AERONAUTICS

Toy Shelf to Stratosphere

Weather balloons blown behind the Iron Curtain have roused new interest in old sport. Balloons today are used for weather observation, propaganda, and reconnaissance.

By HENRY WHITE PIERCE

➤ SOMEWHERE IN Europe a balloon drifts eastward to accomplish its mission in the battle for men's minds.

From a lonely desert outpost a dozen scientists watch a balloon float skyward to snatch hidden facts from the upper atmosphere.

And in the heart of a large city a bright red balloon fluttering at the end of a piece of twine delights a small boy.

Physicists, engineers, geographers and even doctors use balloons every day. But the high-flying bags were originally used more for sport than science. The balloon has evolved from a harum-scarum adventurer's toy to play a vital part in what may be the world's most deadly game.

What balloons have lost in popular play they have gained in scientific application. Pilotless, they soar 25 miles into the thin stratosphere to take weather readings. Rockets launched from the big gas bags attain even higher altitudes. Balloons are used in mapping, for wartime air cover and to carry freedom messages behind the Iron Curtain.

New developments in ballooning are continually being disclosed. The Army Signal Corps has recently announced an "express" balloon that rises about twice as fast as conventional types. Its greater vertical speed means the new balloon is less likely to drift out of radio range during its ascent. It will also speed up observations.

Another possible development may be using a balloon to launch a man-made satellite. The present plan is to shoot the small moon into its orbit by a three-stage rocket. Later experiments, however, may possibly find balloons carrying satellites 15 miles up, from which point a rocket would shoot the spheres the remaining distance. This would save great amounts of fuel.

Affects Your Life

In some ways, the balloon affects your daily living much more directly than you may think. Tomorrow's weather is predicted with the help of small balloons equipped with instruments for recording temperature, pressure and humidity. The information is automatically radioed down to meteorologists who use it in learning weather trends and for long range forecasts.

Striking success has been reported in launching rockets from balloons. The Deacon, launched from the General Mills Skyhook Balloon at an altitude of 75,000 feet, reached a height of 60 miles. The same rocket launched from sea level has gone up only 20 miles. The thinner atmosphere at 75,000 feet reduces friction to such an extent that rockets may fly far higher than if launched from sea level.

One of balloons' most interesting applications is in the field of cosmic ray measurement. When cosmic rays strike the atmosphere, the primary particles become ionized, and their nature is changed. They are then called secondary cosmic rays. To measure the original rays, balloons are sent up to heights of 120,000 feet where they can remain for as long as 10 hours. Instruments swinging beneath the Navy's loft-seeking giant sky-hook balloons are stealing secrets from cosmic rays 23 miles above the earth.

Often blamed for flying saucer scares, balloons actually vary greatly both in shape and in size. They can be pear-shaped or nearly spherical, range from a minimum of one foot in diameter to a maximum of 200 feet. The balloons which recently aroused Russia were 39 feet across.

None of the airborne sacks has great lifting power. The biggest can carry a ton and a half to a height of 60,000 to 70,000 feet. The weather balloons that recently drifted behind the Iron Curtain traveled at about 50,000 feet, higher than commercial airplanes fly. If they remain too low, the balloons are automatically destroyed.

Weather balloons can be sent up in such great numbers that some become lost, accidentally penetrating the Iron Curtain even when extra precautions are taken. One reason so many of these airborne weather stations can be released is the cheapness of the material used. Modern balloons cost about one-fiftieth as much as their counterparts of 20 years ago. The weather balloons of yesterday were made of rubberized fabric that cost $2.00 a square yard. The polyethylene plastic of many of today's floaters costs only four cents a square yard.

The Montgolfier brothers flew the first crude hot-air balloon in 1783, and soon

BALLOON LAUNCHING—A newly designed Air Force meteorological balloon is here being launched at Vernalis, Calif. The bag is being filled with gas just prior to its release.

daredevil sportsmen seeking thrills among the clouds became the first real pioneers of aviation. With their spectacular, sometimes inspiring, often clownish escapades, they lit new corridors of science.

Ballooning first aroused popular excitement in the early 1900's. By that time, hydrogen had succeeded hot air as the lifting agent. But hydrogen is highly inflammable, a drawback which culminated in disaster three decades later when the historic Hindenburg burst into flames killing 36 persons.

The great, shining plastic sacks of today are usually filled with heavier but noninflammable helium.

Twenty-five years ago it was commonly believed that the balloon would outstrip the airplane as a commercial vehicle. In 1932 a metropolitan newspaper editorialized: "Climbing 10 miles into the sky, we shall soon fly from New York to Paris in 10 hours, safe from rarefied air in sealed cabins, while zooming along at dizzy speed of 400 miles an hour."

The story was referring to dirigibles.

International Sport

During the first quarter of the 20th century, balloon racing became a sport of international scope.

The breakneck, cross-country races originated in France, but interest soon swelled to world-wide proportions. The first international race, held in October, 1906, started from Paris. The idea was to see how far the balloons could drift.

The balloons started westward, then veered to the north. Some landed along the French coast. Others drifted across the Channel to England.

This first race was won by an American, Frank P. Lahm, a U. S. Army lieutenant. Lahm landed near Scarborough, England, and brought home the coveted James Gordon Bennett trophy.

The development of heavier-than-air transportation, however, cost the sport of ballooning its popularity. Today the only balloons generally available for recreation can be bought on the street for a few cents.

Daring feats are still performed in the balloon world, but they are done in the name of science. Late this fall the Air Force plans to drop men by parachute from balloons 17 miles above the New Mexico desert. This will be twice as far as parachutists have ever jumped before.

The purpose of the experiment will be to obtain information for developing safe equipment and procedures for bailing out of fast, high-altitude airplanes.

Despite all its scientific uses, ballooning as a sport still survives. Balloon licenses are issued to the enterprising. If you wish to try a jaunt or two yourself, you must have at least six hours of instruction and pass a written test that covers meteorology, navigation and map reading.

Of course, you must also demonstrate your ability to pilot a balloon.