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Each float has a conventional main wheel and a castoring nosewheel attached to a composite spring at the front of the float. The effect is rather like balancing an aeroplane on an oversized supermarket trolley. Steering is by rudder and differential brake. Surprisingly, this 1.5 ton behemoth is very manoeuvrable. The aircraft can swivel on one braked main wheel, if required. Things only get interesting when traversing a ramp exactly like that supermarket trolley in a sloping car park.

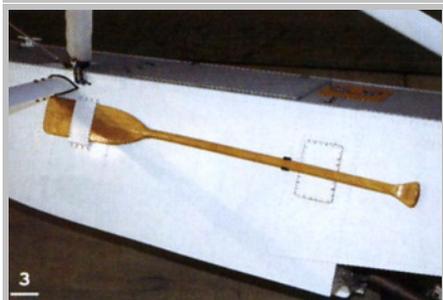
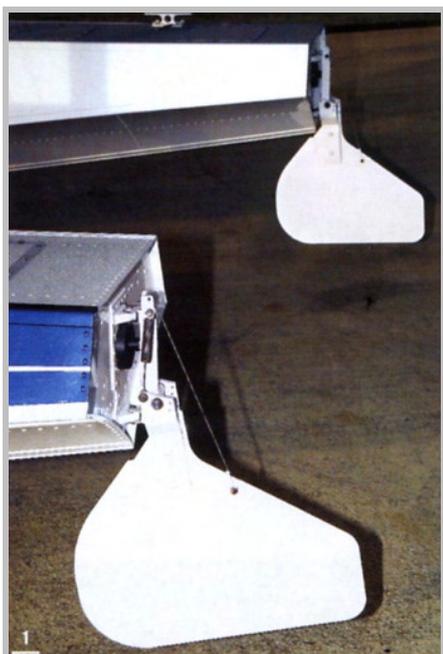
The floats have a neatly recessed step to help with the big climb aboard. I had to curb my instinct to grab the aircraft's diagonal wing strut and pull myself up. Once atop the float, its functions can be fully appreciated. There's a paddle to aid getting about, because using the engine for tight manoeuvring isn't always safe or practical. There's a large locker in which to put ropes and anchors. Each float can be bailed while the aircraft is on the water every chamber inside the float has an access plug on top and a hand pump can be attached. So far, Steve has only had to pump out the condensation which accumulates when the aircraft is hangared. There was quite a lot of it when he demonstrated the system to us, at least half-a-pint per float.

FOR THE FIRST time in decades, you can take a seaplane rating in England. Owner and seaplane instructor Steve Powell has secured permission to operate his Maule M -7-23 S B amphibian from several freshwater sites, near Nottingham and Lowestoft, with more under negotiation. He has also had favourable talks with several seawater port authorities. G-TAFC was built in 2000 and added to the UK Register last April. The aircraft is fitted with Wipaïre 3000 amphibious floats. Having wheels as well as floats, G-TAFC can be based on land.

The Maule will also be available for solo hire. This is rare. The only seaplanes that I've seen regularly advertised as available for solo hire are in

Canada and on Lake Como. My first flight in the Maule was from its land base, at Peterborough - Conington. Out of the water, the amphibian stands many feet higher than the light aircraft around it. The two Wipaïre floats are particularly large. Each has nine separate compartments; four on each side could flood with the remaining sections more than capable of keeping the aircraft afloat. The only other external difference from a stock Maule M-7 is a ventral fin to improve directional stability. Internally, the aircraft has some additional plumbing: a normal and emergency hydraulic system for gear operation and some cabling to operate, extend and retract the water rudders.

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Once I had stepped up from a float into the cockpit, I took comfort in the knowledge that, despite being new to me, the aircraft is in ways a traditional rag-and-tube, high-wing taildragger. Think of a Super Cub, Husky, Decathlon or Auster and you're most of the way to understanding what a Maule is made of.

Getting in during that final step was predictably difficult, due to the door's location relative to the seat, plus the door only opens halfway before it contacts the wing strut. I found the best way was to sit sideways in the seat and then swivel my legs 90° into the footwell. But individual seat adjustment gives plenty of legroom and the cockpit is pleasantly spacious.

- 1 | Retractable rudders are lowered for steering on the wet.
- 2 | At least the cockpit is conventional.
- 3 | An oar does the same job on water as getting out and pushing on land.
- 4 | Outrigger wheels keep everything in balance.
The float Maule rides *very* tall on land.
- 5 | Unambiguous control labelling keeps it simple.

I switched on the battery master and was confronted with the most significant change to the cockpit from a stock aeroplane: four green lights next to a gear selector. Other oddities to a landlubber are the spring-mounted water rudder control; this hangs on an aluminium bracket at the base of the instrument panel and is attached to a chain through the floor. On the floor is the emergency gear pump the handle lives in the glove box. Other than that, we could have been sitting in a normal Maule... were it not for the fact that we were twelve feet above the taxiway

The floats mean a reduced useful load. Substitution of the big Wipaie floats for normal wheels adds 680 lb to the land Maule's 1,550 lb empty weight. The result is that this amphibian can only haul 520 lb, rendering at least two of its five seats useless. Rumour has it that in the wildernesses of Alaska and Newfoundland, Maules have been seen flying filled to the brim with burly hunters accompanied by their weapons, baggage, crates of beer and a moose or two lashed to the floats. Some operators choose to fly without all the additional weight of the gear and hydraulics of an

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On the water the Maule becomes normal aircraft height.

amphibian, content to run their machines as simple floatplanes. Another alternative is to fit smaller, lighter floats but G-TAFC is a trainer and the bigger floats make the job easier.

Fuel is stored in the wing, with two 91-litre main tanks and two 68-litre auxiliary tanks, giving a total of 318 litres, for a theoretical five hours maximum endurance. With two large adults aboard, we were limited to 180 litres giving just under three hours total flight time a useful range of 250 nm plus thirty minutes reserve.

The fuel selector is a big valve mounted on the left cockpit wall at knee level. To me, it looked the wrong way around because the handle of the selector lever is bigger than the pointer. Fuel can be selected to left, right, both and off. When

the main tanks are less than full, fuel can be pumped into them from the auxiliary tanks at the rate of one litre per tank per minute. Switches for the auxiliary pumps are on the right of the panel, above the fuel gauges.

Power comes from a 235 hp Lycoming O-540 with a traditional carburettor (because they are easier to work on in the wilderness) driving two-blade, constant-speed, McCauley propeller.

After a little priming, the big, six-cylinder Lycoming started without any bother and settled into a smooth purr. The throttle, prop and mixture controls are all vernier (yuck!) and I set 1,200 rpm to let the engine warm while I strapped in.

On water, the engine has to be warmed with the throttle at low rpm, unless either the aircraft is tethered or you are prepared to take a short cruise before lift-off. Run-up and vital actions include a check that the gear is down for a land take-off (there is a mechanical indicator atop the float to confirm this) and that the water rudders are retracted despite being spring-loaded they would otherwise drag along the ground when we rotated.

FOUR BLUES

I lined up on Runway 28, set one stage of flap with the lever on the floor and then smoothly opened the throttle. The aircraft tried to swing to the left and held it easily with rudder. Despite the 235 hp up front, acceleration was modest as we were at maximum take-off weight yet we were airborne in an amazingly short distance after the lightest of pulls on the yoke. This aircraft really wanted to fly.

I asked Steve to select gear up for me it takes thirty seconds to cycle and a single transit light replaced the green lights as the hydraulics did their work, followed by 'four blues' (yes, blues) when the gear was up. I pulled the power back to 2,400 rpm and 24 inches manifold, the VSI settling at 500 fpm with the ASI steady at 80 mph.

The flaps are a little awkward. I had to take the down force off the lever before pushing the button on the end and lowering the lever to the floor - it tended to stick. The aircraft sank quite noticeably once clean, until I pulled the control yoke back

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Facing page: on the water the Maule becomes normal aircraft height. This page: healthy power to weight ratio allows a brisk take-off.

that's no surprise when you see that the flaps span almost exactly two-thirds of the trailing-edge, and when fully retracted are actually at -7 degrees. This is to extract a useful cruise performance from what is otherwise a supremely STOL wing. The first stage of flap is actually 'flap zero'. It follows that the ailerons are very small, but they seem reasonably effective so long as you co-ordinate with rudder. I resumed the climb at the V_y of 90 mph with 500 fpm on the VSI again.

After the lively take-off, my second big surprise as the cruise speed. Level at 1,500 feet in ISA conditions we easily achieved 125 mph with '24 square' at maximum weight. An EGT gauge is fitted and with the mixture leaned, Steve estimated we were burning around 65 litres

per hour - not frugal, but that's float drag for you. In theory, a true flying boat can be made to be less draggy than a floatplane and there are several new kit designs around at the moment promising quite exceptional performance.

Another compromise inherent to most floatplanes made itself known when I tried a few turns; the Maule has little or no dynamic stability'. Like a tired bird, flying with a stitch in its side, once out of balance the aircraft will sit all day with one wing low, the ball hard against its stop in the opposite direction. The secondary effect of yaw, namely roll, is either lost or negligible.

I levelled at 1,500 feet and sampled the pitch stability; ten-knot departure from the trimmed speed corrected itself in two, very slow phugoids.

Conversely that's pretty stable for a floatplane. I read about Sir Francis Chichester's oceanic exploits in his de Havilland float biplane. That aircraft behaved similarly to the Maule in yaw but was also divergent in pitch... let go of the stick and the aircraft would either try to snatch into a hammerhead stall or plunge into a vertical dive. This was heady stuff, especially when you realise that he navigated using a two-handed sextant. In truth, all water-enabled aircraft have handling compromises; the Cessna 206 amphibian, Lake, Buccaneer and even the Catalina (sorry, but it's true) aren't particularly nice to fly. But that's missing the point. It's what you can do with these aeroplanes that makes them so exciting. You just have to keep your eye on the ball, literally.

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Stalls are interesting. I tried a clean one first, speed coming back not as fast as I had anticipated when I closed the throttle, an aural warning chirping 'gear up for water landing' as the needle flickered past 80 mph. The stall occurred at 55 mph clean, heralded by a light buffet and an abrupt 45° wing drop to the right. Lowering flap to zero (!) caused the same effect at 52 mph clean. 30° of flap and a handful of power and the g-break occurred at 45 mph with a 60° wing-drop. This aeroplane really stalls! Each time the wing-drop could be held with rudder (it's not worth bothering with the ailerons, plus it's bad technique) and the worst recovery I made lost just 250 ft.

As we headed back to the airfield I opened the throttle and let the speed build to the Vne. of 164 mph (compared to the 182 mph Vne of the stock aeroplane. The Maule felt supremely stable at high speed, the ailerons still light.

Back in the circuit, the Maule was easy to fit into Conington's local traffic. I dropped the first two stages of flap at 90 mph, followed by the gear (30 seconds again). There was an appreciable pitch change, easily held, and I turned final before selecting stage three (40 degrees of flap) and an approach speed of 75 mph.

Stage four flap is an option for really short strips. I have heard some pilots complain that using this last, monster 48° flap setting results in reduced pitch authority. It's a bit like the one about the patient telling his doctor that his leg hurt when he touched it. Don't touch it then''

is the punch line and that's my reply to the complainants - you can stop in 250 metres with the third stage; consider the fourth stage as being for the aces.

I slowed to 70 mph over the fence and rounded out higher than my instincts told me to before closing the throttle. We touched down smoothly but the forward - pitching effect of the wheels retarding far below us made my throttle hand move forward an inch or so, thus applying power. Suddenly we were flying! I closed the throttle, touched down, and then did the same thing again! The lifting ability of the Maule wing is truly remarkable - earlier I had smirked when I found out that this aircraft's creators call themselves Maule Aerospace Technology - delusions of grandeur and all that but now I was in admiration. After landing, I made a mental note to tighten the throttle friction next time and also to brace my hand with a finger against the instrument

THE SOUND OF WATER

One week later I flew the Maule from Conington again, this time to try the amphibian on water. As I stowed the life-jackets in the generous baggage area aft of the rear seats, Steve explained that our destination as Fritton lake in > Norfolk. It's a beautiful spot: a country park with a hotel and log cabin accommodation - a perfect destination for training or a place for a newly-qualified seaplane pilot to visit.

The thirty-minute flight was uneventful and on arrival we circled the park once, to check that the lake was free of

obstructions. Then Steve set up on long final and slowed down:

'gear up for a water landing' announced the recorded male voice as we decelerated through 80 mph. Steve selected only the third stage of flap and slowed to 70 mph. The fourth stage is never used on water as it would reduce the angle-of-attack too much and risk nosing over when touching down.

At the last minute, just before we descended inside the curtain of trees which surround the lake, I had a sudden feeling that this was all completely wrong and that we should go and find a runway instead. I compare it to the feeling I had when I sat in the open doorway of a parachute plane at 2,500 ft, about to jump for the first time. I suppressed the urge to grab the controls and sat on my hands.

The lake was mirror smooth, patched in the shady areas with a wafer thin layer of ice. This represents the most difficult of water landings, because it's difficult to gauge height above the surface. If the water is clear and shallow it's even possible to unwittingly attempt to land on the lakebed rather than the water surface above it. The trick is to be stabilised early, then set up a descent rate of under 200 fpm, while looking ahead and not down. The aircraft is allowed to touch down of its own accord, after which the throttle is closed and the stick pulled back so that the aircraft settles off its step. That's the theory. By the way, the 'step' is the sharp break in the otherwise smooth hull or float of a seaplane to assist take-off, thus the expression 'on the step'.



Author found landing on water easy. Stick must be held all the way the way back after touchdown.

As it happened, Steve attempted to recreate on water what I had achieved on land — we bounced once ever so lightly on first contact, then again a little more firmly, and then again with vigour...Steve decided to go around. The first touch of that throttle and we were instantly flying again, no matter about any particular speed or climb attitude. Just a couple of minutes later we were lined up on the same approach, the expanding ripples of our previous touchdown spreading out towards the lake perimeter. This time the landing was textbook, we didn't bounce at all but touched down so lightly that only the sound of the water skidding under the floats alerted me to it. After a second of uncertainty the drag of the water took hold of the floats and stopped us flying. We slowed about twice as fast as I had anticipated in a cloud of spray splaying out from the floats amidships, and leaving a beautiful triangular wake behind when I craned my neck to look. We had probably slowed to taxi speed in 200 metres. Now it was my turn.

Steve unhooked the lever under the instrument panel to deploy

the water rudders and gave me control. On the water, the Maule becomes 'normal light aircraft height'. The aircraft displaces approximately two feet of water, depending on load of course.

The pedals felt heavier than on land, nevertheless the aircraft was quite manoeuvrable, with a turning radius of perhaps twenty metres. This is called displacement taxiing. For longer distances, the aircraft can be brought onto its step with full power and aft stick, and the nose lowered once she rises up on the floats. Thereafter the throttle can be brought back a long way to maintain the step for a fast and fuel-efficient taxi. I positioned to the far end of the lake and then carried out the rather inelegantly named FARTS check for a water take-off. Flaps (two clicks for 24°) and Flight controls set; Area clear; Rudder (water) up; Trim set for take-off; Stick back.

If the aircraft has been sitting on the water for some time, it is also necessary to check the floats - they are capable of holding over three tons of water between them.

I opened the throttle and the nose immediately rose several feet in the water. After a couple of seconds the nose went up another foot or so - Steve explained that this was the aircraft's way of telling us it was ready for the step and that we could lower the nose. I did so gingerly and caught a little swing with the rudder, not to the left but to the right. This was because as we came onto the step the aircraft was balancing on the rear of its floats, which allowed a crosswind from the left to swing it to the right, a sort of downwind weathercock. Now we were really motoring, the effect of water somehow magnifying the impression of speed.

After less than 300 metres, at 60 mph, I raised the nose a little and we broke away from the surface cleanly, the sound of the water under the floats ceasing abruptly even though I hadn't been aware of the noise before.

For noise abatement I immediately brought the power back to '24 square' and raised the flaps to zero, i.e. one notch, at 300 feet. By now the lake had a few ripples on it, so I opted for a standard circuit and approach. I flew exactly as it I was landing on wheels and it really felt that easy too. My touchdown was smooth and, with Steve's gentle reminder, I just had to remember to get the stick all the way back after landing.

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For rough water the technique is the same, except you keep power on during and after the roundout. For the next thirty minutes we flew combinations of high speed turning for take-offs in confined spaces, glass water.

Seaplanes generally, and amphibians in particular, lend themselves very favourably to reality TV shows such as *You've been Framed*. When things go wrong in an amphibian they tend to be spectacularly catastrophic. I never tired of that 'gear up for a water landing' and 'gear down for a runway landing' voice, even when touching down back at Conington after a long but rewarding day.

Most of the flesh water in England is privately owned, unlike Scotland and Ireland where it is public property. This single factor has been the primary obstacle to running a floatplane school in England. Fears of pollution (which is preposterous, liability and litigation have swamped numerous attempts in the past few decades. Steve Powell is to be congratulated for succeeding where others have failed and particularly for his persistence with the mountains of paperwork and bureaucracy, which accompany any thing new in aviation.

G-TAFC is available for hire and training at £250 Inc VAT, which sounds like a lot of money, but is actually very favourable if you factor in the time, travel and accommodation costs of the alternatives. A UK/JAR seaplane rating takes five hours of flying training.

Steve is also keen to attend several splash-ins around Europe this year, a perfect opportunity for some cost-shared trips. I intend to complete my seaplane rating with Steve and I simply cannot recommend it more highly.

SPECIFICATION

MAULE M7-235B SUPER ROCKET AMPHIBIAN



Tel + 44 (0)796 2213976

• Dimensions

Wingspan	32ft 11 in
Length (fuselage)	23ft 8 in
Height	9ft 6 in

• Weights & loadings

Empty	2,230 lb
Mtow	2,750 lb
Fuel	318 l
Max power loading	11.7 lb/hp

• Performance (approx figures)

Vne	164 mph
Max level speed	135 mph
Cruise	125 mph
Stall, flaps up, power off	55 mph
Stall, flaps down, power on	45 mph
Climb. s/l	500 fpm
Range. 30 min reserve	250 miles
Take-off run, land, mtow	750 ft
Landing run, land. mtow	650 ft
Take-off run, water, mtow	900 ft
Landing run, water. mtow	750 ft

• Engine & propeller

Lycoming O-540'B4B5 235 hp @ 2,575 rpm.

Propeller typically McCauley B3D32C414-C two-blade, metal, 80-inch diameter.

• Price

Approximately £120,000 used, as tested.

• Manufacturer

Maule Aerospace Technology mc,
Moultrie, Georgia. Web:
www.mauleairinc.com

• Operator

The Amphibious Flying Club.
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