

Aerostation

Blanchards Balloon

Globe Diamet^r - - 27 feet

weight - - - 102 ~~65~~ Lib

Net and Cord - - 63 ~~75~~

M. Blanchard - - 100

Ballast - - 130

Insufflⁿ air at $5\frac{1}{4}$ 110

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Globe Diam^r - - 27 feet

weight - - - 102 Lib

Net and Cord - - 63

Boat and cordage - - 75

M. Blanchard - - 110

Ballast - - 130

Insufflⁿ air $5\frac{1}{4}$ 110
590 Lib

Materials for crew on falling
Manchards Joint Balloon
Est: and 6591 Lib
from ——— 3500 Lib

10 Double hogheads
Had the balloon been more
air light the following would
have sufficed

Est: and ——— 4400 Lib
from ——— 2500 ———

weight of the balloon less that
 $1\frac{1}{2}$ oz square foot seems included

2. M. Vallot at Savelli near Paris proposed to fill a balloon of 30 feet with the following quantity of materials

Acid	4764	Lib
Iron	3050	—
Water	40430	—

4 cylinders each 8 feet in diam and 4 feet in height - The Balloon to be filled at one operation and in one hour

- appendice 12 feet long and 10 inches in diam. - Reservoir of the same size as the other two

- connecting tubes 9 feet long and 9 inches in diam

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The first inflated air balloon launched
 from the Champs de Mars at Paris
 was 13 feet in diam. weighed with the
 apparatus was 25 French pounds -
 began falling on the 23 August 1783
 and it was the 29th before it would
 be launched - its power of ascent
 35 Lib went 15 Miles - burst -

4.

First aerial voyage was performed
 at La Motte on the 21st Nov with
 an inflated air balloon De la Motte de
 Rozier and the Marquis d'Arlandes
 rose at 1,54^h -

Height of the machines 72 feet

Diameter

weight of machine passengers &c
 between 16 and 27 hundred pounds

5. The first ascent voyage in an
 inflated air balloon 1st Dec. 1783
 - Messrs Charles and Robert -
 Balloon 27.6 in Diameter
 Net and cord Equatorial hoop
 - value at test -

Boat made of basket work 8 long
 took 70 hours to fill -

breadth - - 4 -
Depth - - 3 $\frac{1}{2}$ -
weight - 130 -

Weight of the whole apparatus
 and 2 Aeronautes = 604 Lib

Power of ascent Load - 20
 624 Lib =

whole Diff. between the weight of this
 Balloon and an equal bulk of common
 air - But the weight of common air
 displaced by the gas was computed at
 771 Lib so that there remains 147 Lib
 for inflated air, hence = 5 $\frac{1}{4}$ lines of ^r Con: air

6. Leonard's Balloon.

Diameter ————— 38 feet —
Net covered about $\frac{2}{3}$ of the balloon
from the net 45 cords to the small
hoop just below the balloon —
Had no valve — It was covered
a pear was the aperture through
which the nitrogen and oxygen of the
air were effected — Inflation be-
gan on the night commenced till
near two next day when about
 $\frac{2}{3}$ of the balloon was filled —
— Work employed — great quantity
of silk: — D. Fordyce —

7. Blanchard's 2^d Voyage in Eng^l
 Nov. 30, 1784 - along with W.
 Jeffries - 21 Miles from London
8. Sadler's Aerial Voyage at Oxford
 12. Nov. 1784 - 14 Miles in 17' -
 - a rent in the Balloon brought
 it down so soon -
9. - Murphy's Voyage - Birmingham
 Jan^y. 4th - 1785 - 50 miles in 1^h¹⁵
 #
10. Blanchard and Jeffries Aerial
 Voyage from Eng^l Land to France
 Jan^y. 7th 1785 - Old Balloon
 Inflation began at 10 and was
 finished at 12³₄ - Apparatus at
 14 feet distance from the Cliff in
 Down cable - brought within 2 feet

of the pump and at one
 clock finished off — Only 30 Lb
 of ballast = 3 Tons 10 Lb each
 — at 3 reached the French Coast
 — circumstances — Balloon seemed
 attracted by the water — bottle struck
 jets on the car — Balloon rose near
 the French coast —

71. Balloon at Chester —

Sept. 8th 1785 —

Weight of the Balloon	113 Lb
Netting and cords —	18 —
Car and hoops —	24 —
Minded and added parts —	5 —
Grapple and cable —	4 —
Air on air —	160
Salted ballast in bags —	44 + 12 56
Provisions and Instruments —	20
— Levity for ascent —	10

Landed at 1^h 20' -
- all right. . . 3, 20 12 miles
- 7 lit ballast remaining - + 24 lb
of other articles thrown out = 31
- ascended again at 3^h 30' - and
landed at - - ~~4~~ 4^h before 4 -
in Austin Pass 25 miles from
Austin -

Inflation

2 Tuns 5 feet D. and 5 ft. high
1 — 0 — — 0 —

Middle - Refrigeratory

In the two tubs and distributed
2000 lb of iron borings, clean and
bright -

For every lit of bell: employed 4 pints
of water -

4 Bolls of Vill: were first poured
 into one of the small Vessels - After
 this had wrought half an hour - The
 other was charged in like manner -
 Half an hour after this 4 bolls
 were poured into the great vessel
 and afterwards 4 more, but which
 means the Ballon was completely
 inflated at 10 o'clock without any
 further trouble -

Total materials

Vill: used 16 bolls at

38/9 -

} £ 30. 8

from 2000 lb —

6 —

Incidents

£ 3. 12

£ 40

Exclusive of the Apparatus —

M. B. observes that if the Bal-
loon be air light, it may be in-
flated by means of the two small
tubs only — and with half the
quantity of acid —

12. Balloons
 Diam. Surface Solidity

5	70.54	65.45
6	113.097	113.097
7	153.930	179.594
8	201.062	260.003
9	254.469	301.704
10	314.159	523.6
12	452.5	904.0
15	706.9	1767.1
20	1256.6	4109.
25	1963.5	8181.
26	2124.	9203.
27	2290.	10306. + 300 y of silk
28	2463	11494
29	2642-	12770
30	2827-	14137
32	3217-	17157

yard wide —

13. A cubic foot of common air
weighs 1.2 ounce - consequently
inflated air when full .12 oz
But in great Balloons it has never
been found to exceed, seldom equal
.2 or as 6 to 1

14. A cubic inch of iron will produce
a cubic foot of inflated air -

15. Zinc is said ~~said~~ to produce
not quite so much, but more ca-
cavallo
pidly -

16. Common Vitriol acid with five
or six times the quantity, by
measures, of water, will dissolve
an equal weight of iron or Zinc
cavallo

17. One oz. of iron wire produces 412 oz
measures of air - The quantity was just
the same whether the acid was diluted
with $1\frac{1}{2}$ or 7 times its weight of
water! — Manuscript —

18. Zinc dissolves rapidly in both
the vit. and Marine acids, and
unless the acid be much diluted
generates a considerable heat —
— one oz. Zinc produces in either
acid about 356 oz Measures of air —
— Manuscript —

19. A cubic foot of atmosphere air has
been found to weigh accurately 554 Grs.
and to be increased in bulk by every
degree on Fahrenheit's scale 500 part
of the whole, By holding a quantity
of air therefore to 500° its bulk will be
doubled when the Therm. stands at 54°

in the open air and it will be
diminished in the same proportion when
cooled

20. Inflantⁿ air is said to be rendered
heavier by its passage thro' water

21. The quantity of inflantⁿ air
produced by steam is to that
by Vell: ~~as~~ ^{from} the same quantity
of iron as 1000 to 800 = quantity
from two ounces of iron turnings
— D. D. —

22. By steam between $\frac{1}{3}$ and $\frac{1}{2}$ more
air can be produced than by Vell:
acid — and produced in less
time. — D. D. —

23. Cast iron annealed by being kept
red hot in charcoal is greatly more
soluble in acids —

24. In filling a balloon it is better
to send in the inflamm^{ed} air without
passing it thro' water —

25 The vessels for filling should be sunk
entirely in the ground, should be shallow
— Strata of some substance between the deposit
Layers of iron filings —

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