

Leonardo Dreamed of A 'Great Bird'

"An instrument may be made to fly withal, if one sit in the midst of the instrument and turn an engine by which the wings being artificially composed, may beat the air after the manner of the flying bird."

So said Roger Bacon in the 13th century. And so thought Leonardo da Vinci, one of the forerunners in man's attempts to fly. Da Vinci, most famous of course for his paintings, was also a learned scientist, contributing theories on road-building, weaponry, and flight. And he was amazingly accurate in his sixteenth century analyses.

Leonardo's dream of the flight of man goes back to his second or third year when a vision of a great bird swooped down upon him in a child's nightmare. From that time, birds held a fascination for the man. He would spend hours watching the tiniest sparrow or the most majestic falcon, visually defining their movements and their adaptations in flight.

By observation, he came up with theories that anticipated later principles of aerodynamics. One such theory is Newton's theory of aerodynamic reciprocity:

"An object exerts the same force against the air as the air against the object."

Perhaps his greatest observa-

tion, at least as related to gliding, was that birds flap their wings mainly in order to balance themselves, but they spiral upward on drafts, or air currents.

This also coincided with his belief that the air had substance and varying condensations.

Da Vinci's first flying machine was merely a tapered board with wings attached. The flyer moved the wings by treading with his legs and pulling with his arms.

Later, hand cranks were added to flap the wings, along with a rudder fashioned after a bird's tail.

In subsequent designs, the board was eliminated and the entire mechanism was to be supported on one's shoulders.

The first type of wing constructed by Leonardo was conceived from his bird-watching. The wing had a web-like structure covered with fabric and feathers and lined with silk. A net covered the whole surface. He found this type to be too rigid for the increased size of wing needed to support a man, however.

The next design called for more flexible bat-like wings that would also revolve.

Leonardo's final drawing board concept was a saucer-like gondola on which the flyer stood between two posts. A double pair of wings was attached to

each post, moved by foot pedals. The wings, made of reeds and linen, were to move crosswise as in a horse's gait. Ladders supporting the machine were to be drawn up in flight as are a bird's legs.

From the bird, too, Leonardo was able to anticipate present-day landing methods. As the bird lands, it lowers its tail and spreads its wings in order to slow down its flight. This parallels the downward movement of the rudders in modern aircraft.

According to Leonardo, the main problem of flight was not the construction of the craft, but controlling air currents. His theory was to fly high, keep equilibrium, and avoid adverse air currents. This, of course, sounds familiar.

Strangely enough, it was da Vinci's desire to be remembered, not as a great artist, but as the first man to fly. The chosen site of the flight was 1300 foot high Swan Mountain, located on the coast of Italy. Wrote Leonardo:

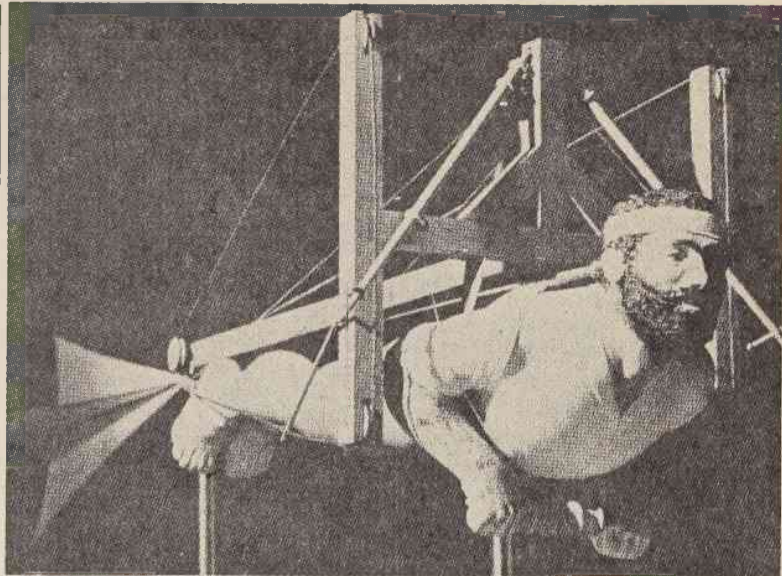
"The great bird will make its first flight upon the back of its great swan, filling the whole world with amazement, filling all records with its fame, and bringing eternal glory to its birthplace."

Whether his flight succeeded, or whether indeed he even attempted it, belongs to the romantic realm of the unknown. An oft-told legend in the area mentions a huge bird that suddenly arose from the mountain and just as suddenly disappeared, indicating that Leonardo had indeed made an unsuccessful attempt to fly.

His friend, Giralamo Cordano, wrote:

"Both of those who have recently attempted to fly came to grief. Leonardo da Vinci also tried to fly but he, too, failed. He was a magnificent painter."

Ed. Note: Information is from *Leonardo the Florentine* by Rachel Annard Taylor, Harper and Brothers Publishers, New York, 1927; and *Leonardo da Vinci, The Tragic Pursuit of Perfection*, by Antonina Vallentin, The Viking Press, New York, 1938. Quotes are from the latter work, pages 368 and 370.



(Air Canada, Between Ourselves)

Above is a quarter scale model of Leonardo da Vinci's flapping wing machine, designed around 1500 a.d. but never constructed. The model was a primary feature of a Qantas Airlines exhibition.

FREDA ZAPPIA MAKES PILGRIMAGE . . .

(Continued from Page One)

lapidated homes and crowded streets.

She visited the open-air laundries where men have for hundreds of years used the same methods. Today, they collect the laundry, beat it clean in shallow, pond-like, concrete tubs. Amazingly enough, there are few complaints and the clothes emerge clean and undamaged.

Freda became aware of an unusual smell in the early morning, only to learn that it came from the combination of incense and burning wood from the Indian crematories. One Indian sect lays its dead on canvas sheets and feeds the body to vultures.

"The Indians," said Freda, "are a very colorful, artistic, and imaginative people. We found them to be gracious, hospitable, and kind. They expressed great affection for the American people, and especially for the late President Kennedy."

After the Eucharistic Congress, Freda and the other pilgrims traveled to Cairo, Egypt. High spot of the trip for Freda was the camel ride to see the Sphinx and the pyramids.

After only 3 days and 2 nights in Egypt, the group left for the Holy Lands. They flew to Ahman, the capital of Jordan, and made the two hour drive from there to Jerusalem. Freda visited all the holy places on the Jordan side, including the birthplace of Christ, His baptismal site on the River Jordan, the Dead Sea, the Holy Sepulchre, the Garden of Gethsemane, the Mount of Olives and the Mountain of Temptation. She also made the Via Dolorosa, the way of Christ's walk to Calvary.

"When you see the terrain," said Freda, "you know truly that it is the Holy Land. It is barren, and rocky with the narrow River Jordan close by."

Freda was fascinated by the incongruous appearance of the men in Western garb driving shiny new cars, yet still wearing the traditional turbans.

Crossing from the Jordan side into Israel is a tedious experience because the two countries are at war. The pilgrims were allowed to pass through the

Mandelbaum Gate one by one, walking into Israel where they boarded buses for Israeli Jerusalem. Here they saw Nazareth, St. Joseph's workshop, the Church of Annunciation (where the angel Gabriel told Mary that she was to be the Mother of Christ), Cana (where Jesus performed his first miracle), and the Sea of Galilee.

All too soon, however, Freda found herself in Tel Aviv, waiting for a plane back to the States. "It was quite an experience," she says. "I am glad that I've been able to share the trip with so many people, too."

She has been showing and narrating color films taken on the trip to various churches throughout the area.

NEW EMPLOYEES . . .

- (Continued on Page Two)
- C. L. Thomas—Cleaner ROA
- J. M. Spencer—F/O Trainee INT
- D. R. Wood—F/O Trainee INT
- H. T. Young—F/O Trainee INT
- J. M. Swicegood—Jr. Radio Tech. INT
- R. L. Brenckle—F/O Trainee INT
- H. D. Bolen—Agent-Operations ATL
- M. J. Herring, II—Agent-Operations RDU
- C. W. Plitt—Flight Instructor CPA
- B. J. Simmons—Agent-Reservations FAY
- I. B. Strickland, Jr.—Agent-Operations ILM
- L. C. Styers, Jr.—Agent-Operations DCA
- L. W. Williams—Agent-Operations MBC
- L. B. Barwick—Agent-Operations ISO
- L. D. Brown—Agent-Operations ATL
- B. G. Elvington—Agent-Operations FLO
- C. F. Goad—Agent-Reservations ROA
- R. W. Lay—Agent-Operations ATL
- B. C. Rogers—Jr. General Clerk INT-A
- J. E. Shaw—Agent-Operations FAY
- D. W. Swain—Cleaner ROA
- J. P. Coon—Jr. Stock Clerk ROA

J. S. Hamilton—Agent-Operations PHF

TRANSFERS

- C. E. Shotsman—INT to ROA
- E. D. Schettler—INT to DCA
- J. R. Comer—ATL to ILM
- Carol Blevins—DCA to TYS
- C. S. Ward—DCA to ILM
- E. S. Blackwood—ORF to TYS
- V. V. Lane—TYS to DCA
- A. J. Hammett—FLO to INT-CTO
- D. B. Holt—ORF-FB to INT as F/O Trainee
- J. R. Michael—CPA to INT as F/O Trainee
- J. A. Nemeroff—CPA to INT as F/O Trainee
- R. B. Parker—ILM to INT as F/O Trainee
- N. A. Coiner—RDU to TRI
- M. E. Buford—INT-CTO to INT-SC
- V. E. McCord—MBC to CVG
- J. H. Dial—ROA to DCA
- G. L. Burton—PHF to JAMTO-Langley AFB

PROMOTIONS

- G. A. Willetts—F/A to F/O Trainee INT
- J. A. Simmons—ROA Lead Radio Tech.
- M. R. Kerchenko—promoted to Radio Tech DCA
- R. B. Parker—F/O ILM
- H. L. Giles—promoted to Chief Agt. TYS
- L. F. Barnes—promoted to Sr. Spec. INT

Happy Birthdays

R. G. Harr, F/O, TYS	1	J. M. Richardson, RDU	15
J. T. Holton, ROA	1	M. E. Stokely, Capt., ILM	15
R. A. Sandberg, ROA	1	C. R. Elliott, INT	16
W. R. Taylor, ROA	1	Lois Jordan, CVG	16
W. A. Bone, RMT	2	J. W. Berryhill, Capt., ILM	17
C. J. Della, BAL	2	R. C. Cromer, Jr., ROA	17
R. L. Howard, Alexandria, FB	2	C. K. Lane, INT	17
G. M. Jarvis, RIC	2	C. W. Welch, CRW	17
E. G. Murphy, LYH	2	J. L. Boyer, TRI	18
G. C. Myers	2	C. B. McLean, F/O, ATL	18
Patsy Turner, ROA	2	C. D. McLean, F/O, ATL	18
H. G. Britt, INT	3	W. B. Simpson, Sales Rep.—Beech, INT	18
S. K. Douglass, CMH	3	Nancy Spiro, TRI	18
E. R. Lovett, INT-FB	3	R. V. Brookshire, INT	19
Helen McPeak, INT	3	W. A. Comer, ATL	19
G. N. Rawley, SHD	3	Lotte Faw, INT	19
J. F. Russell, INT	3	H. L. Gilpin, PHF	19
F. J. Slone, Manager, RMT	3	R. P. Kelley, Industrial Engineer, INT	19
J. W. Whicker, INT	3	J. L. Plemmons, INT	19
W. C. Clark, Jr., INT	4	S. B. Caldwell, INT	20
D. L. Hastings, INT	4	E. A. Martinez, City Sales Mgr., RIC	20
E. B. Fields, RMT	4	R. V. Shipton, F/O, ILM	20
J. W. Sherrill, Jr., INT	4	R. P. Smith, Jr., ILM	20
Patricia Boccock, Stewardess, INT	5	A. M. Watts, INT	20
Barbara Boles, INT-A	5	H. A. Baldock, F/O, SDF	21
Margaret Hankins, ORF-FB	5	W. S. Hart, F/O, ORF	21
R. F. Myrick, Parts Salesman, INT-FB	5	J. A. Lawrence, BLF	21
R. M. Voss, INT	5	Celia Richardson, DCA	21
G. R. Welborn, F/O, ILM	5	L. D. Whitley, EWN	21
P. V. Wyatt, Jr., ORF	5	J. E. Dail, ORF	22
D. Brown, INT	6	J. Maffett, ATL	22
C. Colter, INT	6	Alice Kohutek, DCA	23
C. H. Costin, EWN	6	P. D. Loar, Dist. Sales Mgr., CVG	23
Hop Hee Dunne, Link Instructor, INT	6	L. H. Nuckles, INT	23
Ginger Maxwell, INT	6	R. E. Smith, DAN	23
B. J. Shepherd, TRI	6	W. J. Jacobs, CVG	24
L. W. Sweigart, INT	6	T. J. Rixson, CVG	24
W. W. Cox, Capt., INT	7	C. T. Crouch, GSO	25
E. R. Gray, ROA	7	R. L. Hill, Manager, BRW	25
W. L. Hendricks, INT	7	O. B. Revell, Supt. Line Maint., INT	25
L. L. Hubbard, INT	7	F. Roscan, Capt., INT	25
G. E. Malcomb, Capt., TYS	7	C. L. Thomas, ROA	25
R. F. Murray, Admin. Asst. to V. P. (Ops)	7	B. P. Kennedy, F/O, ILM	26
Deanna Cranfill, INT-FB	8	A. C. Marlowe, ORF	26
R. W. Kadlec, Dir. of Research, INT	8	Ruth Leedy, TYS	26
T. A. Kirk, Purser, ROA	8	G. E. Price, INT	27
R. F. Schulte, Capt., ORF	8	R. F. Rose, Manager, RIC	27
J. A. Woodruff, BLF	8	Nancy Smith, INT	27
H. W. Bradshaw, F/O, INT	9	J. L. Wathen, Dist. Sales Mgr., SDF	27
J. R. Flowers, Jr., F/O, ORF	9	E. J. Wisniewski, Mgr., CVG	27
D. M. Trueblood, ORF	9	J. R. Wright, INT	27
R. W. Tucker, HKY	9	J. E. Bradley, Dir. of Personnel, INT	28
C. D. Blevins, SHD	10	H. T. Carter, SOP	28
J. Chandler, INT	10	W. C. Freese, ORF-FB	28
D. K. Hicks, INT	10	Carolyn Fulk, INT	28
Marcia Morris, CVG	10	A. M. Lundy, ROA	28
Nancy Rowland, Stewardess, ILM	10	E. C. Monson, INT	28
L. S. Smarr, INT-FB	10	A. J. Slaydon, ROA	28
P. S. Snell, Jr., Capt., ATL	10	A. G. Walker, GSO	28
H. K. Scott, INT	11	D. G. Edmondson, Dist. Sales Mgr., ATL	29
P. J. Shively, ROA	11	R. W. Evans, ROA	29
A. S. Williams, INT	11	B. W. Hamilton, TRI	29
E. L. Beard, ATL	12	A. C. Johnson, INT	29
G. B. Folsom, INT	12	B. D. Shelton, INT	29
Katherine Honeycutt, INT	12	R. E. Hicks, INT	30
M. L. Horn, LYH	12	K. D. Oakley, INT	30
R. L. Thomason, Capt., INT	12	D. A. Poole, ILM	30
O. Wagoner, INT-FB	12	H. T. Young, F/O, INT	30
C. L. Wooten, INT	13		
D. H. Cooper, ILM	13		
Pattie Griffin, INT	13		
M. L. Oxley, AVL	13		
R. L. Westbrook, Jr., Supv. Planning & Scheduling	13		
E. Aaron, INT-FB	14		
H. L. Giles, TYS	14		
J. D. Hoots, Supt. of Accessory Overhaul	14		
A. L. Norvelle, CHO	14		
R. J. Ragsdale, INT	14		
T. F. Young, Jr., ATL	14		

SWAP TALK

MOTORCYCLE NEEDED. Bob Bosley, HTS, wants to buy or trade for motorcycle. Needs cheap transportation to and from work. Mechanical condition of motorcycle not important.