

NOMINATION FOR THE MONTGOLFIER DIPLOMA
FOR
A MAJOR CONTRIBUTION TO THE DEVELOPMENT OF THE SPORT OF
BALLOONING IN GENERAL

Tim Cole and Dennis Brown (USA)

In 1990, Tim Cole was passing through South Dakota during the World Gas Balloon Championships. Although he had flown and worked with gas balloons in the past, the high costs involved with the sport prohibited him from fully participating. As he watched from the sidelines, he was deeply inspired and his enthusiasm for the sport grew.

Upon his return home, Cole began research on an alternative to the costly helium gas that was being used. He found that anhydrous ammonia was available at a cost of just 7 percent that of helium. However, with ammonia having approximately half the lift of helium, it would be necessary to develop a lightweight system and employ an envelope of greater volume before ammonia gas flight would be possible. His good friend and partner, Dennis Brown, was equally enthusiastic about the possibilities. The quest had begun, with both men researching materials, fabrics, and rigging that would accommodate ammonia gas.

Cole and Brown soon began building two 600 cubic meter balloons. After just three months of preparation, on January 3, 1991, Brown made the first ammonia gas balloon flight, staying aloft 1½ hours, traveling 48 kilometers, and reaching an altitude of 2,200 meters, using no ballast. A few weeks later, on January 26, Cole flew for 2½ hours, traveling 105 kilometers, and ascending to 3,200 meters, also using no ballast.

The men continued to improve their techniques with each successive flight, and on September 26, 1991, Cole flew for 8 hours, 47 minutes, to set 13 national duration records for ammonia balloons, and the World duration record for all gas balloons in the AA-2 subclass. This flight was deemed one of the ten most memorable flights of 1991 by the National Aero Club of the United States.

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Since these early flights, Cole and Brown have continued to develop special systems and techniques for deflation and pack-up, as well as safety precautions for using ammonia gas. For example, the two discovered that larger deflation ports would be necessary for safe landings without dragging. They continued to modify the ports with each flight, eventually settling on two larger ports, which are used today. Other technological developments arising from the use of ammonia gas include new lighter weight, durable fabric and construction techniques, as well as a lightweight, compact basket.

Cole and Brown have willingly shared their knowledge with all interested pilots, providing them with advice and guidance, and have put together a package of materials for those interested in building and flying their own ammonia systems. Currently there are 22 balloon systems already built or under construction in seven different states, and inquiries have been received from pilots in Belgium, Canada, Chile, Great Britain, Japan, and Spain. There are also more inquiries than ever before from hot air pilots about gas ballooning, due to the less expensive costs for equipment and flights.

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Competitive events have gained momentum in recent years as more pilots become involved in gas ballooning. Pilots entering the gas arena have successfully flown their ammonia systems with helium in these competitions, while improving their flying skills during the year using ammonia.

The following time line shows a steady increase in participation of ammonia balloons at sporting events:

- 1991 • 4 ammonia balloons competed in Tyndall, South Dakota
- 1992 • 5 ammonia balloons competed in Culbertson, Nebraska
- 1993 • 1 ammonia balloon competed in the Gordon Bennett race in Albuquerque, New Mexico, using helium gas
- 1994 • 6 ammonia balloons competed in the qualifying event for the Gordon Bennett in Greeley, Colorado
- 9 ammonia balloons gathered for a day of flying in McCook, Nebraska

Earlier this year, the Balloon Federation of America and its Gas Division approved the use of ammonia balloons in competitions with helium balloons, using the coal gas conversion to determine volume.

Gas pilots have adopted a new enthusiasm for what was—but is no longer—a waning sport. Increased communication among the new and long-time gas pilots concerning new ideas, safety techniques, and gas responsiveness is at an all time high, and the sharing of ideas abounds. This is a very exciting time for gas ballooning!

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The United States is pleased to have the opportunity to nominate Mr. Tim Cole and Mr. Dennis Brown for the Montgolfier Diploma for these major contributions to the development of the sport of Ballooning in general.

Balloon Federation of America

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An Affiliate of the National Aeronautic Association

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The Balloon Federation of America nominates Tim Cole and Dennis Brown to receive the Montgolfier Diploma in the Service to Ballooning category.

Cole and Brown in 1990 and 1991 developed and flew the world's first gas balloon to utilize anhydrous ammonia (NH₃) as its lifting gas. Since that time, the two men have built or assisted in building several balloons utilizing this technology.

On September 26, 1991, Cole flew his 600 cu.m. ammonia balloon for 8 hours, 47 minutes to set 13 ammonia balloon world duration records and the world duration record for all gas balloons in the AA-2 class. This flight was considered one of the top ten flights of the year by the National Aeronautic Association, in all categories and classes of aircraft.

The development of the technology of ammonia ballooning has enabled a far greater number of U.S. pilots to enter the sport of gas ballooning than would have ever been possible with the former restriction to helium as a lifting gas (hydrogen is largely unavailable in the United States). The cost of anhydrous ammonia is approximately just 7 percent of the cost of hydrogen, bringing gas ballooning to within the reach of a large number of balloonists. At present, the great majority of gas balloon flights occurring in the United States are flown with anhydrous ammonia.

Because of this significant contribution to the advancement of gas ballooning technology, we feel that Tim Cole and Dennis Brown would be the most appropriate recipients of the Montgolfier Diploma for Service to Ballooning in the current year.