R	No
STREET LICENSABLE	No	No	No	No	Most states	No
TOOLS	No	No	No	No	Yes	No
IGNITION KILL SWITCH	Yes	No	Yes	No	Key	No
FOLDING PEGS	No	N/A	N/A	No	Yes	Yes
SPARK ARRESTOR	No	No	Yes	No	No	Yes
IGNITION LOCK	No	No	No	No	Key	No
OPTIONS	Cargo carrier + others	No	No	No	No	No

The Snow Co.
4350 McKinley St.,
Omaha,
Nebraska 68112

Roper Corp., Neward Div.,
550 Wehrle Ave.,
Newark,
Ohio

Montgomery Ward & Co.,
619 West Chicago Ave.,
Chicago, Illinois
Illinois

K & P Mfg.,
330 South Irwindale Ave.,
Azusa,
California 91702

HPE/Muskin Inc.,
225 Acacia Street,
Colton,
California 92324

Clark Mfg. Co.,
Highway 138 East,
Conyers,
Georgia 30207

Bonham Corp.,
P.O. Box 858,
Provo,
Utah 84601

Alsport, Inc.,
84 Whittlesy St.,
Norwalk,
Ohio 44857

A.P.E. Products, Inc.,
13727 Excelsior Drive,
Santa Fe Springs,
California 90670

FRONT END KITS

Continued from page 29

scrambles, is a Sachs rider. He had his machine along so we were able to go from one leading link front end to the other.

It is a fact of life that the Swenco front end is better than the Sachs front end. Which is saying an awful lot.

The Swenco front end completely replaces the stock unit and it fits equally well on the older Hodakas and the



ABOVE - The sturdy construction of the channelled (for weight reduction) die cast swinging arm can be seen here.

BELOW - Deep axle bearing with the speedo sender unit still in place.



newer Super Rats. The swinging arm is constructed of die cast alloy in a complete loop around the back of the front wheel, so that one side cannot move more than the other. The front axle bearing is located well ahead of the bottom shock mounting and this has the effect of lengthening the wheelbase. A longer wheelbase creates a more stable straight-line ride and a certain loss of quick maneuverability. However, in a lightweight machine, like a dirt Hodaka, the loss is only marginal and can be overcome by more radical leaning and

judicious use of power.

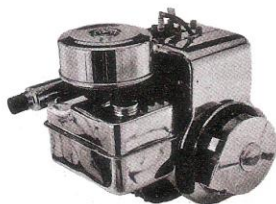
In any case, the Swenco front end is so stable that conditions that would have the normal machine dodging from side to side, are taken head-on without a whimper. Instead of avoiding that hump with a little bush on top, you just explode through it and come out the other side without a wobble.

This stock kit comes with Maverick five-position shocks. At first these are a little on the stiff side and travel is in the order of four or five inches. However, as they wear in, travel gets to be 6½-inches

to seven-inches. Who needs more? An interesting effect of leading link front ends is the lack of "dive" when the front brake is applied. If anything, the front end tends to rise.

The down tubes are made from high strength seamless steel (chromed), all the bolts are hardened and there are bearings at all pivot points. The Swenco front end is nothing short of superb and any machine that it fits (the only limitation would be the position of the triple crown holes and axle length) would be improved by the installation. □

GET WITH THE PROGRAM- A.P.E. PRODUCTS IS!



PART NO.	BRIGGS PARTS	PRICE	QTY.	TOTAL
AB-101	CHROME BLOWER HOUSING	5 HP 14.95		
AB-102	CHROME GAS TANK	4-5 HP 11.95		
AB-103	CHROME CYLINDER COVER SIDE & TOP	4-5 HP 8.95		
AB-104	CHROME STOCK AIR CLEANER COVER	3-4-5 HP 1.95		
AB-105	CHROME GAS CAP	3-4-5 HP .80		
AB-106	POLISHED STARTER COVER	5 HP 5.95		
AB-107	CHROME HEAVY DUTY AIR CLEANER (Stock Carb.)	3-4-5 HP 9.95		
AB-108	HIGH COMPRESSION HEAD (Milled .060)	4-5 HP 9.95		
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TECUMSEH TWO-STROKER

Continued from page 39

components of the ignition system, is both sizable (diameter: 6-5/8-inches) and of good heft. Again, the point may not appear important, but the flywheel weight certainly helps to smooth out the power pulses on a single cylinder engine—and particularly so when the engine is lightly loaded. Less BLAM! BLAM! shaking, in other words. Equally important is the well-finned design of the wheel as even at idle engine RPM's it will certainly move plenty of air over the cylinder fins for good cooling.

And it was here, when the flywheel was to be pulled, that the minimum service tool approach was put to test. With the flywheel securely held—a folded shop towel protecting the holder's upholstery from nicks or cuts—two sharp raps on the end of the socket handle were sufficient to break loose the flywheel retaining nut. Next, with the nut backed off to the end of the crankshaft (to protect the shaft threads), three raps with the plastic head hammer directly on the shaft end and nut popped the flywheel right off the taper. But it was also at this point that the first disagreement with the service procedures issued by Tecumseh

came about.

To check the breaker point setting (point of opening as related to the crank throw position before top dead center), the book calls for 0.115-inch BTDC, which is fine. Fine, that is, provided that your tool box is stocked with a fairly expensive dial indicator timing device. For the average Joe with the average thin pocketbook, a measurement in degrees before top dead center is really preferable. If you haven't tried it, there is a considerable difference between a one buck plastic protractor and a 25 buck dial indicator! Anyway, when checked, the points were found to be set at 0.116-inch, which is not too bad for a production engine.

The 817 as produced is best identified as a vertical shaft engine, and it is very likely that it started in life as the power unit for a small outboard motor. This is no mark against the little engine, as a two-stroker—having no crankcase full of oil—has no awareness of operating attitude. Thus, a twist of the wrist—plus a side mounting bracket—immediately converts the engine for horizontal shaft operation. An excellent feature of the all-attitude capability of the engine is in the carburetor that Tecumseh elected to use for mini cycle application. Specifically, the carb is a floatless, diaphragm-

regulated, with integral fuel pump assembly. Now, what does all of that mean?

Simply, the carburetor has no float bowl. A regulating diaphragm, with one side exposed to atmospheric pressure and the opposite side to fuel (termed the wet side), replaces the float and chamber. Like the engine, the carburetor can be operated in any attitude and there is never a problem of fuel surging or of the jets going dry. An outstanding feature of the carburetor is the integral fuel pump—and it is novel!

The pump is nothing more than a small nipple-like tube inserted into the carburetor body from the mounting flange. Open on one end, sealed on the opposite, this tube is inflated and then sucked flat by the crankcase pulsations common to a two-stroker. (As the piston moves up the barrel, the tube is sucked flat as crankcase pressure is reduced. As the piston descends, crankcase pressure increases and the tube is caused to expand like a balloon.) As the tube is caused to contract, fuel enters the chamber in which the tube is loosely fitted. Then, as the tube is expanded by crankcase pressure, the fuel in the chamber is forced into the chamber under the wet side of the regulating diaphragm. To prevent fuel from just moving back and

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forth in the fuel line, a series of valves open and close with the change in pressure and fuel is permitted to move in one direction only—straight to the regulating diaphragm. Thus, even with a gravity flow fuel system, a constant and even supply of fuel is furnished the carburetor which infinitely improves fuel metering and regulation.

The unhappy part of the carburetor is in the 0.810-inch diameter throttle bore, which is quite small for an eight-inch engine. On the other hand, the small bore will certainly limit wild engine operation (through lack of breathing capability) and there can be no doubt that this factor will improve the service life of the engine. But more on this later.

The fuel intake system of the 817 is of the third port design, which means that there are neither reed valves nor a rotary valve. Instead, the skirt of the piston opens and closes three ports which are drilled through the cylinder block (directly under the carburetor) and into the crankcase. These ports are approximately 0.350-inch in diameter which, like the carb throttle bore, is certainly minimum size for an eight-inch engine.

As one thing seems to balance out another, however, there has been considerable thought in the mounting of

the carburetor. With recognition that heat soak from the engine could cause fuel boiling in the carburetor, the carburetor is mounted with thermal spacers to reduce the transfer of heat. Thus, much improved engine performance on hot summer days—plus much less trouble in the starting of a hot engine. (To explain, fuel has a boiling point. When this temperature is reached, vapor is released from the fuel much like steam from boiling water. As the jets will pass vapor much more readily than a liquid, the engine starves for fuel and either dies or is extremely hard to start when hot. OK?)

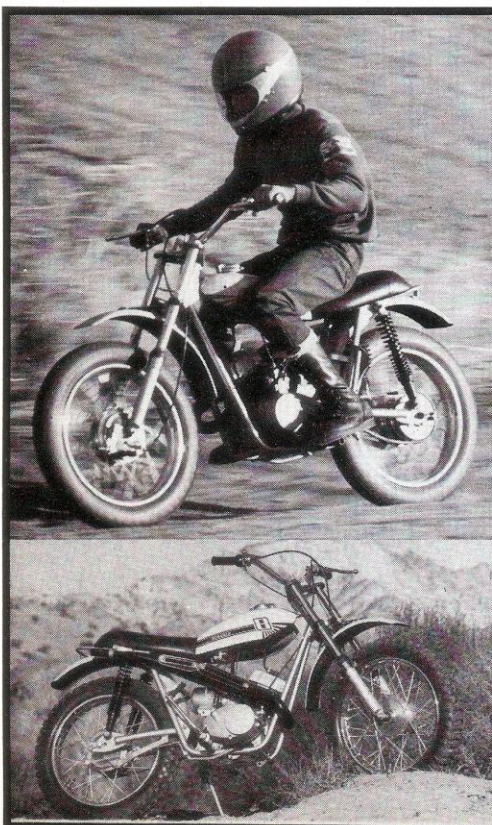
A feature of the 817 design is in the use of a loop scavenging system. Both the front and back transfer ports are angled upward and away from the exhaust port, directing the incoming fuel mixture in a loop through the chamber over the top of the piston. This design improves the charging efficiency and ultimate power production. There are four transfer ports, two each front and back, and these ports are 0.50-inch in diameter. In order to plot the relationship (port timing)—an important factor in the performance of a two-stroker—a hastily contrived degree wheel was made up from a plastic protractor. And this uncovered the next rub of why-did-

they-do-it-that-way?

You see, the only logical place for mounting the degree wheel was on the end of the crankshaft (PTO end). Great, but why was a fine thread screw (5/16-24) used here when all other screws are of the coarse thread variety? Not that it is a big problem, but fine threads can be very hard to find in the middle of the desert on a Sunday afternoon.

With the degree wheel installed and a bent paper clip for a pointer, it was found that the exhaust ports open at 82 degrees BBDC and the transfers at 63 degrees. This results in a 19 degree blow-down timing, which is very respectable for a two stroke engine. In parlance of the trade, it means that the exhaust gasses are given a longer period to escape before the fresh fuel charge is pumped from the crankcase and into the chamber over the piston. In turn, the third ports (fuel mixture inlets) are opened by the piston skirt at a point 73 degrees BTDC, which gives 146 degrees of inlet duration.

In the logical sequence of disassembly, next off was the head—and the next question on design. An eight screw hold-down pattern was available in the cylinder block, but the head had provision for only six screws. This resulted in two



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groups of three hold-down screws, with a sizable gap between the two groups. Perhaps the problem is minor, but the review engine had very noticeable witness marks of liquid leakage in the two large gaps (between groups) and it appears that there could be some problem of adequate sealing due to the warping of the head when pulled down against a soft gasket. And this brings forth another question: Why an asbestos type gasket for sealing between the cylinder head and block? It will be interesting to see if such a practice survives the rigors of engine use on mini cycles. (This, too, is not a serious problem. A few minutes

with a piece of dead soft copper of suitable thickness will produce an excellent gasket—so fret not.)

And then the piston and rod assembly was removed—sheer Panicsville! If you have ever seen 66 tiny black rollers—each 0.065 in diameter by 0.210 in length—falling out of the bottom of an engine, you know the despair that was felt when the con rod cap was pulled free of the rod body. Everything stopped until a large piece of clean white paper could be found and placed under the engine. Even then, with these little things fairly well contained, every nook and cranny of the piston and en-

gine was checked with a strong light and a magnifying glass just to make certain that no engine destroying culprits were left up in the innards. (And the problem of putting them all back in has yet to be faced—and solved. It is not something that is recommended to be tried while huddling under a cactus plant in the middle of the Mojave on an average summer day!)

A quick fanning of the service manual revealed that a double row of these little monsters is used in the 817. For service purposes, strips of rollers in wax are wrapped around the crankshaft throw and the rod and cap are then assembled—provided the heat of your hands hasn't melted the wax and released the needles. But again, a minor technical point of assembly.

With everything removed, the construction of the engine is impressive. The cylinder liner is husky and, being of cast iron, will provide a virtually endless service life unless destroyed by something breaking. The crankshaft is carried by two anti-friction (ball) bearings and the alignment is excellent. When rotated, there is absolutely no sign of binding or other deformation of the bearings through misalignment. The crank journal miked out to 0.630-inch, and the finish looked as if it had been polished. The same held true for the connecting rod. Of good cross-section through the web, there were no discernible points noted that could ultimately cause trouble through early failure.

The piston is fitted with two rings, each 0.062-inch in thickness. The rings, iron, are not pinned but this should not present a problem due to the diameters of the exhaust and transfer ports in a stock engine. Based upon the experience of Tecumseh in the two-stroke engine field, if there were any serious problems of either port pound-out or ring end hooking, there would have been ring keeper pins in the piston ring grooves.

In summation, production quality and finish of the engine is very good. The castings are clean and the machine work above average. All dimensions checked against the furnished prints, specifications sheets, and service manual were well within specification. The piston skirt was slightly egg-shaped, but what is 0.0005-inch among friends? But these are just the bits and pieces. The next step is to prove the engine through use, and this is planned to be done through the simple fact of mounting it on a bike—and then getting out and letting it all out to do its thing.

Stick around. We'll tell you all about it next month. □



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HOW NOT TO ENTER AN ENDURO

Continued from page 49

rider needs an accurate odometer in his speedo and a good watch with a sweep second hand. Beyond this he needs the concentration to work out the distance travelled against the time passed while dodging rocks and digging his machine through bottomless sand washes. At the same time, he must keep his eye open for the occasional ribbon so that he doesn't wander off the course and get disqualified that way.

One thing more. At the start of the enduro each rider is given a score card. The time at each check is marked and the race is immediately over for the rider if this score card is lost.

That's how an enduro should be run. Now let's deal with the realities of the situation.

There we were, out in the middle of the desert. Greg, Rick and me, waiting for the enduro to start. The "famous" MiniCycle Racing Team! Looking back on it all, that was our biggest mistake. Letting the name of the magazine get mixed up in it.

Greg's dad, Bob, an old trials rider, had worked out the "miles per minute" between the first set of known checks and this card, together with my score

card, was "safely" taped to the tank of the Honda. Although it is readily admitted that Greg and Rick are both better riders than the editor of this magazine, I though I could control the rate of progress better. Besides, I was the only one with a speedometer.

The course was laid out in two loops, around 40 miles in length. Both loops started at the pits and there was time out for lunch. Somehow, this seemed too easy to be true. Just a 40-mile ride then we get to rest? And the average speeds between checks seemed real slow, some down to 12 mph. A breeze!

We lined up ten minutes before the first flag. We should have got some indication of what lay ahead by the seriousness of the more experienced enduro riders. The flag fell and the first group took off like the devil was right behind them. What were they hurrying for? There was plenty of time.

Gradually we moved up to the start line (we were the "ninth minute"). The flag fell and Greg and Rick roared off. Me? I got ten feet from the start line and bogged the engine down in a loose pile of sand. And I was wearing a MiniCycle sweater! With everybody watching. Fortunately the Honda started up again without trouble, before somebody came up to help out the "poor old

man." This time I kept the revs up until I was out of sight and had caught up with the other two. A great beginning but the worst was yet to come.

We were about halfway to the first checkpoint when I remembered that I hadn't checked the odometer before starting so I didn't know how far we had come. To compound the problem, the flag-off had been a little late and, naturally, I hadn't checked my watch to see *how* late. In short, I, the leader of our little team, didn't know where the heck we were, time- and mileage-wise.

There was no time to have a conference and I don't believe Rick and Greg, to this day (until they read this), know how messed up we were. We struggled on. I tried to rectify things by looking at the number plate of the bikes we passed or that passed us (the numbers corresponded to the minute of departure behind the first group). I figured that somebody must know what they were doing. Those other guys probably were figuring the same thing as they tried to see our numbers.

We did have one guide left, Bob Lersch's minutes-per-mile computations. Once I remembered our problem, I tried to stay within this guide and the other two guys probably felt they were in good hands as they saw me looking at



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wrist watch and speedo all the time. Which wasn't too easy because the trail, to put it mildly, was a bear.

Soon after the first check, the cap of the Dell Orto carb on the Harley worked loose, with the screws back there in the sand. We faked it by stealing the screws from a less important part of the machine that happened to almost fit. But it cost us a lot of time.

The Honda didn't take too kindly to the deeper sand washes and had to be "legged" out of the worst spots. The Montesa did best in the soft sand but the Harley cranked on pretty nicely. We tried to stay together pretty much

(rather the younger guys cooled it so that ol' Mackie could stay with them). But the inevitable happened. We went over a series of sharp little hills and I missed a turn, went tearing on until I came to the top of a bigger hill which should have showed me to the other two guys. Nothing! Emptyville!

More precious minutes lost while I turned around and went looking for them, met them looking for me, and from then on it was full bore to try and make up. We never did, of course, but when we pulled into the first loop finish-line, we were not too far off the clock. Fortunately there had been no

secret checks on the first loop, otherwise we might as well have packed it in, there and then.

Well, to make a long story somewhat shorter, the second loop was pretty much a repeat of the first, including a dumping for the Honda at the start line. This time, however, we were late starting because I wanted to make sure I'd got the time and mileage down exactly. I'm learning, see. We also had an edge over the other guys. Our photographer, Dennis McClintock, has a Jeep and I overheard Brian Cochran asking Dennis if he'd take the secret-check crew out "to the last sand wash." We didn't know where that was, exactly, but we knew we wouldn't have to worry about it until the end of the loop, somewhere.

If we thought the course was rough on the first loop, the second loop must have been laid out by a guy with horns, cloven feet and a tail. From our previous experience, we knew that we could throw the "average speed" things to the winds, particularly since we weren't worried about the no-longer secret check. We just cranked it on as hard as we could—where we could, knowing the sand washes would even things up.

After the last known checkpoint, we cooled it a little knowing the secret check was ahead and wanting to arrive as close as possible to our time. I figured it would be either at the beginning of the "last big sand wash" or at the end. Nobody in their right mind would take a vehicle, even a four-wheel drive Jeep, into one of these things. Now I know Cochran is crazy. The secret check was right in the middle. This meant that the Honda was introduced to the soft stuff too slowly (thinking the check was somewhere around). After coaxing it up to manageable speed, I had to stop it midway through the two-mile mush to get the score card checked.

It was right then that the final blow fell. I found that my score card was missing. Out! All through! And just about five miles from the end.

Knowing that we were washed up as a team, I let Greg and Rick off the leash and away they shot, with the Honda trying gamely to keep up (no way was I going to give up now). At the finish line I was right behind Rick (who was having trouble with his carb) so could estimate where we would have been if (that always comforting "if") my score card hadn't blown away. Individually, we hadn't done too badly. Rick in the top half of the finishers and Greg was a little ahead of him. As a team, we might even have won. Anyway, it was fun. □

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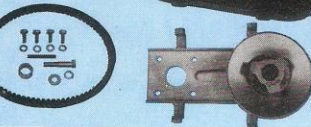
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Continued from page 55

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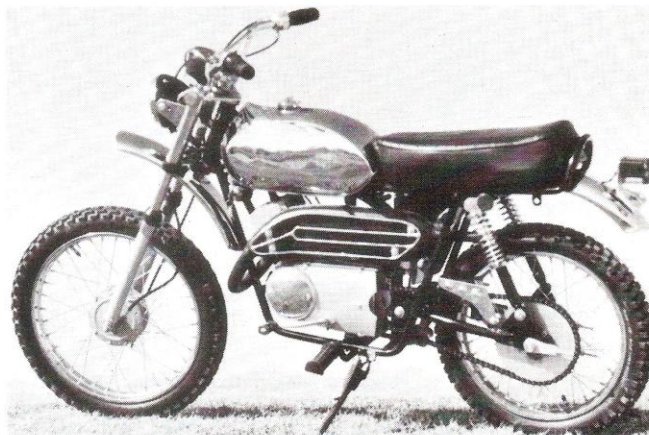
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Continued on page 68

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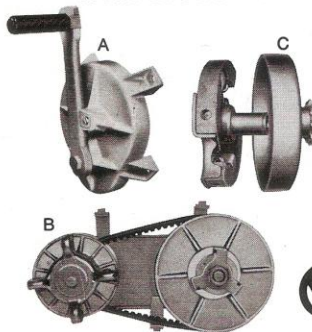


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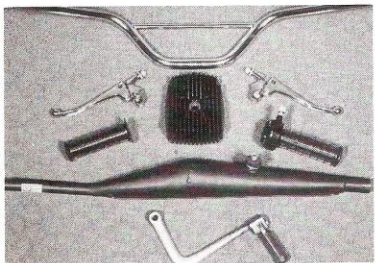


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gram—now start a line 1/16" in from the outside of the intake port. Draw this line straight up to the horizontal line indicating transfer port height.

(3) Next mark the other side of the booster port. Using dividers, make a mark 5/8" in from the outside of the intake port (toward the intake bridge). Just a dot is enough. From that dot mark a line that aims directly at the cylinder stud hole—remember the cylinder is still lying on the bench, you are looking at the top—and the intake port is still down. Check it again—the right intake port aims at the right stud hole. The left intake port aims at the left stud hole. Now that the booster ports are marked in, you have what looks roughly like an inverted "V".

(4) Get out the hand grinder. Before you attempt to follow all these marks and grind in the booster ports first grind the rough casting marks out of the exhaust port. Do not remove much metal, just smooth the port out. When you've finished find a piece of 1/4" bare welding rod and 1/4" bolt, 3" long, or something similar, hacksaw a slot in one end about 1/2" deep. Chuck this new polishing mandrel into the grinder. For polishing the port use some "auto body cloth roll" 1" or 1 1/2" wide (available from your local auto parts store), 180 or 200 grit is ideal. Tear off about 6" of the abrasive cloth. Tear again lengthwise so that the piece is about 1/2" wide. Fit one end of this piece into the slot and roll on the mandrel, check the grinder rotation to see which way to roll the cloth, and polish away.

(5) Get out the grinding stone that is 1/2" in diameter, 1 1/4" long, and has a 1/4" shank and chuck it up the grinder. Very carefully place the cylinder in a vise (use wood or plastic to protect the fins) just like it was before; intake port down, work from the top of the cylinder. Go slowly now—THINK—start grinding—STOP—look at the diagram again. Start again, grind slowly so that the booster port is approximately 3/8" deep coming out the top of the intake port. You must grind the port from 3/8" deep and taper it out to the cylinder wall surface at the transfer height scribe line.

(6) You now have booster ports. All that remains is to polish them a little. Use the same technique as you did with the exhaust port.

(7) Remove the cylinder from the vise and use a small round hand file to radius the sharp edge from the top of the intake into the new booster ports.

(8) Now is a good time to set the reed manifold on the carburetor mounting

studs. Scribe a line around the inside of the reed manifold throat onto the face of the mounting surface of the cylinder—now grind out the scribed area on the manifold side of intake port to match the reed manifold opening. Try to duct as much fuel flow down toward the crankcase as possible. It will be necessary to use several small rotary files and stones to complete this port. Don't forget to polish this port, too.

PISTON

(1) Follow the diagram and mark the window openings on intake side of pistons—watch for locating pin.

(2) Place the piston in the vise between two pieces of wood or plastic again. Hold the piston top and bottom, not on the sides (you could collapse it). Get out your electric drill and make a 5/16" hole in the center of each of the four scribed windows.

(3) Use a 1/4" round coarse file and hand file the piston windows to the diagram specifications.

(4) Follow the diagram for the piston skirt radius. Use a grinder or a file. Be careful not to bear too heavily on the piston and crack it.

(5) Very carefully deburr or round all sharp edges with a fine file and abrasive cloth.

(6) Completely wash the piston in clean solvent and you are ready for assembly.

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(2) MIKUNI (24mm as found on the Super Rat—PN-VM2400). a) Standard out of the box set up. b) Main jet—300 to 400. You will need to fabricate a wedged heat block (phenolic or mica). The wedge angle must let the carburetor mount in a horizontal position. (Look at a Super Rat). Bend the studs so that the unit will bolt up tight (no air leaks). The standard Super Rat air cleaner works great. (Remember to start rich and work lean.)

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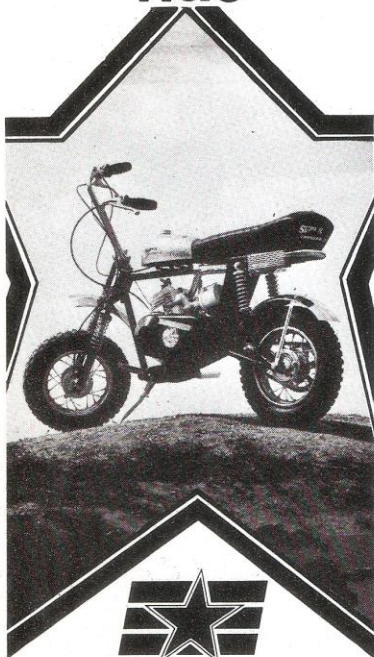
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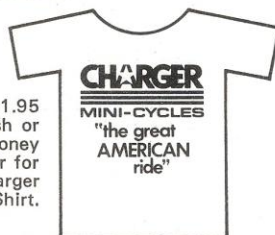
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BONANZA TEST

Continued from page 33

takeoff. Once again, Bonanza is aware of the problem and is working on the torque converters. Final drive is via No. 41 chain and the rear brake is set into the rear sprocket, using the sprocket metal as a brake drum.

Brian Conrad was our test jockey. He is a tiny mite (relatively speaking, although mini racers seem to be getting smaller and tougher all the time) who has been striking fear in the hearts of other racers at Indian Dunes. His size and weight would allow the Cyclone Mk II a fair test and his riding ability would match whatever it had in store.

In point of fact, he made the Cyclone look really good but, when an older youngster climbed aboard, the fall-off in performance was noticeable. We attribute this to two factors, the restrictive exhaust and incorrectly adjusted torque converter. Both these problems will be cleared up, we are assured, before the machine is marketed in quantity.

Still, the performance of the machine, with Brian on board, indicates what might be expected with everything working right. It handles very nicely and the geometry seems to be worked out just about right. Steering is positive yet the machine is agile when dodging rocks and bushes at speed. There is a sureness about the handling that makes the rider feel at ease when throwing the thing around. The tires gave good traction in all conditions and we felt happier traversing across the face of hills with the Bonanza than with a full-size lightweight motorcycle.

Suspension was adequate for normal riding but the high jumps produced some bottoming on the front forks. The rear end seemed much better.

There were still a few bugs to be worked out of our test machine but that is not at all unusual for one of the first units in a new line. Part of the reason for testing, in cases like this, is to point the way to final production design. As it happened, the areas in which we found room for improvement, basically the machine's inability to make the full use of the engine's power, were already being worked on by Bonanza engineers. By the time this machine hits the showrooms it should be one of the better mini-bikes around. Certainly the new frame design has cleared up doubtful areas in Bonanza's former design and it promises to be extremely trouble-free and long-lived. It is obvious that Bonanza is listening more carefully to the people who use their machines. □

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MOTO SKEETER TEST

Continued from page 48

Moto-Skeeters stood unridden. Once they were fired up and the first few guys took a whirl at them, everybody wanted to ride. Starting them with the pull rope was exceptionally easy and sure. It ended up that they got more hours on them than any of the other machines we had along.

The reason for this is that they are just plain fun to ride. Although the 650 is supposed to be a little stronger than the 500, this was not immediately obvious from the performance. Perhaps it was because of the extra weight the 650 carries around with it but, more likely, it was the need for a longer running-in period. Anyway, both machines had plenty of power to pull around full-sized adults with ease and some of the younger riders had to ease the throttle on gently to prevent unwanted wheelies.

Still, they displayed a remarkable amount of control. The throttle was not the slightest bit twitchy and the power came on in a smooth surge. The torque converters were a major contribution to this and they seemed to work at all times without any slippage or grabbing.

Handling was a surprise, considering the relatively small size of the machines and wheels. They were extremely maneuverable yet were quite stable in tricky situations. Perhaps our suggestions about the front end would lessen the lightness of the steering but a longer wheelbase still wouldn't make hard-to-steer dogs of them. That is not to imply that they are squirrely, just easy to steer. Altogether, the front ends have been designed quite well and they provide excellent suspension, all things considered.

Since we would not contemplate taking such small machines on the road, our preference was towards the simpler 550, especially as it was difficult to detect any difference in performance between the two. We would save the extra dough and, maybe, put it towards modifying the front end and, perhaps, installing an expansion chamber/silencer. Still, we recognize the advantages of having a camping two-wheeler on which you can legally bop down to the store for a loaf of bread.

The really serious dirt digger, particularly the guy who wants to race, will probably look in other directions than towards the Moto-Skeeters. Still, as family trail machines they would be hard to beat. There is a great deal of quality and good engineering wrapped up in these little packages. □

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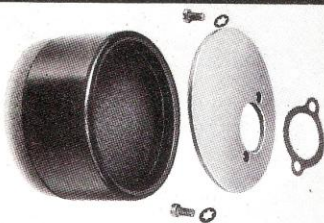
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KAMI TEST

Continued from page 26

complete the job before we had to take the machines for testing. At the time of writing, this problem was in the process of being solved and both air cleaners will be mounted higher up, close to the seat, in the production models.

Still, this did not have any effect on the performance of the machines during our testing. We were pleasantly surprised. As a rule, pre-production machines leave much to be desired but these two were ready, as they stood, for the market place, with the exception of the few minor points already mentioned. Power from the Fuji F-480 engines was more than sufficient and points the way to future successes on the track. The lighter MX was a shade faster than the JX but this could have been due to slight differences in tune and the fact that the engines were brand new.

Handling of both machines was excellent although our preference, in this area, was for the JX, probably because its larger size suited our test riders better. In hill-climbing the wider rear tire of the JX proved superior although there was little to choose between the machines in fast laps around a motocross-type course. For trail riding in narrow spots and for hard-leaning turns, we felt that the foot pegs could have been a little less widespread but we understand the foot peg width is under revision on the production models.

Steering was extremely precise with no suspicion of squirreliness. In trail riding, both machines could be traversed across the side of the hills and maneuvers safely made to avoid rocks and bushes. On the track, power slides could be taken in the loose turns with smooth predictability and "crossed-up" jumps immediately straightened out after landing.

The only signs of wear after bashing the machines around for two days were the slight loss of oil from the front forks of the JX and a stretched chain on the MX. These things are to be expected on any dirt machine when pushed the way our test machines were and are of minor consequence.

The Kami JX and MX are very impressive machines. Compared with competitive machines of less horsepower and (in the case of the JX) smaller dimensions, they represent extremely good value. We understand that a lot of attention is being given to backing up the sales with good service and parts availability. This bodes well for the success of the venture. □

LETTERS

POLICEMAN ON OUR SIDE

I thought you might be interested in the enclosed clippings. The one from Berlin, N.J., was from last year but the article on Franklin township is more recent. Nevertheless, they tell about the "wonderful" opportunities in New Jersey for cycle riding. How about the restriction even on PRIVATE property? What is private property if you are told what you can and cannot do on it? Although I do not live in Franklin township, it is nearby. Having been a special police officer for almost 17 years I have the fullest admiration and respect for the mini-bike and mini-cycle rider. It's a wonderful sport and it keeps them out of trouble. Yes, at age 38, I too am a mini-bike rider, as is my 11-year-old son. New Jersey has hundreds of acres of public grounds known as the Wharton Tract in the south central area of the State, but unless you have tags on your bike, keep out. There are some places which you can ride in, New Jersey but the point that I am trying to make is, if someone complains about something, the authorities pass an ordinance to eliminate their problem without consideration for those it effects.

Lawrence R. Corson
Elmer, New Jersey

The clippings reported efforts by the two local authorities to control mini riding in their areas. They are typical of the over-reaction we have seen in various parts of the country and are, again typically, cloaked in expressions of the "greater community good". Mr. Corson has a right to be indignant. However, it is our experience that these repressive moves are often softened, or reversed, if enough people, such as Mr. Corson, take the political moves to make their opinions known. In other words, organize. At the same time as you organize to change the attitudes of local authorities, organize to clean up our own house. Somebody must have done something to bring about the original complaints and, it is a fact of life, that if we do not annoy our neighbors, we won't get complaints from them. You are absolutely right, though, Mr. Corson, even in the worst of situations, mini riding is much better than some of the alternatives.

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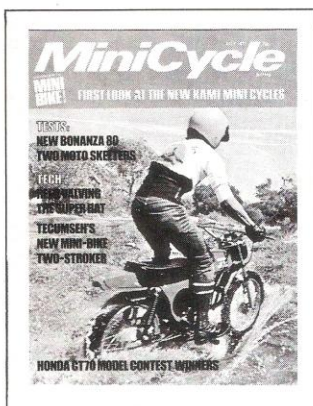
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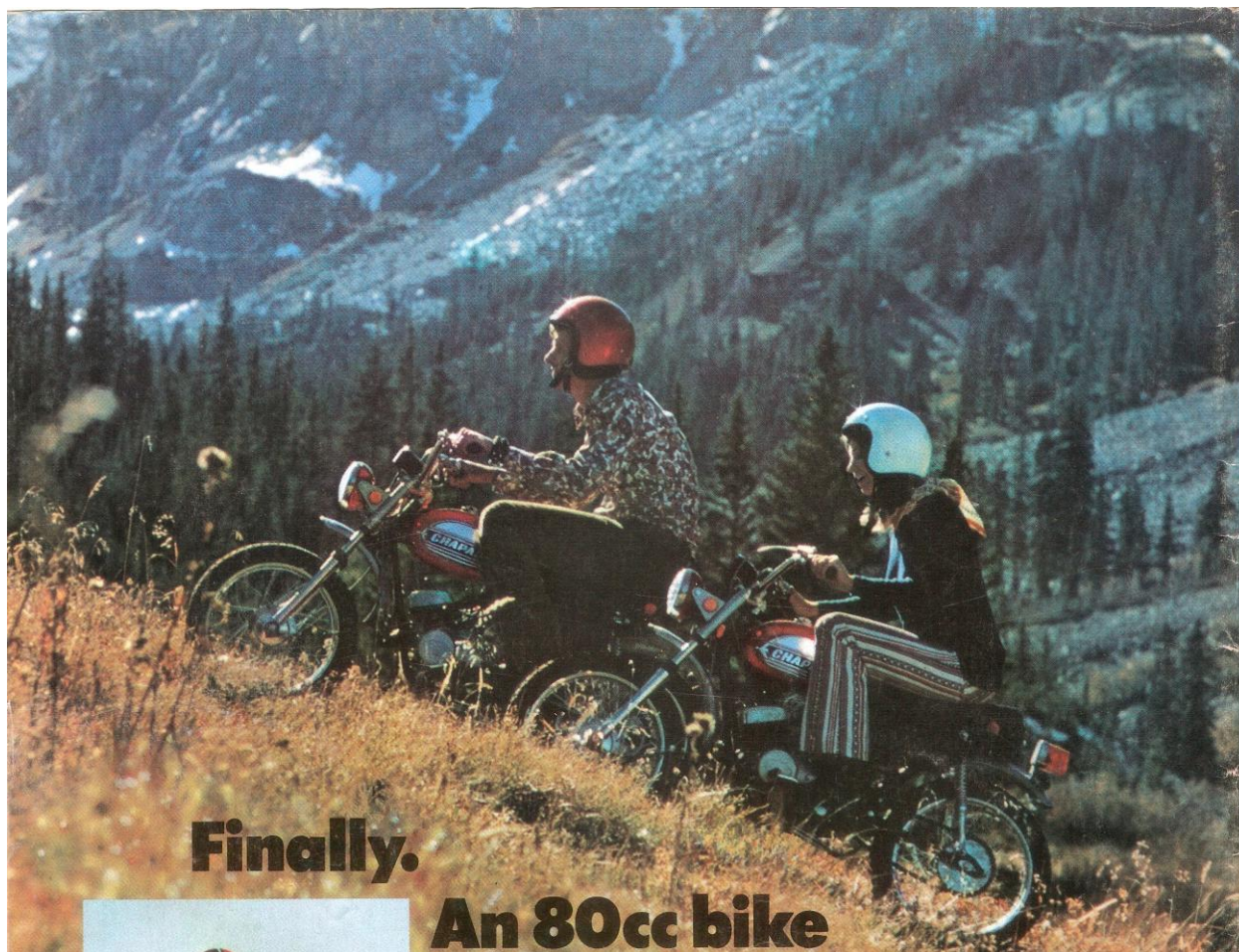
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An 80cc bike with some guts.

The new familyweight ST80. From Chaparral.

The ST80 is more than a new bike. It's a whole new idea. The first bike designed and built for a family. So, we call it the familyweight.

Dad, this means the end of trying to ride a junior minibike with your knees up around your ears. Or, spending the day holding your 250 back so the family can keep up.

Mom, here's a bike you can feel comfortable on. If the little ones were always too little, and the big ones were always too big, welcome to the ST80.

The kids. Well, they'll just plain love it.

Our family of familyweights also includes the T80—a tough trail-ready machine identical to the ST80, but without the lights, horn and speedometer package.

And the T172 with a churning 4-cycle 172cc engine and shift eliminating torque converter.

The familyweights. ST80. T80. And T172. From Chaparral.

A whole new idea in bikes. For your family.



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Check Out Our YouTube Channel for some great mini bike videos!

https://www.youtube.com/channel/UCSfQbGyWgUKm9OTIUyzYvKQ?view_as=subscriber

Sarah's first ride on a mini bike (Honda QA50) with a transmission

<https://www.youtube.com/watch?v=RiHh-Obvtg>

Build Your Own Mini Bike Video...

<https://www.youtube.com/watch?v=lr9M3GCQF-U&t=225s>



COMPLETE VINTAGE PLANS HOW TO BUILD A MINI BIKE PLUS.. "RUTTMAN MINI BIKE STYLE PLANS"

<http://www.allaboutminibikes.com/vintage-mini-bike-plans.html>

Original Plans from "Boy's Life Magazine" 40 years ago.

You might have to explain to a young person what this is. But if you grew up in the 1950s, '60s, or 70s – you saw this exact Mini Bike all over America. It was frequently constructed by kids working with their Dad. It usually had a lawnmower motor on the Mini Bike and made a lot of noise as it screamed down the block. But it was COOL!

I did some research back in the 1990s and actually found the guy who created these plans. These exact plans were the ones sold in Boy's Life Magazine for 40 years. Yes, THIS is the Mini Bike you remember seeing and loving as a kid.

Please take a moment to look at the image up close. You can get a good idea of how this is built. It wouldn't be much work to make one of your own, especially when you have the FULL ORIGINAL PLANS.

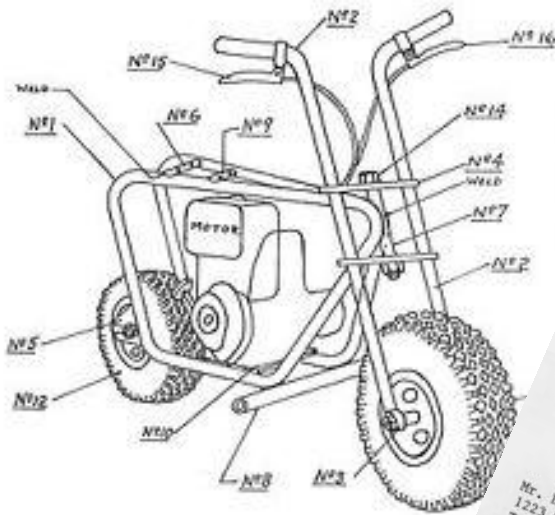
You can modify the plans to the size you want just like we did on the pictured MiniBike!

Take a trip back in time. Or simply share an important part of Americana with your kids or grand kids. Back when having a Mini Bike was the most fun a kid could have.

ORDER YOURS NOW!

PDF Download **PLANS ONLY - NO PARTS INCLUDED!**

MINI VEHICLE PLANS
P.O. BOX 687, CHAZY, N.Y. 12021
MINI-BIKE
Plan No. 1



VINTAGE JB RACING AD FROM 1974

Popular 1970's Ad From MiniCycle Magazine

This is a clean copy of the JB Racers ad that was in the Aug/September 1974 MiniCycle magazine, NOT the original, ad copy. It was an ad that was two pages when you opened up the magazine. I had the center crease photo shopped color filled in because the original ad is on two pages. Suitable for framing. Would look great in your den or garage. Ad will be shipped in a tube so there will NOT be a fold. P.S. THE WATERMARK IS NOT ON THE COPY YOU WILL RECEIVE. Thank you, Dan. <http://www.allaboutminibikes.com/jb-racer-ad.html>

INTRODUCING THE

RACE READY, TRACK & DYNO PROVEN
J&B Racers are based on three of Honda's best...the CR-125; the XR-75; and the MR-50. But, aside from their excellent handling characteristics, the J&B Racers have little in common with the stock machines.
In the J&B Racer line-up there are two versions of the CR...a 125cc and a 100cc. The XR comes in four versions...a 60cc, a 75cc, an 80cc and a 100cc. Our Junior Mini-cycle, the MR, is a 50cc screamer.
The J&B Racers are not toys. They are full-house racing machines, track-developed by the J&B racing team (Brad Dutoit, Jeff Ward, Dave Carlson and Brian Myerscough) and dyno-refined by the J&B tech crew. With the right rider, J&B Racers are winning machines. The record proves it.

JB racers

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All About Mini Bikes

J&B EL SINORE 100cc & 125cc

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