# SPHERICAL BALLOONING, SOME OF THE REQUIREMENTS

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By P. J. McCULLOUGH

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THIS VOLUME
IS RESPECTFULLY DEDICATED TO

OUR BOYS IN FRANCE

WHOSE DEVOTION TO THE BEST INSTINCTS
OF MANHOOD WILL MAKE THE
WORLD SAFE FOR
DEMOCRACY

# Foreword

MODERN works on theory and practice in the art of ballooning, not being sufficiently primary to satisfy the average student, this compilation was suggested as a means to assist in an effort to become competent to successfully assemble and pilot the spherical balloon.

Description of equipment herein should not be regarded as covering all methods of design and construction, but is offered as an example of one popular type and system as used at the present day, the object being to impress the fact that in addition to keen observation as to detail in regard to both work and equipment, self-reliance is much to be preferred in preference to theory or suggestions from any other source offered in advance as to just what should be done to maintain control; i. e., problems cannot be solved until presented for solution.

# Gas Ballooning

**Some of the Requirements**

CONSULT the weather man. Arrange for a supply of gas of the proper specific gravity and sand to fill each bag. Secure a complete balloon outfit and check the equipment, making sure that each part examined is in serviceable condition.

One balloon assembly as follows:

One Ground Cloth.
One Balloon Cover.
One Balloon Cover Lace or Rope.
One Balloon Envelope.
One Balloon Appendix.
One Appendix Ring (two parts).
One Appendix Rope Assembly.
One Filling Hose.
One Filling Hose Thimble.
One Rip Cord (red).
One Valve Cord (white).
One Load-Ring Assembly.
One Passenger Basket or Car Assembly.
One Drag Rope.
One Anchor.
One Anchor Rope.

One Sand Bag for each mesh in the circumference of the balloon net, plus six or eight sand bags to hold down the appendix rope cords and the corners of the ground cloth.
Recording Barograph. Barometer. Statoscope. Thermometer. Compass. Watch. Knife. Flash Lamps. Camera. Megaphone. Matches. Pencil. Log. Maps. Money. Water. Lunch. First Aid Kit.

**Ground Cloth**

Place one corner of ground cloth about five feet from end of gas supply pipe in such position that pipe points diagonally across center of cloth.

**Envelope**

Unroll balloon envelope so that it will lie diagonally across the center of the ground cloth with the opening for the appendix about four feet from the ground cloth corner which is nearest to the gas filling pipe. The valve end of the envelope should be near the corner of the ground cloth diagonally opposite to that of the gas filling pipe. Pull the folds of the envelope in such way that it will form a disc, so that all of the slack, both on the under side and upper side of the envelope, is evenly distributed in the outer part of the disc thus formed.

**Appendix Rings and Appendix**

Place appendix rings on the ground cloth with bolt heads down and remove upper ring. Place bolt holes in the cloth of the appendix over the bolts in the lower appendix ring in such way that the inside of the appendix cloth will be next to the lower ring. Place the appendix and lower ring into the balloon. Place bolt holes (which are near the edge of the appendix hole in the balloon) over the bolts in the ring. Put the upper appendix ring in place, making sure that the markers register, as bolt holes are not interchangeable.

**Appendix Cord and Loop Nuts**

A loop nut is secured to each of the appendix cords which should be twisted five or six times in the opposite direction to that required to tighten the nuts. Turn appendix loop nuts down firmly on the appendix ring bolts, but don't use a wrench or pliers; a small nail or key furnishes quite enough leverage. Both the balloon cloth and the appendix cloth should be inspected to make sure that no folds of the cloth have been clamped between the two appendix rings. Carry the appendix, appendix ring and the folds of the balloon fabric on each side of the appendix ring about half way to the valve opening in the balloon or within about two feet of the center of the ground cloth, keeping in line with the gas supply pipe. Stretch the appendix so that it points toward the gas supply pipe. Place lower edge of appendix ring on ground cloth with upper edge inclined toward the gas supply pipe at an angle of thirty to sixty degrees.

**Anchor for Appendix Ring**

Place a bag of sand on the appendix ropes at each side of the appendix ring and see that appendix cords on which the sand bags rest are tight between bag and loop nuts on appendix ring.

**Filling Hose and Thimble**

Place thimble or a joint of stove pipe in end of filling hose, and place both of these into the end of the appendix, making a gas tight joint by binding with a strap or cord. Place other end of filling hose over gas supply pipe and secure in the same way. Place bags of sand on each side of the appendix and filling hose so that the flow of gas is not restricted by the weight of the balloon fabric. Carry folds of envelope on either side of the appendix ring back so that it is again in the form of a disc.

**Slack on Under Side Fabric**

While doing this, be sure that all of the slack has been taken up on the under side, and that the appendix ring and bags of sand have not been pulled out of position. Pull the cloth or fabric over

to that half of the disc or circle nearest to the gas supply pipe until the fabric at the bottom of the appendix ring has been stretched up over the top of the ring and back to the edge of the balloon nearest to the gas filling pipe. This gives the envelope the appearance, in shape, of the moon in its first quarter. From the inside of the crescent thus formed pull the balloon fabric in the opposite direction until a disc is again formed, the fabric being distributed in such way that the center of the hole for the balloon valve will be about two feet farther from the gas filling pipe than is the appendix ring.

**Diameter of Balloon Before Inflating**

Shape the balloon fabric so that it forms a disc about two-thirds as large in diameter as that of the balloon when inflated. Be sure that all folds in the balloon fabric are evenly distributed, within two or three feet of the edge of the disc. Remove boots or shoes when walking on balloon fabric. Pull end of rip panel flap and rip cord support flap out through the valve hole.

**Slack in Fabric**

**Rip Cord**

Roll the rip cord into a compact ball and tie one end to the flap on the rip panel. At a point on the rip cord, about twelve inches from the rip cord hole in the rip panel flap, tie a piece of cotton wrapping twine and secure same to the rip cord support flap, which is immediately above the rip panel. Pull the balloon fabric back into place so that its disc-like shape is restored. Hold balloon fabric up at rip panel so that rip cord ball can be thrown through the valve hole and caused to lodge near the outer edge on the inside of the envelope.

**Valve Cord**

Roll valve cord into a compact ball. Hold one end of cord and throw ball through valve hole in envelope so that it lodges on the inside opposite to the rip cord ball.