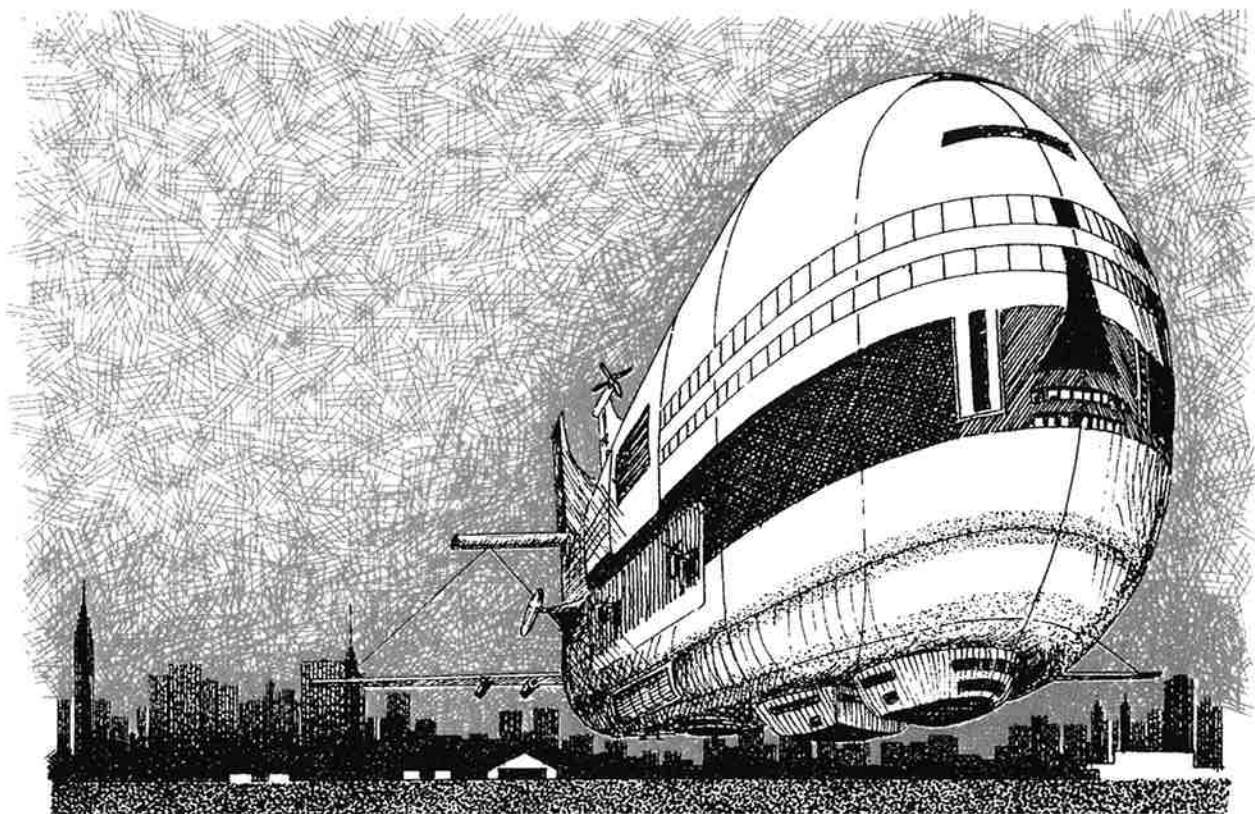


# Airships in Our Future?

by Michael Cusack



- 1 Once, years ago, ships bigger than ocean liners sailed through the sky. The ships didn't rush, they didn't roar, nor did they trail dirty fumes. They required little energy to stay in the air, and they were big—bigger than anything now flying the skies.
- 2 In this age of huge jet planes and supersonic transports, it is difficult to believe that the biggest vehicles ever to fly came and went more than fifty years ago. They were the giant balloonlike airships that cruised around the world in the 1920s and 1930s. And since the huge flying vehicles were quiet and clean and required little fuel, there is reason to think they may become popular again.
- 3 Like balloons, airships are lighter-than-air

craft. That means that the vehicle is lifted up by an immense bag filled with a gas that is lighter than the air around it. The light gas could be hydrogen or helium—or it could be hot air.

- 4 Unlike balloons, airships can be steered to go in a particular direction—even into the wind. There are three ways in which an airship is different from a balloon. First, an airship is powered. Engines and propellers are used to push it through the sky. Second, an airship is specially shaped for powered flight. The bag of gas usually has a pointed end to help it cut through the mass of surrounding air. Most airship designers have found that a cigar shape works best. Third, an airship is controlled. The bag of gas has vertical and horizontal tail surfaces. They tend to keep the airship level as it floats through the air.

72

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72

- 5 Balloons that are powered, controlled, and shaped for flight are also called dirigibles. The name *dirigible* comes from a French word meaning "able to be directed."
- 6 Dirigibles come in two types. One type has a rigid frame and the other type does not. That is, they are either "stiff" or "soft." The kind without a frame is just a large, limp gas bag. It has no shape until it is filled with gas. In fact the British once called this kind of airship a *limp*. The most common kind was a "type-B limp." Gradually that led to the term *blimp*, the word used today.
- 7 After the first blimps were developed, engineers realized that there was a limit to how large the ships could be made. If a blimp is to keep its shape, the gas pressure inside must be kept high and even. But the larger the gas bag, the more difficult it became to keep the correct pressure. Even a small loss of pressure could make a blimp difficult to steer through the air.
- 8 In 1900 a German named Count Ferdinand von Zeppelin thought of a way to build an airship so that it would keep its shape, no matter what happened to the gas pressure inside. He made a cigar-shaped framework for the airship out of beams and girders and put several bags containing gas within it. Then he covered the entire framework with fabric. The result was a rigid airship that was longer than a football or soccer field and more than twice the size of a blimp.
- 9 Count von Zeppelin's first airship was a success. In time other airships of the sort were built and were named Zeppelins after him. Zeppelin airships were larger and faster than blimps and for almost forty years they dominated the skies. In the 1920s an airship named the *Graf Zeppelin* started taking passengers on long-distance trips—including the first round-the-world passenger flight. During that period it carried more than eighteen thousand passengers without a single mishap.
- 10 Other countries—Britain, the United States, Italy, and Russia—also began to build and operate Zeppelins for military as well as commercial purposes. The U.S. Navy used several Zeppelins as aircraft carriers. Planes took off from them and landed on them high in the sky.
- 11 A number of tragedies, however, spelled the end of the era of giant airships. In 1925 a U.S. Navy airship was ripped apart by a storm, and in the 1930s two other airships crashed at sea. The worst tragedy of all, however, involved a German Zeppelin named the *Hindenburg*. On May 6, 1937, the *Hindenburg* had successfully completed a flight from Germany to the United States. It was preparing to land in Lakehurst, New Jersey, when the ship burst into flames. Within minutes its frame had turned into a mass of twisted metal. Thirty-two people died in the wreck. And it seemed the future of the giant airships died that day too. No more Zeppelins were built after that time.
- 12 But now many scientists feel that we should start building airships like those again. They say that with new methods and materials we can build airships much bigger than the *Hindenburg*. The new ships would get their lift from helium, which, unlike hydrogen, will not burn or explode. Airships filled with helium would be much safer than older types of airships.
- 13 The superairships of the future could travel long distances very inexpensively. The giant ships could carry huge loads of cargo and travel to almost any place on the globe. The airships wouldn't even have to land. They could pick up and drop off cargo while hovering over open fields. Thus they could be used in places without docks or airports.
- 14 In times of earthquake or natural disaster, giant airships could bring help to stricken areas. The ships could take relief supplies directly to those in need, and on the return trip the ships could take out the injured. Specially equipped airships could also serve as emergency hospitals.
- 15 Because airships don't burn fuel to stay in the air, they could help save great quantities of energy. New types of power could also make such vehicles very quiet and clean. New airships might even be powered by nuclear engines.
- 16 Are there airships in our future? The oldest type of powered flying machine might just be on its way back.

## How Well Did You Read?

Write the letter of the word or phrase that completes each sentence best.

- 1 Paragraph 1 tells that airships didn't rush, didn't roar, and didn't trail dirty fumes. That statement implies that airships were
  - a slower, quieter, and cleaner than jets
  - b faster, safer, and cleaner than jets
  - c quieter, safer, and dirtier than jets
- 2 Airships were somewhat similar to
  - a balloons
  - b barges
  - c supersonic transports
- 3 Airships were cigar-shaped because things made in that shape
  - a are easiest to land
  - b move most easily through the air
  - c are easiest to fill evenly with gas
- 4 Airships differed from balloons in that
  - a they could be steered
  - b they didn't have to be filled with a gas
  - c they needed fuel to rise
- 5 The zeppelin, or rigid dirigible, was developed because the blimp
  - a was difficult to get off the ground
  - b wasn't large enough to work well
  - c was difficult to fill evenly with gas
- 6 Which of the following probably caused the end of airships?
  - a The development of the jet
  - b A series of accidents
  - c Increasing cost of the gases they used
- 7 Airships of the future would differ from the old airships in that they would
  - a be smaller
  - b be cleaner
  - c use a different kind of gas
- 8 After a disaster such as an earthquake, airships would be more useful than jets because
  - a they can land anywhere
  - b they can pick up and drop off supplies
  - c Both a and b
- 9 The use of airships would help conserve fuel because they
  - a don't need any fuel
  - b need fuel just to move from place to place, not to stay in the air
  - c need fuel just to stay in the air, not to move from place to place

## Learn about Words

### Vocabulary

- A** You can often tell the meaning of a word by reading the words around it.

Look at each number in parentheses. Find the paragraph in the story with the same number. Then find the word that fits the given meaning. Write the word.

- 1 smoke or gases (1)
  - 2 journeyed (2)
  - 3 huge (3)
  - 4 stiff (6)
  - 5 accident (9)
  - 6 period of time with certain characteristics (11)
  - 7 goods carried by ship, plane, or other vehicle (13)
  - 8 floating in one fixed spot (13)
- B** A word may have more than one meaning.
- Look at each number in parentheses. Find the paragraph in the story with the same number. See how the word in **heavy type** is used in the paragraph. Decide whether it has meaning **a**, **b**, or **c**. Write *a*, *b*, or *c*.
- 9 **craft** (3)
    - a sly behavior
    - b work done by hand
    - c water or air vehicle
  - 10 **globe** (13)
    - a earth
    - b ball-shaped object
    - c ball-shaped map of the earth

## Word Study

- C** Steve answered **angrily**.  
Pearl left **early**.  
We will meet **here**.

The words in **heavy type** are adverbs. Adverbs modify verbs, adjectives, or other adverbs. Adverbs often tell how, when, or where something is done. In the examples above *angrily* tells *how* Steve answered, *early* tells *when* Pearl left, and *here* tells *where* we will meet. In each sentence below there is an adverb in **heavy type**. Decide whether the adverb tells you how, when, or where something is done. Write *How*, *When*, or *Where*.

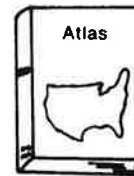
- 11** Sometimes we have chicken and dumplings for dinner.  
**12** We played **outside**.  
**13** The lamp stood **above** my head.  
**14** Pull **hard**.  
**15** Visit us **soon**.  
**16** The kitten played **inside** the box.  
**17** The car turned **sharply**.  
**18** The campers frightened **easily**.

- D** Kittens eat **very** often.  
Kittens are **rather** tiny.

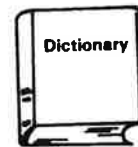
The words *very* and *rather* are often followed by an adjective or an adverb. For that reason, *very* and *rather* are sometimes called adjective-adverb markers. Some other common adjective-adverb markers are *somewhat*, *really*, *quite*, *more*, *most*, and *too*. For each sentence below, write the adjective-adverb marker and the adjective or adverb that follows it.

- 19** This is a rather difficult task.  
**20** Barbara dances very gracefully.  
**21** She spoke most proudly of her sister.  
**22** My aunt is somewhat strange.  
**23** The weather is really chilly.  
**24** I'm quite sure you can do the job.  
**25** Chris is too shy to speak to you.  
**26** Sandy is very sad.

- E** There are many kinds of reference books. Each one is used for looking up some special kind of information. An *atlas* contains maps and facts about many countries. A *dictionary* gives the meanings of words and tells you how to spell and pronounce them. A *book of quotations* contains statements that various people have spoken or written. A *telephone directory* lists the names, addresses, and phone numbers of many people and businesses. The drawings show these four books. Each one has been given a letter. Decide which book would be most helpful in answering the questions below. Write *A*, *B*, *C*, or *D* for each question.



A



B



C



D

- 27** Who asked "Am I my brother's keeper?"?  
**28** Did Ben Franklin say "A stitch in time saves nine"?  
**29** What street is the public library on?  
**30** What does *empathy* mean?  
**31** Where can you buy pastries in your town?  
**32** How do you pronounce "equilateral"?  
**33** How far is London from Liverpool?