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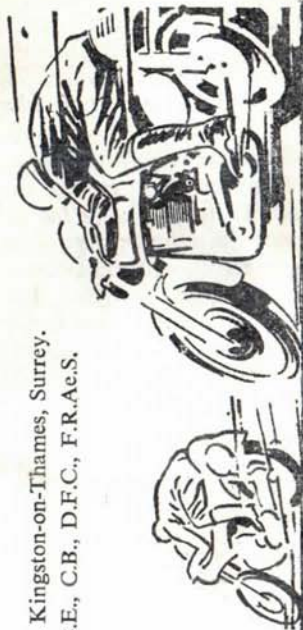
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THE JOURNAL OF THE
BRITISH MOTOR CYCLE RACING CLUB

Bemsee

EDITORIAL

This month the editorial must concern the Hutchinson 100 for, if I can't think of anything else to write, the whole magazine must be dedicated to this one meeting.

You may well ask "why all the fuss about just another international?" It is just another international race meeting but it has the difference that the people concerned with its organisation are trying to make it a popular venue for the riders as much as for the spectators. The direction of the circuit has been switched round to provide an equal chance for all. This necessarily involves considerable extra expenditure, the whole problem these days with endeavouring to stage 'something different'. Start money has leaped forward as the biggest single expenditure so the entry has to be held in check, one governed by the other. You cannot get all your stars along if you can't afford the money they are asking.

This year's Hutch well just read on.

If you asked anyone interested in two wheeled sport to name the most popular mainland race meeting and they would undoubtedly reply, "the Hutch." Not only has it been going the longest but it also has the reputation for providing the spectator and rider with the best value for money. Its one trouble is that it cannot give a ride to everyone who wants to take part.

Over the years it has changed in one form or another but the basic foundation of competitive racing remains. There are races for all classes (50 c.c. racing being dropped in 1966) including the ever popular Production race which last year highlighted the meeting with that never-to-be-forgotten scrap between Mick Andrews and John Cooper. The Summer Scratch race too is a proven fixture and provides a nice break from the star names which normally affront the spectator whichever way he looks. At least he can normally watch the racing and see the racing for what it is rather than have to pick out his favourite names all the time.

It has taken many months to sort out an entry worthy of being included in the Hutch programme. Some names are pencilled in even now as we are awaiting final confirmation of their entry. Reading through this article you will remark that the entry is one of the finest ever—although, I do believe we said this last year!



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The most noticeable difference for 1967 is that the Senior Championship race is being run in two legs, two fifteen lap races instead of one twenty-five lapper. There is prize money on a reduced scale for both events but also, on a separate basis, a further £260 will go on aggregate performances. Our reasoning is to improve the racing by giving more incentive to do well. We hope it works! This race, which has a capacity margin between 250 and 750 c.c.—no rubber cylinders being permitted—has a phenomenal entry. Working through the list it is as follows:

Mike Hailwood (350 or 500 Honda)
Fred Stevens (Hannah-Paton)
Ron Chandler (Matchless)
John Blanchard (Seeley)
Lance Weil (Lyster Matchless)
Rod Gould (Norton)
Tom Phillips (Dunstall)
Dave Croxford (Oakey Matchless)
Derek Minter (Norton)
Dave Degens (Dresda Metisse)
Joe Dunphy (Comerford Norton)
Peter Williams (Arter Matchless)
John Cooper (Norton)
Rex Butcher (Dunstall)
Alan Barnett (Kirby Matchless)
Mike Duff (Matchless)
Dan Shorey (Norton)
Chris Conn (Norton)
Kel Carruthers (Matchless Metisse)
John Hartle (Matchless Metisse)
Charlie Sanby (Norton)
Peter Richards (Norton)
Pat Mahoney (Kirby Matchless)
Griff Jenkins (Norton)
Tony Godfrey (Norton)
Malcolm Uphill (Norton)
etc., etc.

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The Junior race is virtually a repetition but for this you can add:

Dave Simmonds (Kawasaki)
Paul Smart (Aermacchi)

The lightweight races (125 and 250), especially the latter, looks like providing a classic battle of the giants. Stuart Graham (Suzuki) will find a hard task master in Bill Ivy (Yamaha) who will also find Ralph Bryans (Honda 5) a bit of a handful. Derek Woodman (MZ) will do his best to cut them out a bit I've no doubt!

The 250 race (event 8) which incorporates the Castrol Challenge, will provide for many a thrill when the giants get together again. This is only one race in the 250 class, the first race of the day being an all-comers which includes many of the stars as well as the Championship. 250 c.c. entries:

Mike Hailwood (Honda 6)
Phil Read (Yamaha)
Derek Woodman (MZ)
Ralph Bryans (Honda 6)
Derek Chatterton (Yamaha)
Dave Simmonds (Kawasaki)
Chris Vincent (Kawasaki)
Peter Williams (Benelli)
Tommy Robb (Bultaco)
Kevin Cass (Bultaco)
John Cooper (Kawasaki)
Rudolf Kadrlicek (Aermacchi)
Rex Butcher (Dunstall Greeves)
Tom Phillips (Aermacchi)
Rod Scivyer (F.H. Merlin)
Dave Degens (Aermacchi)
Peter Inchley (A.J.S.)
Tony Godfrey (Higley Cotton)
Paul Smart (Greeves)
Reg Everett (Broad Yamaha)

Referring back to what I said earlier about the Summer Scratch being a race to look out for, here are a few of the entries:

Tony Cooper (Norton)
Brian Burgess (Norton)
Ray Knight (Hughes Triumph)
Alan Chivers (Norton)
Alan Prange (Matchless)
Jack Brillard (Norton)
Cyril Jones (Triumph)
Les Kempster (Norton)
Steve Jolly (Matchless)
Keith Heckles (Norton)
Mike Eglington (Norton)

The Sidecars? Well, at the present moment we are awaiting confirmation from Kurt Enders and Siegfried Schauzu. But we have Terry Vinnicombe (Kirby B.S.A.), Chris Vincent (B.S.A.), Mick Boddice (B.S.A.), Fred Hanks (B.S.A.), Helmut Fath (U.R.S. 67), Peter Brown (B.S.A.), Charlie Freeman (Norton), Brian Rust (Triumph), Nigel Mead (Triumph), Pip Harris (B.M.W.) amongst others.

But the finest race of the day must again be the Production race. Just look—

John Hartle (Triumph T120)
Percy Tait (Triumph T100T)
Rod Gould (Triumph T120)
Pat Mahoney (B.S.A. Spitfire 3)
John Cooper (B.S.A. Spitfire 3)
Dave Degens (Triumph T120)
Ray Pickrell (Dunstall)
Joe Dunphy (Triumph T120)
Paul Smart (Dunstall)
Tommy Robb (Bultaco)
Steve Murray (Bultaco)
Lance Weil (Triumph T120)
Mick Andrew (Triumph T120)
Tony Smith (B.S.A. Spitfire 3)
Ray Knight (Triumph T100T)
John Hedger (Triumph T120)
Rex Butcher (Triumph T120)
Peter Butler (Triumph T120)
plus an un-named two from Norton Villiers.

Wetted your appetite?

Practice is all day on Saturday, August 12th from 9.30 a.m. until 5.00 p.m. There is no Sunday practice, racing commencing at noon. Programme:

- 12.00 p.m. — 250 Allcomers.
- 12.40 p.m. — Sidecar Scratch race.
- 1.15 p.m. — Senior Championship — 1st leg.
- 1.55 p.m. — 125 Championship.
- 2.30 p.m. — 350 Allcomers.
- 3.00 p.m. — Production.
- 3.50 p.m. — Summer Scratch Race for solos up to 1,000 c.c.
- 4.20 p.m. — 250 Championship.
- 5.00 p.m. — Senior Championship — final leg.
- 5.45 p.m. — Sidecar Championship.

Looking to the future of Bemsee as a leading Club, it is quite obvious that it has much more of a future than any other Club in the country. It has a full time staff, an enthusiastic Board of Directors—none of whom receive any remuneration from the Club—and a Secretary who has made the Club and road racing his life to the detriment of a great many other active interests. The number of race meetings are forever on the increase and the most serious problem he foresees is the lack of voluntary officials to help run them. "We have a great organisation which is gradually being eaten into by the variety of other family interests. It happens in the best of circles, but we must endeavour to keep together the core of the organisation for, without it, the flesh crumbles."

With the amount of forethought going into the planning of the Club, 'Bemsee' has still to reach the heights of success, of that we can be certain.

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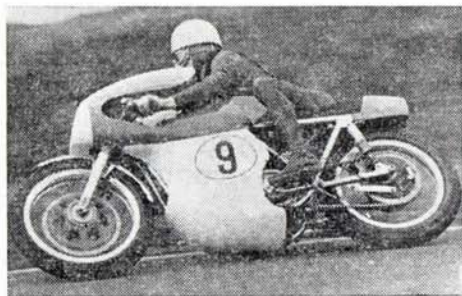
A reminder to many who forget that the Metropolitan Meeting is again being staged by the Club at the Crystal Palace on August Bank Holiday Monday (28th) with practice on the Saturday (26th).

A full star line up is anticipated for the first time and we hope to include Ron Chandler, Joe Dunphy, John Hartle, Rod Scivyer, Reg Everett, Lance Weil and Charlie Sanby amongst the entry list.



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Durrington Walls 51

A Reunion to Remember!

PETER LEWIS

The attraction of Brooklands' 60th Anniversary commemorative meeting was such that two or three thousand cars, full of people, crowded into the centre of B.A.C.'s airfield to see what remains of the track and the cars and motor cycles that used to lap the track at speeds of over 120 m.p.h.

It was a fine gesture by B.A.C. to the organisers, Godalming Round Table, that they allowed the general public into Brooklands for the first time since the track closed in 1939.

It was a pity, however, that some people abused the occasion. Although the meeting was open freely to the public there had been gate crashers, many of the thousands of people who were there giving the impression by their behaviour that they were not vintage enthusiasts.

People climbed over steel crash barriers on to the runway on which demonstration runs were taking place. At one stage the officials threatened to cancel the second demonstration run, though in the end the programme was completed as scheduled.



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To give the huge crowd an idea of the kind of machinery which used to race at Brooklands there was a display of nearly 140 racing cars and motor cycles. There was also a display of nearly 400 cars, motor cycles and commercial vehicles dating from 1898 to 1939. These took part in a parade and during the afternoon about 150 of them competed in driving tests under the control of the British Automobile Racing Club Surrey Centre.

But the main point of the meeting was the reunion of cars and motor cycles which used to race and these provided a memorable sight as they set off in pairs to race up the runway towards the Railway Straight.

Surrey was very well represented at the meeting and one of the fastest cars to compete at Brooklands, the 4½ litre single-seater blower Bentley was there with its present owner, Mr. Russ-Turner of Leatherhead. This car, which is ex-Henry Birkin, was specially built for Brooklands and held the outer circuit lap record in 1932 at 137.9 m.p.h.

At the end of a day which must have been full of nostalgia for many, Lord Montague of Beaulieu presented prizes for the various classes.

AWARDS

Fiat Brooklands Trophy, (awarded annually): P. Lindsey.
Historical Commercial Vehicle: E. J. Baker & Co. (Bedford).
Best Privately Owned Commercial Vehicle: M. Friedman.
Oldest Motor Cycle E. N. Pearce: (Kentish Wheel).
Oldest Car P. Foulkes-Halbard: (Orient Express Dog Cart).

Class 1

Furthest travelled: P. Smith, (Triumph).
Concours—Cars: J. Crabb, (A.C.).
Concours—Motor Cycle: P. Foulkes-Halbard, (Triumph).

Class 2

Furthest travelled: W. Golding, (Lagonda Tourer).
Concours—Cars: C. Booth, (Morgan Grand Prix).
Concours—Motor Cycle: J. S. Gray, (B.S.A.).

Class 3

Furthest travelled: R. Moore, (Singer Sports).
Vauxhall Trophy: D. Sharp, (Vauxhall 30/98).
Concours—Cars: G. Middleton, (Riley Sports).
Concours—Motor Cycle: G. Grimes, (Brough Superior).

Class 4

Most Original Car: A. James, (Fiat 10½ litre two-seater).
Best British Racing Car: M. Eyre, (Austin 747 c.c.).
Best Foreign Racing Car: J. Richards, (Type 51 Grand Prix Bugatti).
Most Original Motor Cycle: M. Mavrogardats, (Brough Superior).
Best Motor Cycle: N. Webb, (Excelsior).
Best M.G. Privately Owned: P. Jennings, (M.G. J.2. Sports).
Furthest travelled: J. Blight, (Talbot 4-seater Tourer).
Untimed Tests: I. Linsdell, (O.M. Tourer).
Timed Tests: T. Ely, (Riley Vester Imp).
Furthest travelled Official: B. Lindh, (Stockholm).

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A Sketch on Marine Diesel Engines

JOHN DENNY, A.I.Mar.E.

Part 4 — Fuel and Air

In order to achieve the function of the engine we must have a source of power. In our case, the ever necessary air comprising of hydrogen, nitrogen, oxygen and some other more obscure gasses, gets together with a fuel called a hydrocarbon fuel (diesel oil) consisting mostly of hydrogen and carbon with some impurities.

Doctor Rudolf Diesel is believed to have been the first man to suggest that if one can compress air to a sufficiently high pressure, then the heat liberated would cause a hydro-carbon fuel to ignite, releasing even greater heat and pressure. He may also have considered that he could achieve this using less fuel per h.p. generated than the steam ships. The resulting joy in maritime board rooms at hearing of this economy maybe imagined—some might even have smiled in those very hard days of navigation.

The problem which now faces us is how, having compressed the air into a very small, hot, dense, mass, we can inject fuel. Two thoughts occur; first we can add to the column of high pressure, fast moving air, and thence into the combustion chamber, or we can directly inject into this space. Many of the earlier designers used the first method, normally called blast injection, simply because the quality of material and hardness required to stand up to continuous service in compressing air and fuel to high pressures was not available to them. It does, however, satisfy one very basic essential, that of good mixing, unfortunately the trail of drawbacks is long.

We must provide air at a very great pressure—about 500 p.s.i. in considerable quantities continuously. This entails large compressing machinery which can be either attached to one end of the main engine consuming valuable horse power or separately, consuming valuable space and either steam or electrically driven. Our engine room is already crowded, as we have previously seen, so the addition of a large compressor is not welcomed. The majority of engine builders tacked it on to the end of the engine, accepting that some of the shaft horse power would be needed to drive it, but at least, when the engine was running, there would be air readily available at about 1,000 p.s.i.

The second method of fuel injection is usually known as solid injection which only means that the fuel is compressed in relatively small quantities to about 5,000 p.s.i., in order to achieve the same mixing as with blast air and low pressure fuel injection, squirting it through a lot of small holes straight into the combustion space. This solves many of the problems immediately—no large compressors, therefore all the h.p. goes to the shaft, no bulky injection valves, fewer pipes carrying high pressure air about the place. The problems accompanying solid injection were: careful design of nozzles and relative holes to ensure good penetration and atomisation of fuel, high quality materials hardened with greater accuracy for, remember, fuel contains impurities, some of which are exceedingly hard and which will score the plunger and body; carboning up of the injector nozzle die to fuel burning immediately on contacting of hot dense air.

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To achieve perfect combustion in our engine, a strict ratio of hydrocarbon to air ratio is required. This works out at 14.5lb of air to 1lb of fuel under perfect mixing conditions. Unfortunately, with the very short space of time available, perfect mixing is not possible so to overcome the drawbacks an excess amount of air is used to fill the cylinder, i.e. 20lb of air to 1lb of fuel. To achieve this end it will be seen that air under pressure, above atmospheric, will help us to push out the burnt gasses and fill the cylinder with the necessary amount of excess air.

To get air into the cylinder involves three distinct phases on two cycle engines:—

1. Blow down period which begins at the opening of the exhaust ports or valves allowing the cylinder pressure to fall very rapidly to less than the incoming scavenge air.
2. Scavenge period beginning at the opening of the scavenge ports while the exhaust ports or valves are still open. There is an identical volume of fresh air entering to that gas which is now being blown out but the density of the relatively cold air is much greater than the hot gas exhausting. This period ends when the scavenge ports are covered on the up stroke.
3. Post scavenge period, and unfortunate necessity. The exhaust ports or valves are still partially open whilst the scavenge ports are closed. For mechanical reasons it is extremely to simply shut off a flow of gas very quickly. Therefore it is done by partially closing the exhaust valve early or by fitting a rotary valve after the exhaust ports and shutting that early.

Having achieved what is quite a complicated manoeuvre in getting clean air into the cylinder, some method must be found of getting the fuel in as well. As has been previously explained, the current method is solid injection of small, carefully metered amounts under very high pressure. It must be clearly understood that air, when compressed, is very dense and the particles are very close together. As a result, a great deal of resistance is offered to anything else getting in as well.

As it is of no use at all squirting in a solid column of fuel, a fine spray of small droplets of fuel has to rely very largely on the great speed imparted to penetrate well into the air. These droplets must be of the correct size; too large will occupy a long time burning and too small will burn too quickly on leaving the nozzle.

To reduce the continuous burning of nozzles by the increasing high rating of engines, water cooling was introduced in a successful effort to prevent the fuel spray from igniting on the hot nozzle tips and thus burning it all away in a comparatively short space of time.

PROVISIONAL 1968 CALENDAR

March 10th	—	—	Snetterton
*March 30th	—	—	Brands Hatch
*April 14th	—	—	Snetterton
*May 4th	—	—	Brands Hatch
*May 18th	—	—	Brands Hatch
*June 22nd	—	—	Brands Hatch
*July 13th	—	—	Snetterton
*August 3rd	—	—	Brands Hatch
August 10th/11th	—	—	Brands Hatch — Hutchinson 100
†September 2nd	—	—	Crystal Palace — Metropolitan
*September 14th	—	—	Brands Hatch
September 29th	—	—	Snetterton
October 20th	—	—	Snetterton

* Saturday

† Bank Holiday

The balance refer to Sunday meetings.

PHOBOF - Part 3

Ivan Hackman

In late 1920 Ephraim Phobof began his great onslaught upon the motorised bicycle market. Having become famous following the success of the Pharce he bent to the task of producing a world beater. Using a combination of his fathers many and varied engine designs, he produced the power unit of the original Phobof Phutile. This was a twin cylinder single piston one stroke engine of horizontally opposed type. Ignition is by twin magneto turning at engine speed by chain drive from the engine. Cams were also by chain drive from the engine shaft. As the piston went from left to right, on the firing stroke the piston uncovers a "trap-door" exhaust valve. Pressure opened this, discharging exhaust gasses. As the piston continues from left to right, pressure drops, the spring loaded exhaust valve closes and the inlet valve, operated by a hairspring, opens, filling the left hand cylinder. This piston then moves from right to left on the firing stroke and the process is repeated. The crankshaft thus completed two revolutions for one complete piston cycle. The cambos is filled with grease every three hundred miles (or twelve months whichever is the sooner) and the valve clearance adjusted by means of a 7 lb. sledgehammer. (Ed.—We couldn't reproduce the drawing as we couldn't understand it enough to redraw it!)

Conversion from steam to petrol drive was soon accomplished and the 498 c.c. Phutile engine was soon installed in one of the famous 'bed-stead' frames fitted with Phobof Roadroller forks. Due to the enthusiastic style of Ephraim on the first track test, the Phutile had to have castors fitted to the handlebars to aid cornering. The engine was also lifted by eighteen inches to improve ground clearance on cylinder heads.

After winning the first three races in which the Phutile was entered, the factory took the plunge and entered motor cycle events—much to the relief of the penny-farthing cycle clubs.

The Phutile was hailed as the most versatile machine on the market. It was available in trials, racing, scrambles or standard trim. With the correct attachments it also served admirably for ploughing fields and pumping out cesspools. The standard Phutile could be fitted with rearward mounted stirrups and straight handlebars together with an alloy petrol tank. This enabled the rider to adopt a racing crouch and also lightened the machine by no less than 357 lb.

By the middle of 1922, Ephraim Phobof had reached the peak of his career and was producing one new model per month. Primarily, this was to appease the unfortunate owners of the previous model. In the next few issues (Jim Swift willing) we shall study some of the leviathans of motor cycling and the herioc men who rode them.



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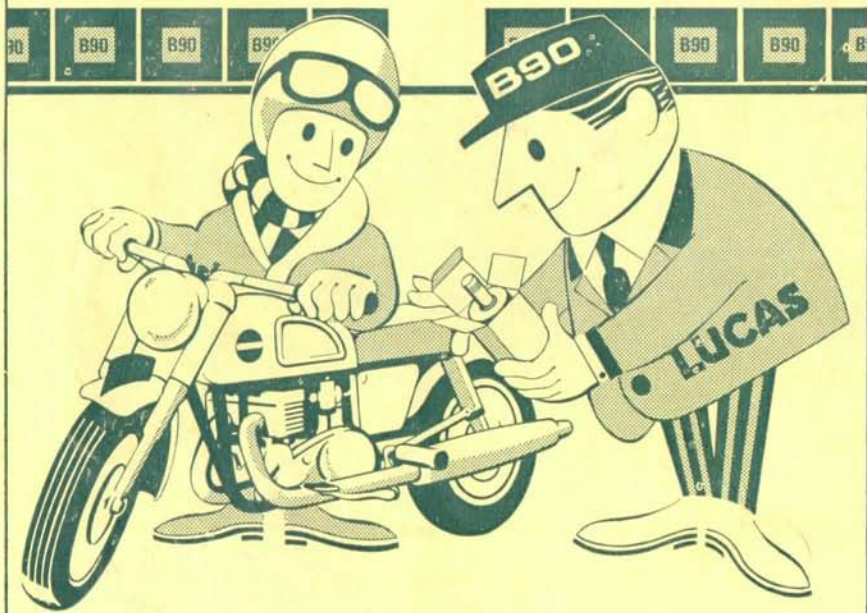


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