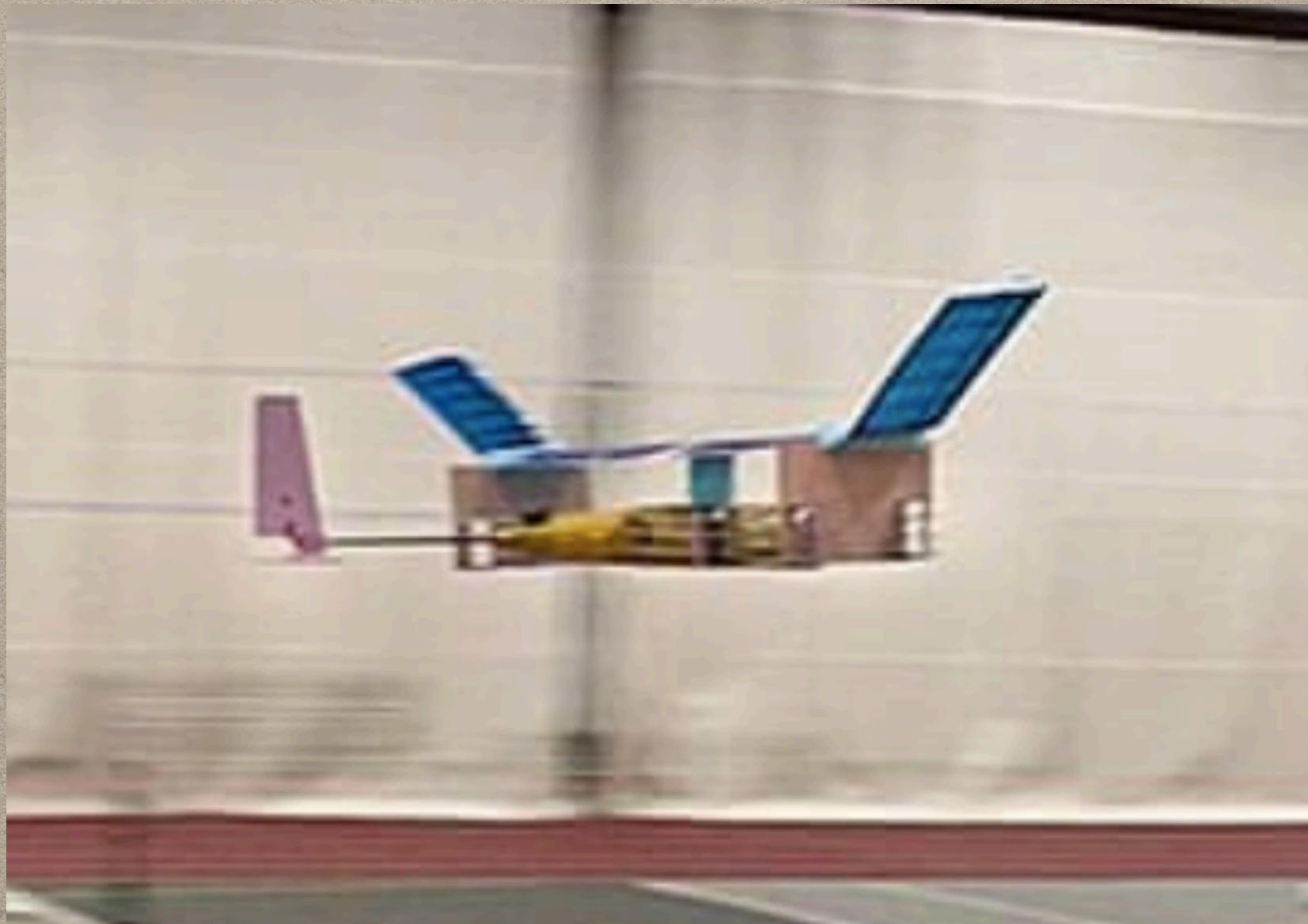


SOLID STATE AIRPLANE

A PLANE WITH NO MOVING PARTS HAVE
FLOWN 60 M (180 FEET)



SOLID STATE AIRPLANE

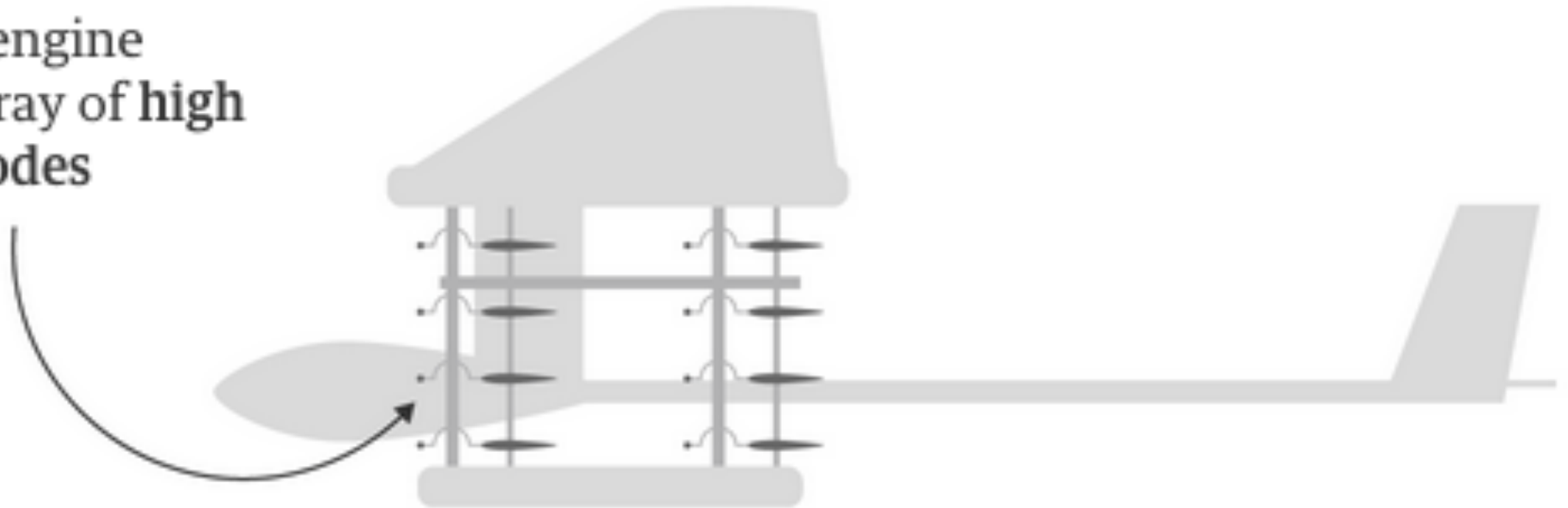
A CHILDHOOD DREAM OF AN MIT
PROFESSOR:

- FLYING SILENTLY
- HAVING NO MOVING PARTS (PROPELLERS,
TURBINES)
- HAVE A 'BLUE GLOW'

SOLUTION: IONIC WIND (1920S)

SOLID STATE AIRPLANE

The aircraft's engine contains an array of **high voltage electrodes**

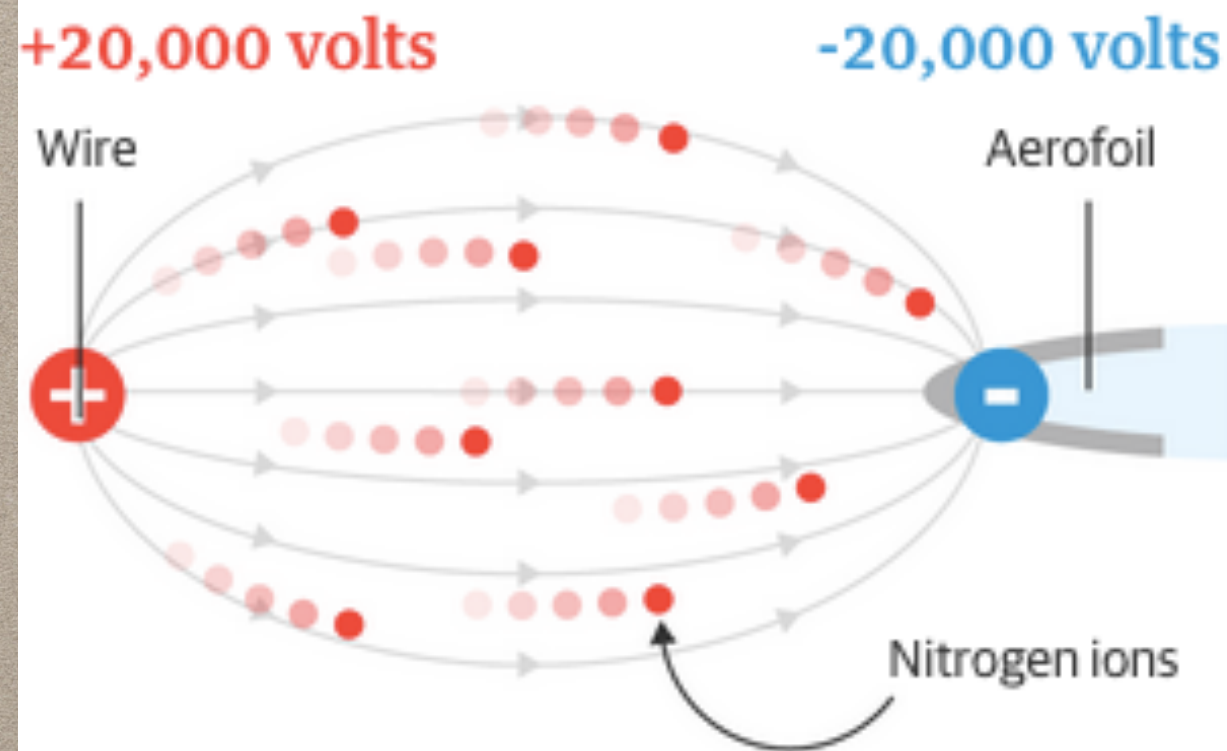


*Wires at the leading edge of the wing
have 600 Watts of electrical power pumped
through them by 40,000 volts
This creates "electron cascades," charging
air molecules near the wing*

SOLID STATE AIRPLANE

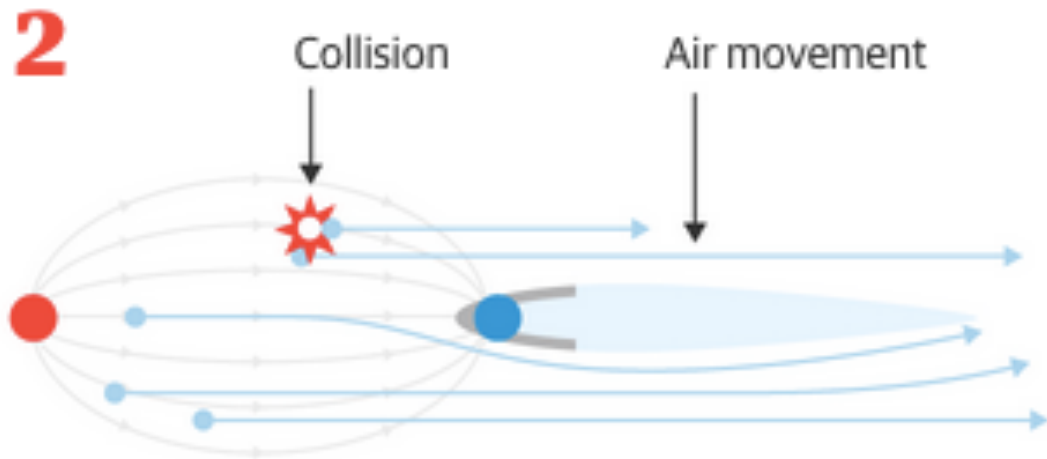
1

Each electrode is comprised of a thin wire which carries a high positive charge followed by a negatively charged aerofoil

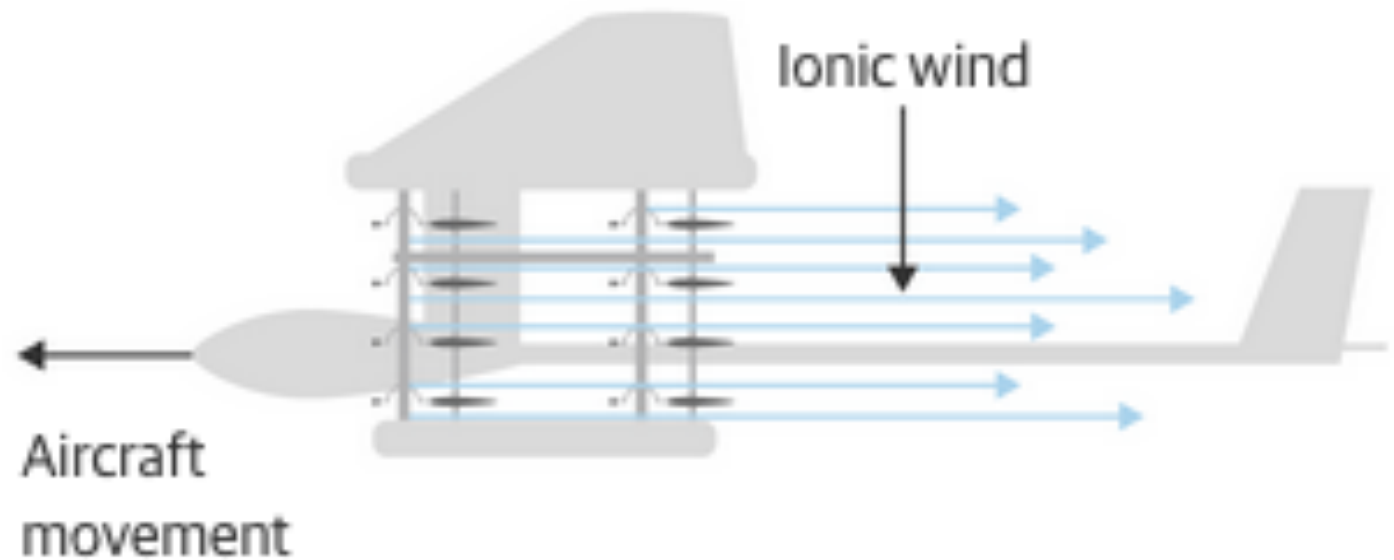


Atmospheric **nitrogen** is ionised and the electric field carries these ions from the wire to the aerofoil

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The ions collide with **neutral air molecules** and push them behind the aircraft; this **ionic wind** generates thrust



Propulsion is entirely electrically generated, almost completely silent, and with a thrust-to-power ratio comparable to a conventional jet engine

SOLID STATE AIRPLANE



Version Two

2.45 kg (5.4 lbs) - 5 m (15 ft) wingspan

Battery pack; high-voltage power converter

SOLID STATE AIRPLANE

Future:

- *Larger, faster planes*
- *Replacing drones*
- *High altitude, solar powered planes substitute satellites*
- *—> Carbon-neutral flight*
- *—> Miniaturization to extremely small size*
 - > anyone's guess*