

HESKETH

The Lord who used to let James Hunt play with his racing cars tells the story behind the best bike ever built in Britain

ALEXANDER Hesketh — Lord, engineer, and businessman — has built up a successful company in the stables of his stately home. Hesketh Tri-Union rebuild and test engines for Formula one car grand prix teams as well as doing research and development for the automotive industry.

"In 1977 we felt that we were too dependant on racing cars. Grand Prix racing is a sport that could well be the victim of change — turbocharging, for example.

"So we looked at a lot of different projects. Like a Hesketh-Morgan. A Hesketh-Lotus. GRP utility buses. We looked at a pretty wide range. We chose a bike because, apart from electronics, motorcycles are the biggest growth market in this country.

"We had looked at motorcycles before and had come to the conclusion that any bike built in this country had to have a British engine and gearbox. You couldn't build something that had a Japanese power train and expect it to be a success — or if it was a success, the Japanese might copy it.

"To give you an example, we looked at the Yamaha 500 single which was then only available in off-road form. We thought of turning it into a contemporary Gold Star — which is exactly what Yamaha did 12 months later with the SR500, so I'm glad we dropped the idea.

"Our original design parameters were limited but, I think, quite far reaching. It should do 140mph, it should be able to do over 200 miles on a tank of petrol, and it should weigh less than 500lb.

Is it overweight?

"At the moment it'll do 140mph quite happily, it does 250 miles on a tank of petrol, and it weighs 506lb. I have nightmares about 506lb. being grossly overweight and there is weight that can be saved on the current machine. But you can only go so far before you start running into flexing frames and so on. That would be saving silly pounds and would detract from the bike.

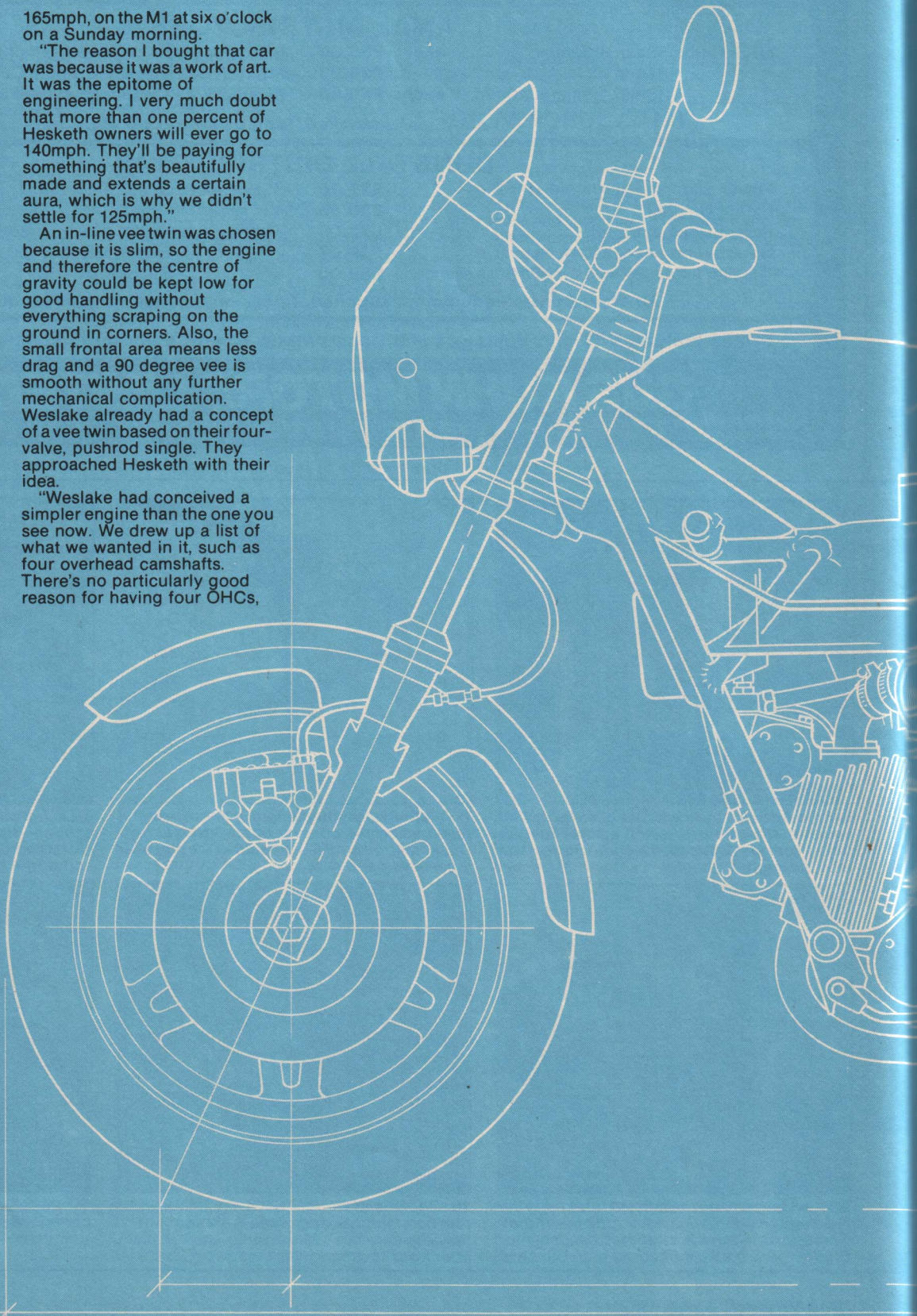
"Performance is important. I think, because a lot of people who buy motorcycles used to buy sports cars. I had a Ferrari GTB IV which was reputed to do 170mph. I only once got it up to

165mph, on the M1 at six o'clock on a Sunday morning.

"The reason I bought that car was because it was a work of art. It was the epitome of engineering. I very much doubt that more than one percent of Hesketh owners will ever go to 140mph. They'll be paying for something that's beautifully made and extends a certain aura, which is why we didn't settle for 125mph."

An in-line vee twin was chosen because it is slim, so the engine and therefore the centre of gravity could be kept low for good handling without everything scraping on the ground in corners. Also, the small frontal area means less drag and a 90 degree vee is smooth without any further mechanical complication. Weslake already had a concept of a vee twin based on their four-valve, pushrod single. They approached Hesketh with their idea.

"Weslake had conceived a simpler engine than the one you see now. We drew up a list of what we wanted in it, such as four overhead camshafts. There's no particularly good reason for having four OHCs,



but there are good marketing reasons. People expect them. "If cars don't have hand cranks any more there's no reason for a bike to have a kickstart. The engine doesn't need five speeds because it's got more torque than it knows what to do with, but we put on a five-speed gearbox because the market demands a five-speed gearbox. We gave the clutch eight friction and eight thrust plates to handle the power easily and gave it hydraulic operation to keep the lever pressure light. And we put an extra shaft in the gearbox so we could have the sprocket coaxial with the rear fork pivot. On our bike the chain tension doesn't alter when the rear wheel moves up and down so there's no need for any slack, giving low chain wear and smooth power delivery.

Car starter

"It's got a car starter motor so it doesn't suffer the way previous electric starts on British bikes have suffered. This one could start a Hillman Imp. We've got a 36Ah battery even though we were told we could get away with

24Ah, so it will start straight away after several nights out in the freezing cold.

"So the Weslake concept was changed dramatically. They hadn't done any detailed drawings. It wasn't an engine that existed, it was a layout. We finished up with a completely new layout. It's a Hesketh engine. We own the designs and we made modifications because we did all the development here. The dyno's here and all the engines are here. They don't have any of our engines at Weslake."

The frame is well triangulated, with as few bends as possible, and uses the engine as a structural member within the beefy Reynolds 531 tubing.

"The frame was the easiest part of the project. It was drawn up when this whole thing started. Apart from various brackets being fitted to take cables or fit a toolbox, the frame hasn't changed from the day it was drawn. It has been the only area of zero aggravation. It is strong enough, it is stiff enough, and it is big enough. It doesn't flex. And that was done by car people, our Formula one design team.

"We did nickel-plated frames for the bikes at the launch because we thought they went well with the red paintwork, but we've got painted frames as well. The next bike to be built will be yellow with a black frame, which I think will look rather delicious."

By choosing Weslake as the prime sub-contractor, Hesketh avoided getting involved with any remains of the last-ditch designs that never saw the light of day outside Umberslade Hall in the last years of Norton Villiers Triumph. Hesketh was determined to avoid any links with the sad past.

"We did a number of things which people considered very strange. At first we refused to hire anyone with any previous time in the motorcycle industry.

Novel concepts

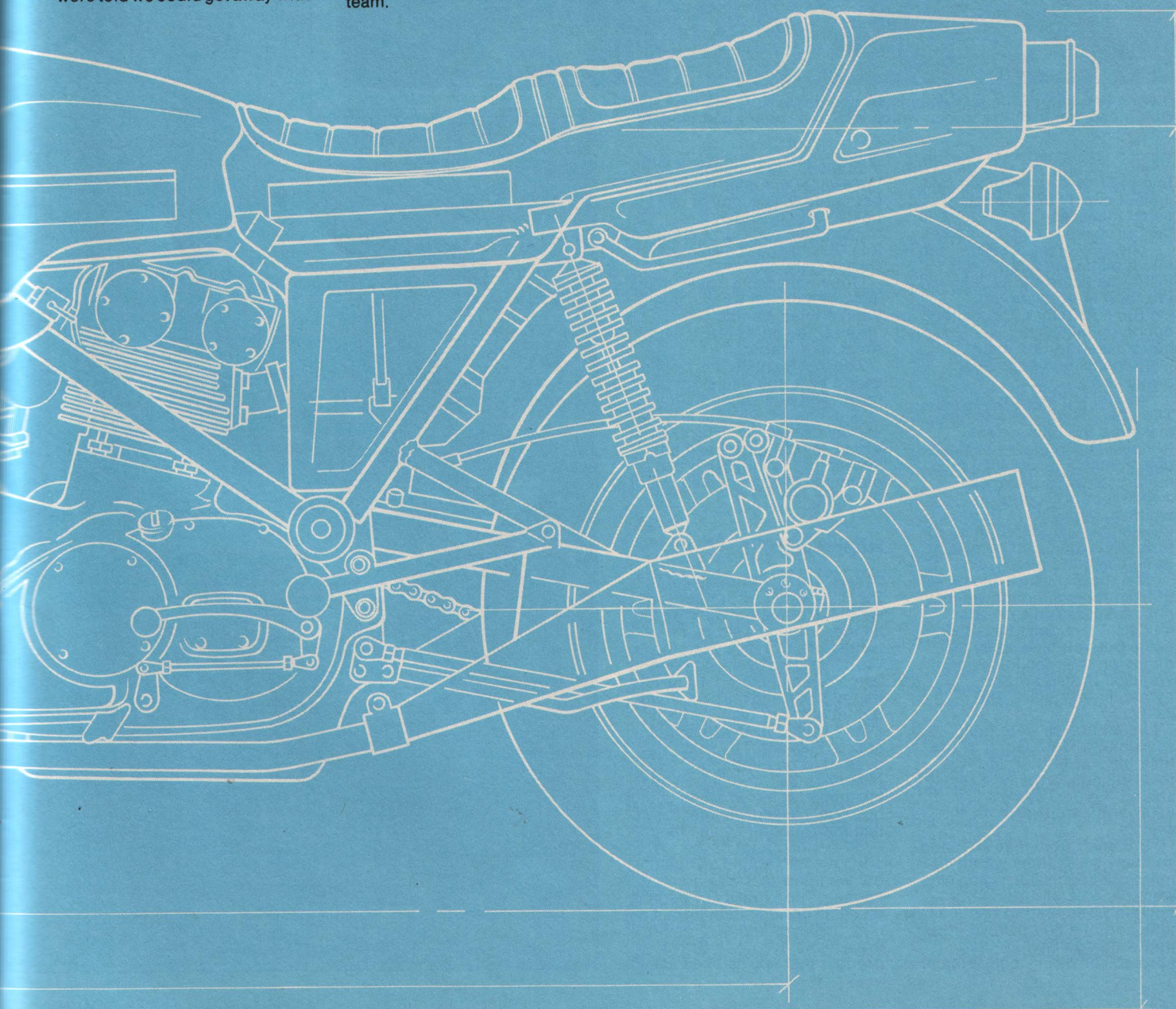
"We made a lot of mistakes but we introduced some novel concepts by taking a clean sheet of paper and looking at the bike from a straight engineering point of view. We felt that it wasn't just down to management

that there was such a cock-up last time around.

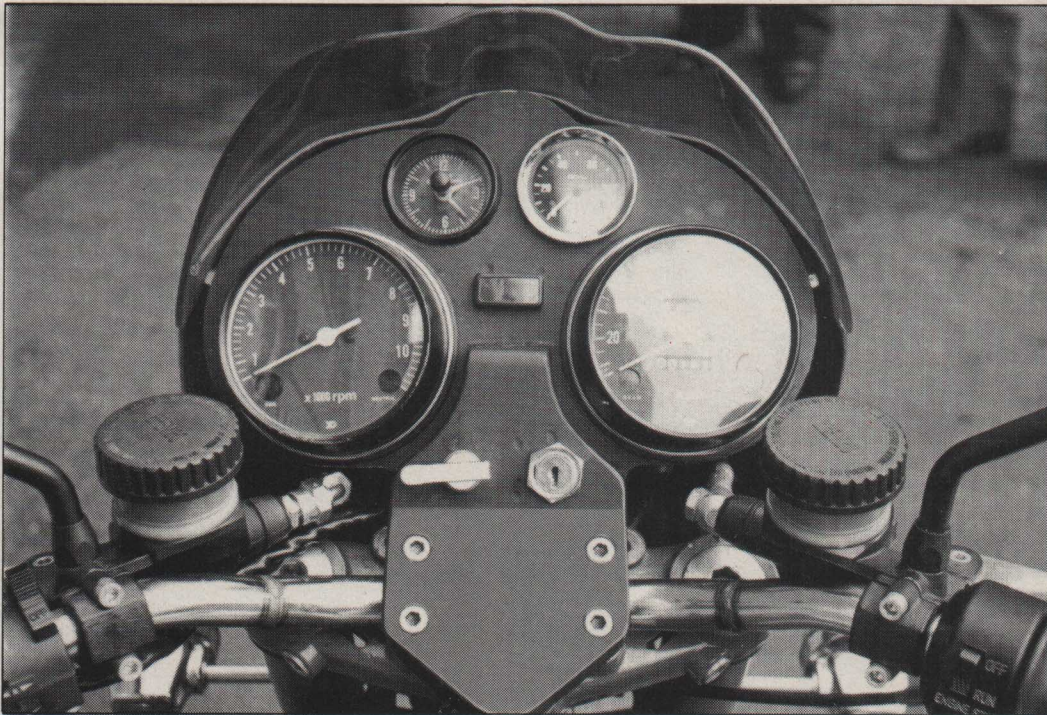
"Then we ran into various bike-related problems. Everyone thought that an engine was an engine whether it's in a tractor, a grand prix car, or a motorcycle. But there are strategic differences.

"So we brought in David Bean. He has worked at every great monument of British motorcycling, from Bracebridge Street to Plumstead and then to BSA before joining Yamaha. All that experience was very valuable when applied to the Hesketh. We couldn't have made it without bike people, but I think it was very important to start without them.

"We had people down here all the way through the programme to criticize. As long as you have enough people coming in from outside and saying *yeuch!* you get back to the drawing board. Like the styling. We had done all the styling, but we got John Mockett in 12 months ago and changed the whole lot. And it has worked."



HESKETH



Rider's eye view of the instruments and controls. Note the hydraulic clutch and 'lump' in the screen which was to allow for instruments

Surprisingly, Hesketh didn't find their design restricted by a limited supply of proprietary components and accessories on the European and home market.

"The only place where we ran into a restricted market was instrumentation and switchgear. We used Moto-meta top instruments (clock and battery condition meter) but we had to go to Japan for the main instruments and handlebar switches.

"We didn't have any choice. The only instruments Smiths make are the ones on the Bonneville and those are totally unacceptable on a £3000 plus motorcycle. The Japanese switchgear is superior to anything available in Europe unless you want Moto-meta to turn out customised objects at three times the price.

"Marzocchi make a decent set of front forks although we may put Japanese forks on later models. They don't have the name but you have to accept things on their technical merit. We used Brembo brakes, hydraulic reservoirs, and calipers."

Linked brakes were only available to Moto Guzzi at the time the Hesketh design was finalised and, anyway, Hesketh shared *Motor Cycling's* lukewarm enthusiasm for the system.

"But apart from that we found so many small firms within 10 miles of Spaghetti Junction who were capable of turning out anything we cared to name on time and at a competitive price that we didn't have to look abroad. The wiring loom is made

in England, for instance. And all the switchgear apart from the bar controls is supplied by Lucas, who provided tremendous back-up — putting it in freezing cells, Nigerian Desert cells, etc."

Other noticeable British items include Astrolite wheels, Avon Venom tyres, Girling Gas Shocks, Reynolds chain, and Amal MkII carbs.

The first Hesketh was running over a year ago and eight bikes have been built since then.

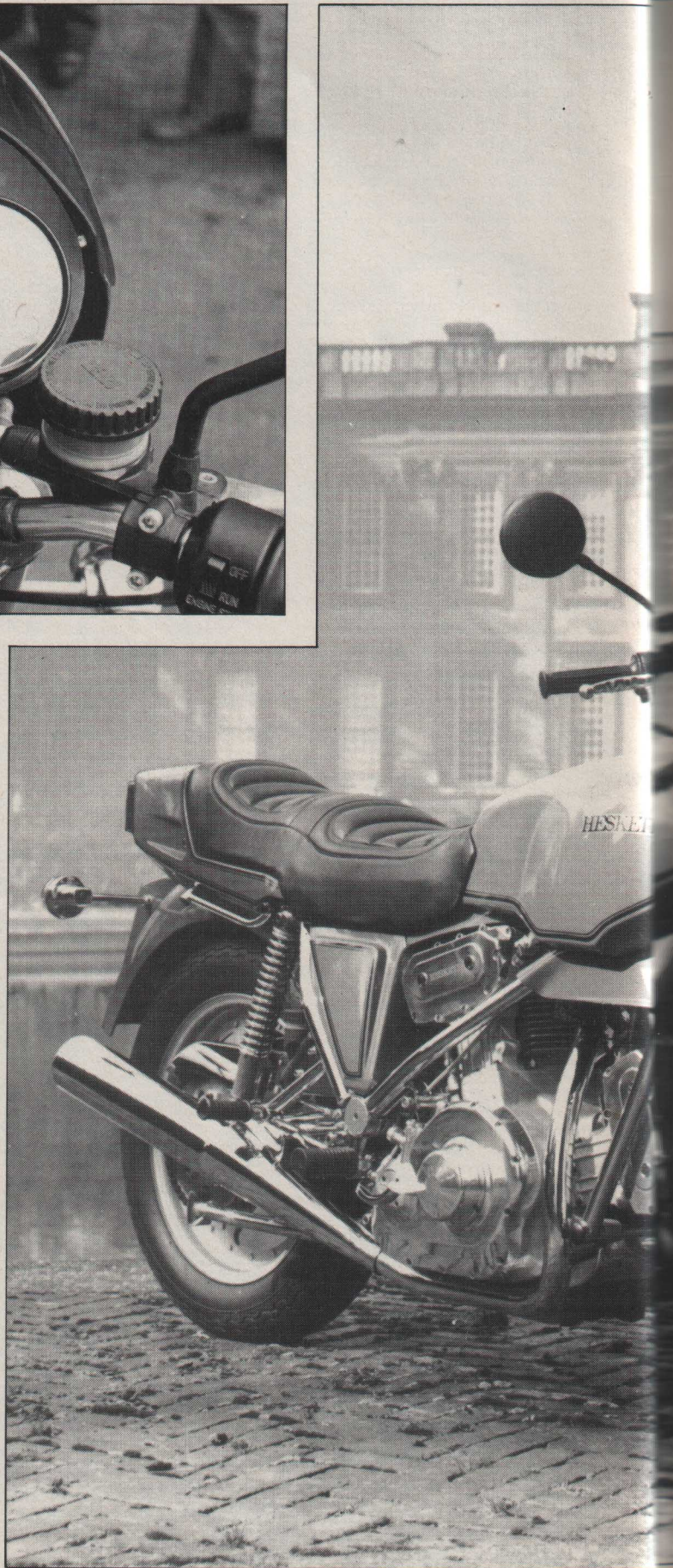
"Our biggest advantage is that we have a developed product of which several have been built instead of the inevitable British prototype that is wheeled out of the door.

Happy with it!

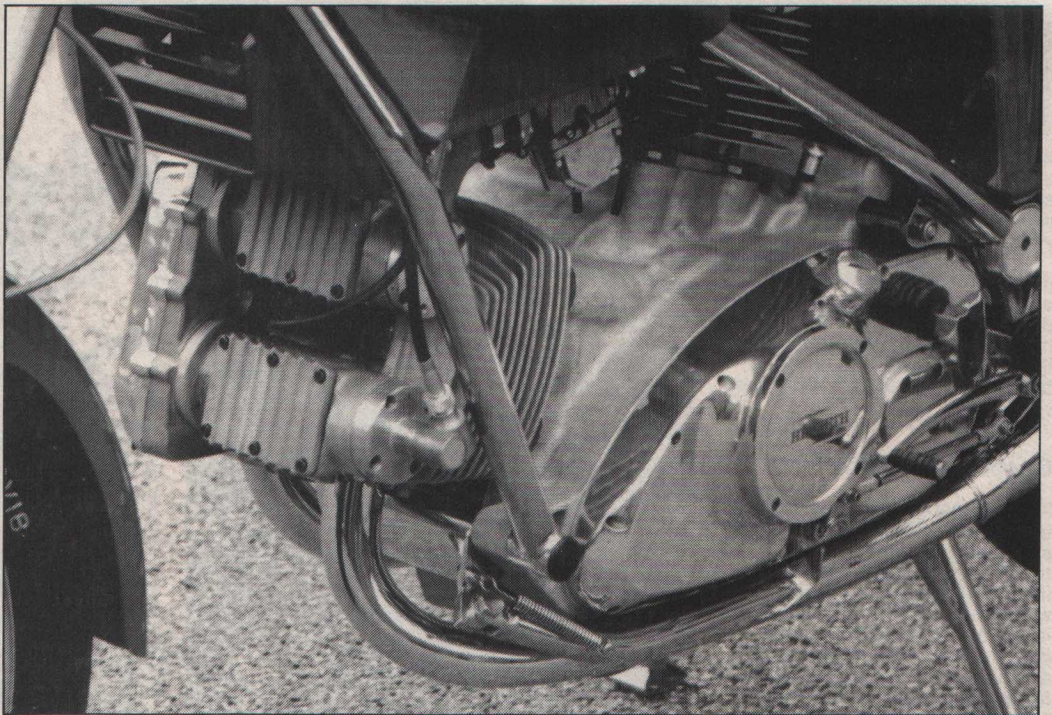
"There are lots of things about the bike which, with hindsight, we'd like to change. But if we did all those things we'd be no further ahead in five years' time. We'd just keep over-engineering it and re-engineering it. I'm very happy with it and the people who built it are very happy with it."

As I waited in the reception area at Hesketh Tri-Union I overheard one end of a telephone call from a potential customer asking when he could buy one. I asked whether they'd had many enquiries like that:

"We've had a lot of them. I don't want to sound arrogant, but we knew that was going to happen. The extra year we spent on detail development turned an ugly duckling into something irresistible. It's not a British product that you've been asked



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The 992cc power unit is a 90 degree V-twin four-stroke, four valves per cylinder, DOHC, design in conjunction with Weslake

to buy just because it is made in this country."

I'd agree with that. Apart from stunning good looks, the finish and attention to detail was superb with nice little touches everywhere: Eccentric-cam chain adjustment and a quickly-detachable rear wheel. Console-mounted, Italian-type on/off cold start lever. A faired-in oil cooler and passenger grab rails on both sides.

The only less-than-perfect things I noticed were the front spark plug which looked very exposed to water off the front wheel, a very slim rear mudguard, and the annoyance of two fuel taps to turn off manually. And the fact that nobody's making any yet. Hesketh will be handbuilding bikes for sale later this year, but they hope for better things.

"We could make the bikes here as a high price, handbuilt object. And that's what we planned to do originally.

"But we're a research and development company. We always knew that we weren't manufacturers but we've woken up to the fact that, even as a luxury item, it's a different world to prototype engineering.

"We've done the costings and we know that it can be built at a price competitive with its European rivals. Because there is a recession in the engineering industry there are large numbers of manufacturers who have the capacity to turn out 1000 bikes per year.

"I'm very confident that we will find a manufacturer. Those of us involved with the project want to see it on the street. I don't care if

it doesn't have my name on it — just to see it built so that people can buy it. As long as it's made in this country."

Three potential producers were being considered and there have been more bids since. No names have been mentioned but the Triumph factory at Meriden seem the most obvious choice. They've been quoted as saying that they'd be happy to produce the Hesketh.

"Meriden is the only volume manufacturing plant left in this country. They appear to have their problems sorted out when it comes to making motorcycles. But they have this huge debt to the Government which has been accumulating at a rate which destroys their productivity. I would be very happy to see the Hesketh produced at Meriden. I would be very happy to see it called a Triumph if Meriden survive."

Bike's potential

Hesketh has a realistic view of his bike's potential, seeing it as a European machine without any grand dreams of beating the Japanese in the world's markets.

"When we started this project we went out and bought the EEC rulebook. We built the bike to comply with EEC regulations because the American market fluctuates to a degree which is unheard of in Europe.

"If we can get the bike in volume production, we wouldn't look at selling one outside the UK for the first 12 months. And don't forget that we've got to establish a service network.

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After that Benelux, maybe West Germany another year later, then throughout the EEC.

"Every piece of market research we've done shows that, if it can be made at a price which is competitive with BMW and Laverda, and it's quicker. We should have a very stable market in Europe for 1000 Heskeths per year.

"For the future there are other models, other potentials in it. It can go up to 1100cc, it can come down to 850 or 750cc if necessary. And we've done all the layout — we've even done the castings — for a shaft-drive version.

Speedway engine?

"Certain people thought that the engine was two Weslake speedway engines bolted together. Our people would be insulted by that but Weslake would be even more insulted. It is not a rehash of a previous design. It is very fuel efficient. It averages over 50mpg which, for a bike of this performance, is good. It's low on pollution and noise. Geoffrey Johnson, a man not given to exaggeration as our head of engineering, feels that it can push out 100bhp without any problem.

"If there's anything else I'd like to see on the Hesketh it's fuel injection. That would mean even less pollution, even more economy. Kawasaki have now put fuel injection into production and I would think it's only a matter of time before it becomes more generally available.

Import substitute

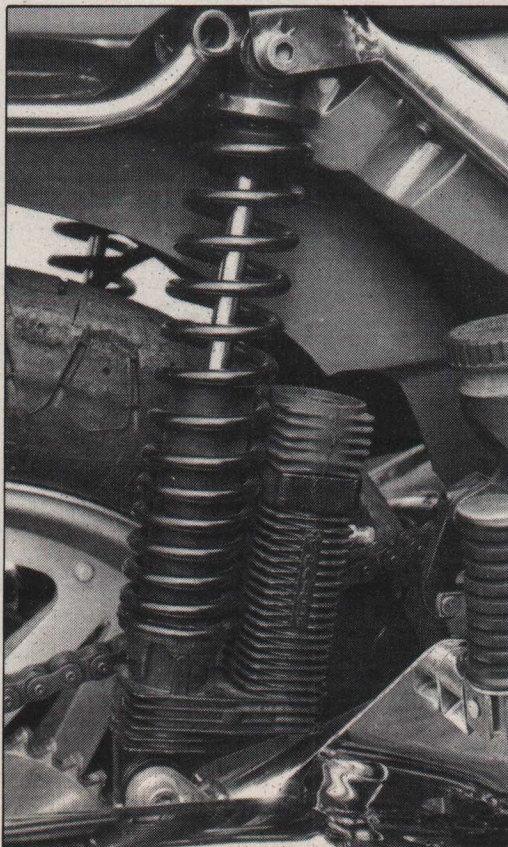
"At 1000 bikes per year, because there is no British superbike already on the market, the economy will benefit to the tune of £3 million. Every bike sold will be an import substitution. That's a considerable contribution and I think we've got to make that a success before we can look any further ahead.

"You can't just say that, because we're producing a 1000 this year we'll have a 750 for 1983, a 500 for 1984, and we expect to have 45 percent of the UK market including 250-400cc by 1986. If you set out like that you'd prove the *Boston Report* right."

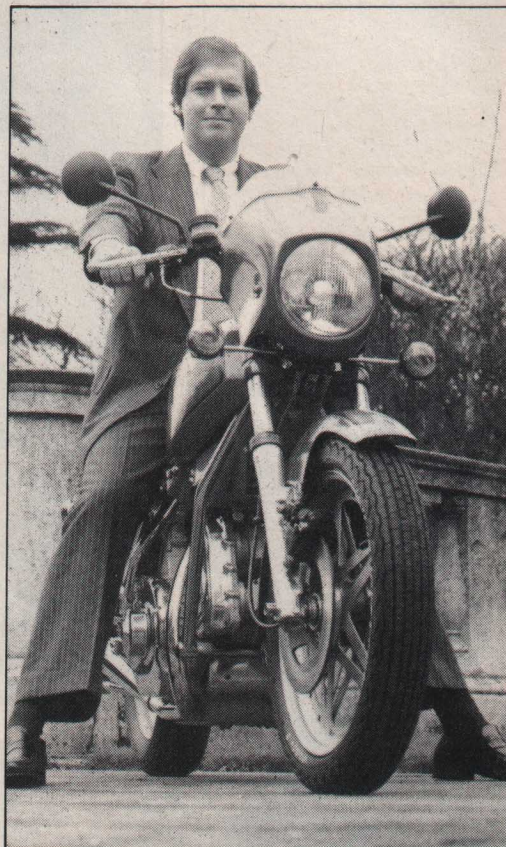
The *Boston Report* on the British motorcycle industry said that it would be quite impossible for this country to ever make a motorcycle again.

"With this project, I think we've proved the *Boston Report* wrong."

Neil Millen



In gas suspension! Marzocchi were fitted to the prototype — Girling to the finished product



The Lord on his charger! Will the Hesketh dream machine see the light of day for bikers to buy?

TECHNICAL SPECIFICATION

Engine type: Air-cooled, 90 degree twin.

Capacity: 992.35cc.

Bore x stroke: 95 x 70mm.

Compression ratio: 9.5:1.

Main bearings: Ball and roller.

Big end bearings: Plain — pressure fed.

Small end bearings: Plain fully-floating pin.

Valve gear: Double overhead camshafts, chain driven, four valves per cylinder.

Gross bhp: 86 at 6500rpm.

Gross torque: 69lb. ft. at 5000rpm.

Carburation: Two Amals — 36mm choke.

Air cleaner: Disposable paper element.

Lubrication: Hobourn Eaton rotor pump.

Oil filter: Disposable paper cartridge.

Oil system: Wet sump.

Ignition: Lucas Rita electronic.

Primary drive: Helical gear.

Clutch: Hydraulically operated wet multi-plate.

Gearbox: Five-speed, constant mesh, unit construction.

Overall gear ratios: 1st 3.710:1, 2nd 2.378:1,

3rd 1.786:1, 4th 1.481:1, 5th 1.334:1.

Final drive: $\frac{3}{4}$ in. pitch chain.

Final drive ratio: 2.765:1.

Mph/1000rpm: 1st 7.1mph, 2nd 11.0mph, 3rd

14.7mph, 4th 17.7mph, 5th 19.7mph.

Exhaust system: Twin pipes and silencers.

Frame: Reynolds 531.1 $\frac{1}{2}$ in. x 17 SWG Bronze

welded.

Suspension: Front Marzocchi, rear Girling.

Wheels: Light alloy pressing — Astrolite.

Tyre size: Front 110/90 V18 Avon, rear 130/90

V17 Avon.

Brakes: Front twin 11in. Brembo discs, rear single disc 11in. fully-floating caliper.

Electrics: Lucas alternator RM24 — 12V x 15 amp, Lucas starter 5M 90, battery 12 volt x 36 amp hours, Bosch 8in. H4 headlamp, fully fused system.

Fuel tank capacity: Five gallons + half gallon reserve.

Oil capacity: Six pints.

OVERALL DIMENSIONS

Wheel base: 62 $\frac{1}{2}$ in.

Length: 92in.

Seat height: 31in.

Ground clearance: 4 $\frac{1}{2}$ in. unladen.

Handlebar width: 26in.

Dry weight: 506lbs.

Equipment: Rev counter, speedo, trip meter, clock, battery condition meter, oil pressure light, neutral light, generator light, main beam light, indicator warning, horn, flashers, steering lock, fuel tank lock, seat lock, centre stand, side stand, mirrors, toolkit.

CLAIMED PERFORMANCE

Speeds in gears at 7000rpm: 1st 50mph, 2nd 77mph, 3rd 103mph, 4th 124mph, 5th 138mph.

Max. speed: Prone 140mph, upright 128mph.

Fuel consumption touring: 50mpg.

Tank range touring: 250 miles.

Manufacturer: Hesketh Motorcycles Limited.

Price: To be announced.