

Letters from Burt Munro, a New Zealand Motorcycling Legend
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Burt Munro corresponded over many years with his friend John Andrews in

England, an American V-Twin enthusiast. John found Burt's letters had no

equal for showing the determination, ingenuity and persistence in trying to

make, both the Indian and the Velocette go faster. This article is compiled

from a letter to John dated 21st March 1970. It expresses

Burt's style and

of his trials, tribulations and success in the quest for more speed. Well it

is a bit hard to cram a brief history and spec of a bike I bought new in

1920 for 140 pounds cash and have been developing since 1926. It has gone 3

to 100 m.p.h. faster each year for 44 years which is about average for some

factory bikes over the same period. I have been riding since 1915 and owned

a Clyno v-twin in 1919-1920 which I sold to a blacksmith and then bought

the 1920 Scout, engine number 50R627. I have made 5 heads for it, countless

pistons and conrods, carburetors, magneto parts, scores of cams, fork

changes, many wheels built as tyres and rims changed. The last one was for

the front wheel last July when I changed from 19" to 18" as

I cannot get

high speed from 19 x 2.75 tires anymore. This I cut the tread off with a

knife then smoothed down to the bottom of the non-skid groove.

For the first 22 years after 1926 it was weekends and nights getting ready

for hill-climbs, trials and standing 100 and flying 100 mile events, =

and 1 mile

dirt sidecar races at Penrith Speedway, NSW, Australia. Between 26 and 29 I

had records in hill-climbs, standing 100 and flying 100, and petrol c=

onsumption

runs, one of 116 m.p.g. This covers the start of my tuning efforts and has

continued up to the present time. I rode second next to les

Weatherby in
the world's first mile TT in Chatswood in North Sydney. The
track was
as cut
out of the bush with stumps and roots left, and a high jump out of a
deep
creek. This is now known as a scramble or motocross.
Then in 1927, solo on Aspendale Speedway, Melbourne, Australia, I
jumped
off at 90 m.p.h.+ when in a bad speed wobble at the end of straight
with
one hand on oil pump. We hit a deep gutter and took off on the bend,
landed
with the bars pulled round a little, and my heavy 29" oversized
tire
on
front just kept the wobble and was heading for the post and rail
fence. The
10,000 spectators were told in paper that I was unhurt but I was
pretty
sick in bed for a week or two with concussion and many bruises The
Saturday
before this at Inverloch Beach in Victoria, my flathead Scout won a
gold
medal at 90.01 mph equal with a 1928 Chicago 61" Harley
Davidson ridden
by
an airforce pilot from point Cook, Victoria, Australia.
From 1929 I returned to New Zealand after four years in Australia
when work
finally could not be had (this was the Great Depression). I spent
the next
10 years as motor cycle traveler. This was finally given up around
1941
when one of my rare (by this time) crashes put me off for 11 months.
When I
returned to NZ I was invited to join the local motorcycle club and
an now a
life member and have been for many years. After joining I just lived
for
beach races, grass track, mile and also 200 mile, hill climbs,
speed trials,
als,
trials, road racing, drags and I think the beach was the greatest in
1940.
About seven years ago averaged 83.43 m.p.h. in a six mile race which
I won.
This was on a championship fancied beach course a few miles from
Invercargill. This is where I do most of my testing nowadays.
In 1948 I decided to give up work and concentrate on getting a good
run out
of my old bike as by this time I thought I was getting better at
designing
parts and would go to the Canterbury Speed Trials held each year

north of
Christchurch. Well I went there for 22 years, this was a 1,000 mile
round
trip from home. I broke the NZ records more than once, but was only
three
times satisfied I had gone as good as I could go at the time, and
those
three times their timer failed for me. The last time was 10 or 11
years ago
and the ACU rep said, never mind, next year we will have cable
buried in
side of the road. Then they could not get it anymore because of
increased
use of this long straight road known as Tram Road, North Canterbury,
NZ. I
will try and give you a rough specification of the past and present
of
engine and cycle. I have and still hold some records in the 37 ci
class,
under 750 cc class, 55ci class and lastly 61ci class, all with my
1920
flathead Scout.
My first major record was the NZ Open Road record established on the
Aylesbury straight in 1940 at a mean 120.8m.p.h. This was held for
twelve
years. The under 750 cc Road record at 143.43 and NZ Open Road
record at
the same time. Also NZ Beach record in 1957. Although this is still
attempted each year it remains unbroken at 132.38 m.p.h.
The 55 ci AMA world record 1962 at Bonneville, engine was 51ci at
this
time. 1966 engine 56ci 168.06mp.h. American 61 ci record 1967 183.6.
best
run 190.07 qualifying. 1969 record number of runs for a streamliner,
14 in
four and a half days. I had magneto and carburetion troubles and
finally
burned-up pistons when gas tap shut off on last chance of a
qualifying run.
I have hauled bike or engine to USA eight times in my attempt to get
one
good run but this has always eluded my greatest efforts.
The last 22 years has been full-time as I could never get enough
hours to
do things. After finally getting 94 m.p.h. from the flatheads and
running
on Borneo Aviation Gas I ahd a go at making ohv heads. A foundry
told me
how to go about making patterns and I finally had them finished
after a
year of work until the first day it ran. Believe it or not the first
runs
were slower than my best on the sidevalve but over the years I
gradually

got it going faster till in 1937 I was getting 110 m.p.h. from it,
also
breaking conrods. About then a mate and I were returning from a
distant
beach meeting and another pair of rods had broken, and he said why
not
write to the Indian factory and get special rods. This got me
thinking and
I acquired a broken Ford truck axle and carved out two rods in five
months.
These were in it for 20 years and were standing up to over 140
m.p.h. By
1950 I was getting 150 m.p.h unstreamlined.
I have had many terrific blow-ups, the last two were during this
last 11
months. I will describe one I had at Muriwai Beach, Auckland in
April 1969.
I hauled my Munro Special up there 1130 miles and blew a piston (I
had
just made thirteen new ones for 1969), the rod and pin toe up and
down, put
tram tracks and split both new cylinders, punched large hole in
front of
case, bent mag armature, broke slip ring and magnets on ML into five
pieces. I hauled home and in eight and a half weeks had it running
again.
Eight more new pistons, two new home made rods, magnets cut form an
old
Bosch magneto.
The brief history is almost impossible to put together but I should
give
you a rough idea of some of my best crashes. In 1916, out all day
after
landing on head. 1921, riding standing on seat of Scout waiting for
Uncle
Alf to get his King Dick going. I looked round and woke up that
evening
after a whole days absence from what was going on. In 1927, jumped
off on a
dirt track Aspendale Speedway at over 90mph. Concussion and bruising
from
feet to back of neck. 1932, stopped to get a rider going in Western
Southland when on my traveling job. I told the guy I would follow
him in
case it stopped again. We came to a farmhouse at a cross road. A dog
ran at
him. I caught it on the rebound and came around later concussed and
bloody
from a deep scalp wound. 1934, crashed Clifton Gorge, struck a wash-
out
before could pull-up. Came around concussed. 1937, in 20 mile beach
race,
doing 110 when Hugh Currie, BSA Special, the last rider I had to
catch,

turned in front of me. I hit the 6=E2=80=9D brake and tried to steer behind=

him as he banked over to turn. My bike climbed up and over his and sailed 120 feet clear of the beach before landing. He was knocked-out and had broken collar bone. My bash-hat was split from crown to rim in two places. Weeks later he told me what knocked me out and split the hat. The underside of his engine landed square on my head. When he was repairing his bike he found the varnish marks from my hat on the cases. I had all my teeth knocked out and my brother picked up numerous gold filled ones from the sand. This was one of the saddest moments of my life when I found my priceless teeth no more.

1940, running on home built gas producer. Still traveler for some motor cycle firm and running at top speed of 56 m.p.h. on coal. I hit a ridge of wet gravel and ran off to side of road but regained control on fence line.

But before I could let go of bar and shut off gas and air lever I hit an 18=E2=80=9D deep cutting into a farmhouse, the bike struck the far bank and= shot right up into the air and back to the gravel road. My head hit the road, I was unconscious for one and a half hours and came-to blind from dried blood in eyes. I had hemorrhage of brain for a week and concussed, and was of work for 11 months. I had part concuss - ional headaches for about 15 years form this so I gave up the traveling as I did not care to travel by bus or car to sell bikes.

1959, was in a drag at Teretonga International track when at 110mph the bike got into a sudden fast speed wobble. I jumped off the side and rolled and skidded and bounced 15 feet high they tell me. I finished up in the hospital for seven and a half weeks. When I finished the crash I had bash hat still on, waistband of pants, tennis shoes and pieces of socks. I was only slightly concussed. It was missing flesh, and skin took building up again. One finger was ground half way through the bone but still

works but
one joint is crook. All the other crashes involved just bones or
scars or
burns and one arm ripped apart at the shoulder. In five and a half
months
it grew back but still hurts at rest when I lie on it.
For this year I have made the new cylinders and pistons to the
largest bore
ever, it is now 3.192 inches x 96mm giving 60.54 ci. For eight years
I have
carved out new rods, cylinders and pistons and cams, and work full
time on
either my 1936 Velo or the Indian.
For 10 years I worked 16 hours a day in the shed and was told to
slow up a
few years ago and now work 7 days and about 70 hours a week. The
flywheels
I made from 5-E2-80-9D axle hammered out under steam hammer. Just
finished =
pistons.
I had these eight heat-treated for the first time. Crank in 1928
Scout
turned down to =C2=BE=E2=80=9D and then sleeved. I made this from
oil harden-
ing steel
and squeeze on and pull up with standard nuts. I leave the taper
with =C2=
=BE=E2=80=9D
hole in it to fit drive side flywheel. The rods of course now have
bigger
eye and smaller rollers. The main shafts right up to about three
years ago
were standard, about 13/16=E2=80=9D; with four sets of caged genuine
Indian=
rollers
=C2=BC x 5/16=E2=80=9D running on the shafts. Well, as speed
mounted-up over=
r the years I
got visions of them breaking and in 1957 I had a new pin, crank-pin
that
is, given to me in Springfield on a visit to Indian factory. This I
fitted
to the timing side with big-end bearings. Then the drive side looked
so
thin. I looked around and had a spare gearbox mainshaft. So I ground
the
four outside splines off it and made up two drive shafts from it,
then had
them re-hardened and ground locally. I bored out the taper in
flywheel in
my three and a half inch Myford lathe. By the way, I completely made
my new
cylinder heads in the same lathe The only change is to cut about one
and a

quarter off gap in bed for flywheels. This probably weakens it a bit but I still work it every day, and have since it was new 22 years ago. I am on my second set of back gears, worn out about 12 years ago, and my third lead screw is now badly worn. Cams I made by file and saw since 1926 but now have built a cam grinder and make them in pairs as I spent 800 hours in 1963 making the engine into a four cam set-up. After I time them I pin them to the hole in the standard cam-wheels on Scout. Cam followers are filed from axle steel and I make a fork to take a roller running on needles, and an oiler to keep a good flow from the 1933 Indian oil pump I had given me in 1956 This I modified to pump the oil to big end, and was when I made my steel flywheels. The 1920 Scout frame and my third streamliner shell are still in USA. The first full shell I built took me five years to hammer out of sheet aluminum. I could only work at it when I had my bike ready for testing then if it blew-up I would work on the engine until running again, then hammer away at it again, or suddenly think of some new scheme to get more speed. Of course these brainwaves often made it slower or just more blown parts. By the way, I have read of E Fernihough's death and perhaps I can offer a reason for him running off the road that day. I have several times had similar experiences caused by a side wind of only two to three m.p.h. if one is traveling at over 180 as on most occasions with me, the bike steers over to one side but I start to steer it back at once. But I have had it go 12 feet over the outside of the black line before getting it back to the center of track. If this were on a road of course there is no chance of survival. The first shell I took with me to Bonneville in 1962 was the second I had built. The first one of aluminum was too hard to ride, too neat a fit and I

had great difficulty getting the gears. So I modified it and used it as a mould for number two of fiberglass. I had my first run on it at Bonneville in 1962, and was ordered to have a test run with officials following in a car. It just veered from side to side at all speeds I said to myself I may as well ship it back home, they will never let me run a thing like this. When they came up with me they said, handles ok. I said, What! They repeated handled good. For the next five or six years I had some of the worst out of control rides on record. The worst was five miles late in 1962 when in an effort to stop wheel-spin at 160 I built a 60lb lead brick and bolted it in front of rear wheel. By the time I got to three mile marker the top of the shell was swerving five feet and wheel marks were five inches wide and snaking thirty inches every 200 yards, measured and lined-up later. Well when you figure you can only die next skid you try anything, so I wound it all on for another one and a half miles and when I found out it would go on that way forever I rolled it back and got it stopped. When the gang arrived and found me laughing and asked me the joke, I said I was happy to still be alive. The cure is to sit-up and let the body strike the air. This shifts center of pressure back behind center of gravity. I learned this the hard way. Lead brick should have been in front of the front wheel and shell higher off the ground. At rear, air packed under tail and lifted weight off rear wheel and thus caused wheel-spin. More specs. I have mods in clutch, the standard Raybestos plates are long gone and I have 17 standard steel plates, hardened and ground. I fit 24 standard clutch springs giving a pressure of 1360lbs on the pressure plate, and the standard thrust race and withdrawal screw haul this free for freeing and gear changing. I have a left hand lever and wire to operating arm and a small foot assist lever on the clutch worm shaft. I only use this for long gear engagement during test runs without shell Over the years I

made four chain drives having finally ground helical teeth off clutch body and filed out 46 half inch pitch teeth by hand and now run a three-row chain on a 22 engine sprocket and still the 46 clutch sprocket. This Reynolds in London told me 15 years ago would be impossible and would never work but it has run in there for the last 35 years or so in 10 SAE oil.

The gearbox is original, but I was unable to get new sliding dog and was visiting an old acquaintance in Sydney in 1948, he had bought out Mr Bidens stock of Indian parts. I bought a set of 1916 Power Plus Indian gears, lay shaft cluster and sliding dog. The cluster I shortened 3/8"=E2=80=9D and have run on them this past 22 years.

Cylinders I usually make from very old city gasworks pipe, cast-iron condemned, because of very large pits. I manage to get short lengths without too deep marks and because of the thickness, about 1/2"=C2=BD-5/8"=E2=80=

1/2", I can have enough thickness for a base. The barrels are old pistons melted in a small pot on the two gallon can furnace I use for melting-down for making pistons. The muff casting I turn-down in the Myford, bore undersize then heat-up with blow-lamp and drop onto liners. Pistons I redesign every year and make about half a dozen or so and take with me to USA for spares. Some years I have used every one and even welded-up burned-out ones there. When

Jim Enz and his wife wanted to help me with fuel, I said I would like to try alcohol and they bought me five gallons of best brand Mickey Thompson alcohol. Boy it sure was the best piston burner! I guess it had Nitro or TNT in it. Every run the pistons vaporized. No alloy heads on my heap

Carburetor is 1924 Indian Chief. I have sawn a cut full length on top of it, bent it out and welded piece of brass in gap and run it in normal position with a T shape manifold made from one and three eighths steel tubing. I have tuned five carbs for my bike since 1927 when I swapped the Schebler H for a Schebler deluxe, and all others I have tuned and modified

have been deluxe Scheblers fitted to the Indians made later than mine
This year since arriving home from USA five months ago, have put in 560 hours on the Munro Special. The main jobs were two new alloy rods—two weeks, two new cylinders and barrels— one week, eight new pistons and much work on old dies for same— three weeks. I am making two new sets of cams for this year. Making a 180 degree Bosch mag into a 42 degree by making new brass cam ring. From old ball race the two cams were made, filed and timed accurately then quenched in oil. As this 0 year old magneto rotated backwards I had to make up a drive different from standard. This I finally got working by taking out the two idler pinions, and fitting a big cam wheel from a late model Indian. This has four teeth more than my engine and by cutting 1/8=E2=80=9D off base of mag and cutting into cases a little and= jamming it back and boring new holes and tapping—out in same, I finally got the drive fixed. I also made a movable shaft to run the large pinion on and thus get a close tooth adjustment
Since finishing the above I have been testing at the beach and have been out 17 times and had 11 blow—ups. This consisted of mostly broken pistons of older designs. I was testing out a steel rod and a new carb I had made these last two or three years. I ran it on 20 to 1 to test the rod, then built better pistons and ran three in it, one after the other, until I had one that should stand—up to 13 to 1. As soon as I lowered the compression to 13, the rod which had stood—up to all the broken pistons finally shattered top end when I was accelerating hard in top at 5,500. I took it down, the new piston was in many pieces, pin broken in half, cylinder scored and split at skirt and hammered out wedge shape and locked in cases.
One rocker arm broken, one twisted, one push rod broken, one buckled. Other breaks were cam follower I had made from magnesium four or five years ago, another rocker and pushrods bent and both valves bent.
Development goes on all the time and has been full—time these last

22

years. I would like to make another DOHC set up. I still have the one I made and ran in quarter-mile grass track races about 1951. This fitted out front cylinder and rear was blanked-off. It was just an exercise as everyone was talking double knockers at the time. It is only lately I have had ideas to try to fit-up one for the rear as well but have so far failed to get time. Pulled the head off this morning and am starting two new rods from DC6 B propeller. I hope to find it strong enough. It was sent to me from Auckland as I cannot get the 70-70 or 20-24 alloy in NZ. I like to improve design every year in cams, carbs (just finished a new one yesterday), conrods, pistons and sometimes valves and guides when they wear a little, and cylinders. It is almost impossible for me to give you a true picture of the time I have spent on my cycles. The last 22 years has been full time and for one stretch of 10 years put in 16 hours every day, but on Christmas Day only took the afternoon off. I have booked berth on SS P&O Oriana for USA June 15th but will not go if cannot pass the doctor.

Footnote:

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In the Open Record on the Munro Special Burt did 120.8 m.p.h.

(flying =C2=

=BD

mile) Main West Road, Canterbury 27/1/1940. Burt never again competed at

Bonneville, due to declining health. But to this day he enjoys the distinction that his Indian is the fastest the world has seen, 190.07 mph

at Utah in 1967.