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Cricket-ball lore lifts the age of the airship into wider spheres

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by Patrick Forman

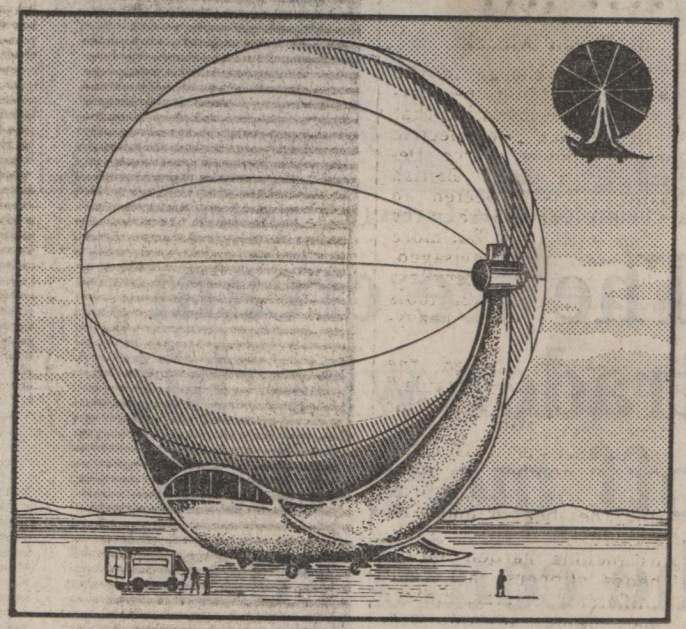
A FLURRY of excited reports of Unidentified Flying Objects is likely in a year's time when a sphere as high as an 18-storey building goes airborne over Canada. The reply to the UFO-spotters will be: "Relax. That's just the LTA 20."

The LTA 20, now under construction, is the latest concept in lighter-than-air transport: a spherical airship. It will be filled with helium gas and propelled by jet engines. That is normal enough. The original thinking behind its spherical shape is what makes its inventors see it as the most promising contender yet for the commercial return of the airship.

Its creator, Frederick Ferguson, is making use, on a huge scale, of an effect long familiar to golfers, cricketers, tennis-players or anyone else devoted to propelling balls at speed. Back-spin gives a ball "lift" and makes it travel further. The reason is that as the ball speeds along, compressing air in front of it, its backspin brings the compressed air over and round to the back and underside. This is called the Magnus effect, after a German physicist, Heinrich Magnus, who worked it out more than 100 years ago.

So as LTA 20 is pushed along by its twin Rolls-Royce jets at nearly 80 mph, small electric motors will keep it spinning backwards on its horizontal axis at a gentle five rotations a minute. And Ferguson, president of the Van Dusen Development Corporation of Ottawa, has devised a refinement, to take advantage of something that the sharp-eyed Magnus noticed at an English village cricket match in 1870: a back-spinning ball flies extra far if its cover has become worn.

Magnus worked out that the round-and-under lift effect from the back-spin is increased if the sphere's surface is not smooth. Thanks to the dimples on golfballs, golfers can benefit by this fact. For Ferguson, the trick is to have a network of cables on his airship's surface.



How the LTA will look, with streamlined gondola

The point of all this Magnus-effect lift is that the LTA 20 will be able, Ferguson says, to carry 50 per cent more cargo than a conventional cigar-shaped airship of the same volume. With its helium sphere of 180ft diameter, he reckons it will carry 60 tons, equal to three juggernaut lorry loads.

Ferguson has already put his design to the test with a radio-controlled 20ft scale model. In flight last month it performed better than predicted. Ferguson's company claims that the full-scale ship will carry three times the load of the biggest helicopter now in use—at one-tenth of the cost. It will have a range of nearly 300 miles. Its jet engines will be swivel-mounted, providing up and down control as well as forward motion.

Additional up-and-down control for landings and take-offs will be provided by means of air pumps inflating a self-contained bladder within the helium-filled sphere. The more the bladder is filled with compressed air, the heavier the sphere becomes—thus bringing the ship down.

The gondola, with capacity for 200 passengers if not used for freight, is aerodynamically designed to reduce drag beneath the sphere, thus further increasing lift and improving the speed.

The LTA 20 will need no special airfield fixtures—unlike a conventional cigar-shaped blimp, which tends to be wayward, veering with the wind during landing and take-off, and thus needing to be tethered to a pylon with anchor-ropes.

Order books will open in a year's time. Last week Ferguson's team said they had "filed our first intent-to-purchase from one company." One of the machine's first uses is expected to be lifting heavy equipment to offshore oilfields.