

Issue No 14 March 2007

Hello People and welcome to spring!

March! A great month for looking forward in a positive way to such things as better weather, daylight hours improving and the collective feeling that the best is just around the corner and yet to come. Things start to shape up with events getting firmed up, anticipation is naturally sky high and generally after the rainy and windy weather of winter the outlook is typically optimistic.

Certainly in terms of the feelings emanating from the manufacturers, the way forward is looking positive and I sense from the big three (Cameron's, Lindstrand and Ultramagic), that news of further sales will be forthcoming shortly with good promise of growth in this sector that crucially seems to being sustainable which can only be good for the sport.



What we all hanker, blue skies and a flyable slot ....bring it on !

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# Ed Speak- By Steve Roake- "February" a tough act to follow!

If for one second I can be indulgent, from an editorial stance February's newsletter represented to me some of our best collective work in the newsletter and in reality March's issue is/was always going to be a "tough act to follow". Simply the depth and scope of the information produced for February from people like Malcolm White / Greg Winker blew me away and I hope you enjoyed reading it as much as I did putting the thing together. March by its nature is a massive month for me .I sit here typing this at 05-45am on the Saturday morning of the

weekend of the first F1 GP in Australia with both of our cars in the top four after qualifying and literally look forward to my first complete weekend off of the new year and yet have achieved most of my stated goals for this time of the year. Winter maintenance work on the balloon trailer is now completed with some aesthetic titivation and powder coating of external cowlings with stainless fixings. Both of my forms of transport have had their annual inspections and taxed for the year ahead with yesterday seeing the first outing of my motorcycle this year (with my 12 year old Yamaha FJ1200), enjoying 45miles of spring sunshine running in new tyres front and back whilst trying to remember how to ride and getting used again to its foibles. In certain ways getting the Hopper out is exactly the same process. A return to basics always seems prudent as the lay off has been pretty extensive (Nov 06 last flight), but also there is a sense of expectation for me since I have taken the time to convert it from Turning vents to swivel and relish the chance to see how the two techniques compare with the subtle differences. Most learned advisers tell me you derive more enjoyment from swivel and in logic terms, the idea of a more efficient envelope performance and crucially less lines internally to get in the way agrees with my sentiments of simplicity whenever possible is the right step forward to enjoying the potential. So then, please all 280 odd of you enjoy this issue, do not compare directly with last months mega offering and remember that we are all time limited in what we can do and within that remit continue to send in to me stuff for inclusion . Many thanks!

## Essential Extra's-

Besides the Weather, light winds and a big high and time for fun nothing needed I guess.

#### Features this month-

<u>Hopper building by Greg Winker</u>- This month Greg gives us specific details of the costing of building his hopper

#### Part 3 – Locating the Parts

Now that I have completed the design, the next step is to prepare a shopping list of all the parts I'm going to need. During the design phase, I've identified most of the components I'm going to use. Now it's time to track them down and purchase them. The design was prepared with a lot of components already in mind. Based on prior experience I knew they would work, I knew where to locate them and I had a basic idea of the prices.

It may surprise you when you see how long the list is. While it is true that fabric and load tape are the basic materials, there are quite a few other bits that I'll need.

This is also a good time to take a look at the cost. Sometimes you can be surprised at how much everything adds up to. If you consider this now, changes can be made to the design to accommodate your budget. In the table below, I have included the components I'll need, the supplier and the actual or estimated cost. If the cost is zero, it's because I already had the part on hand from a previous project.

#### The shopping list

173	yards	Noah Lamport	\$454.02
180	yards	Noah Lamport	472.39
12	yards	Noah Lamport	-
12	yards	Noah Lamport	-
12	yards	Noah Lamport	-
12	yards	Noah Lamport	-
12	yards	Noah Lamport	-
12	yards	Noah Lamport	-
12	yards	Noah Lamport	-
12	yards	Noah Lamport	-
12	yards	Noah Lamport	-
12	yards	Westmark	-
25	yards	Stumpf Balloons	83.89
20	yards	Stumpf Balloons	67.11
	180 12 12 12 12 12 12 12 12 12 12 12 12 25	180 yards 12 yards	180 yards Noah Lamport 12 yards Stumpf Balloons

Nomex - Red Balloon Winker Embroidery N# Fabric -	5 3 3	yards each each	Noah Lamport Dawne Smith scraps	52.48 30.00	
Total Fabric					1,159.89
Load Tape - Type IV 3/4" - Natural Load Tape - Type III 3/4" - Black	65 250	•	Bally Ribbon Mills Bally Ribbon Mills	111.32	
Load Tape - Type IV 1" - Natural	12	yards feet	Bally Ribbon Mills Cameron Balloons US	6.00	
Load Tape - Type III 2" - Natural Total Load Tape	12	ieei	Cameron Banoons US	6.00	117.32
Thread - White - Size 69	1	lbs.	Synthetic Thread Co.	-	
Crown Ring - Red	1	each	SlingRings.com	4.90	
Crown Line - 1/2" Webbing - Red	72	feet	REI	19.44	
Biner on End of Crown Line - Red	1	each	Home Depot	-	
1" Velcro - Red	20	feet	Hook & Loop.com	30.00	
3/4" D-ring - Top Cap	1	each	DJ Associates	1.50	
Stainless steel cable - 3/32"	40		Aircraft Spruce	20.00	
Thimbles - 3/32"	3	each	Aircraft Spruce	1.00	
Copper sleeves - 3/32"	3	each	Aircraft Spruce	1.00	
Red line - 1" tubular webbing	40		REI	-	
1" V-Ring	1	each	DJ Associates	1.75	
Wireless Temp Gauge	1	each	Wireless Alarm	-	
Turning vent lines	120	feet	REI	15.00	
3/4" D-ring - Turning vents	2	each	DJ Associates	2.00	
Stainless steel cable - 1/8"	100		Aircraft Spruce	35.00	
Thimbles - 1/8"	18	each	Aircraft Spruce	5.00	
Copper sleeves - 1/8"	18	each	Aircraft Spruce	5.00	
Shrink Tube - Black - For 1/8" Cable	20	inches		2.00	
Envelope Data Plate + engraving	1	each	PetsMart	9.79	
Quick Links	4	each	Home Depot	8.00	
Envelope Bag	1	each	Aerostar		
Total Other				_	161.38
TOTAL ENVELOPE					1,438.59
BOTTOM END					
Customized 15 gallon propane tank	1	each	BRET	375.00	
Heat tape	1	each	Paul Stumpf	102.68	
Insulating pad	1	each	REI	8.00	
Cordura Fabric - red	3	yds	Westmark	-	
Balloon Winker Embroidery	2	each	Dawne Smith	20.00	
Seat pad	1	each	Home Depot	2.79	
2" Velcro - black	4	feet	Vic Johnson	5.00	
1" tubular webbing - Black	8	ft	REI	4.00	
Stainless steel cable - 1/8"	20	feet	Aircraft Spruce	10.00	
Thimbles - 1/8"	8	each	Aircraft Spruce	2.00	
Copper sleeves - 1/8"	8	each	Aircraft Spruce	2.00	
Shrink Tube - Black - For 1/8" Cable	8	inches	Radio Shack	2.00	
5-Point harness	1	each	eBay	65.00	
Hopper load ring (second hand)	1	each	Lindstrand Balloons	-	

Burner w/ fuel hose (on loan)	1	each	Wiederkehr Balloons	-	
Drop line - 1-1/2" webbing - blue	100	feet	Bally Ribbon Mills	-	
TOTAL BOTTOM END					598.47
Logbook	1	each	Cameron Balloons	-	
Personalized N#	1	each	FAA	10.00	
Certification	1	each	FAA		
					10.00
Grand Total					\$2,047.06

A special note on fabric. Since balloon manufacturers have reputations to protect and warranties to honor, they use "first quality" fabric. In order to save money, homebuilders can sidestep both of these obligations. One way to keep the costs down on a homebuilding project is to use fabric that is sold as "second quality". Seconds regularly run less than 50% of the cost of first quality fabric. Even though the price is less, seconds are not usually rejects with inferior characteristics. In my experience, seconds can be end runs of first quality fabric, or it may be fabric that has the occasional weaving or coating flaws. Typically an entire roll of fabric that has only one or two minor issues is relegated to the seconds bin. As long as you can work around these occasional flaws, you end up with a lot of good quality fabric at not a lot of cost.

If you use seconds, you should plan on encountering sections that you are not going to want to use. I used seconds in my last building project. Out of the required 800 yards of fabric; I probably threw out 10 yards of fabric that had weaving, dying or coating issues. When using seconds, I always order an extra 10% in anticipation of running across some areas that are unusable. Worst case is I have a little extra repair fabric. Overall, the price paid versus the fabric wasted made it a very cost effective alternative. I'm happy with my decision and plan to use seconds on this project too. But your standards may be different than mine. Your wallet might be different too, so this is a very personal decision.

As you can see in the chart, the bulk of the cost is tied up in fabric. I'm sure there are ways of doing this cheaper and I know there are alternate suppliers. But based on my experiences of what works in construction and who are reliable suppliers, these are my choices.

Good Floating!

Greg Winker coming up next – Basic Fabrication

# Phil Dunnington- "Going it alone -A brief history of One Man hot air balloons"

Phil Dunnington is one of life's "been there, seen it, done it" types of people and as the organizer of most of the One Man Meets since they were instigated some 25 years ago, generally when he puts pen to paper, it is from the viewpoint of experience and with a historical accuracy that gives a true view. Recently in a UK magazine called Air Britain Aviation World, Phil chronicled the history one man balloons over the past 25 years from viewpoint, so with his permission (and as it is a cracking read), I have literally re-written it word for word as published. (All jpegs from Mel Kirby with thanks).

Over the past quarter-century a small but determined sector of the hot air balloon fraternity has dedicated itself to the very smallest practicable man(or woman) carrying balloons. To carry even the lightest adult, weighing in at say, 50kgs, you need approximately 15,000cu ft (500cu m) of hot air to lift you off the ground at sea level in average temperatures. This seemingly anti-social form of acrostation, where you can't actually take your crew-person or partner for a flight, does, however have several advantages which make it appealing. Compact size for transportation and ease of operation in limited spaces with minimal crew were the key elements. From the enthusiast's point of view they have mostly been elusive because of their limited pattern of use.

The first significant use of "hoppers" (as I shall refer to them) was in the late 1970's when Colin Prescott of the UKs operator Flying Pictures (then called HABCO/The Hot Air balloon Company), asked Per Lindstrand of Thunder and Colt balloons to make a "minimum" balloon for the Film *Green Ice*, to be shot in Mexico City. Colin invented the name "Cloudhopper" for the ensuing creation and the name has stuck in its abbreviated form. The first three to appear from the Thunder & Colt Factory in 1980 were G-BHKN, G-BHKR and G-BHOJ, all made in anonymous Khaki polyester fabric (which can stand higher temperatures than the more normal nylon). After the

filming(where no markings were worn), they went into store or museums.

In truth, however, the idea was first developed by Gerry Turnbull for use by his daughter Christine in a series of TV ads for "Nimble" bread (which some of our more mature members may recall!), in the late 1960's when O-20 G-AXMD appeared from the Western production line at the RFD-GQ parachute factory in Godalming Surrey.



On the other side of the Atlantic, Don Piccard toyed with the idea and built at least one unregistered balloon, reputed to be a 35,000cu ft

example, which I discovered in storage in California and flew briefly in the Napa Valley during 2002.

One-Person balloons became a peculiarly British preserve for two reasons. Firstly, several countries, including Germany, would not permit certification of balloons without a "basket", whilst in the USA such products were in the "Experimental" category which limited their use for commercial purposes. In the UK, the CAA(Civil Aviation Authority) took a more pragmatic approach and allowed "hoppers" to be certified if built to the recognized standards of BCAR 31. Once the commercial potential was recognized, it became common practice for UK operators, in particular, to buy a small balloon to accompany a special shape or larger conventional shape in order to provide a spectacular alternative if location or weather precluded the latter's operation. To a lesser extent this combination came to be used in mainland Europe too, resulting in the appearance of UK-registered "hoppers" in, amongst others, Germany. Many of these still remain in store.

Another, less frequent, but regular appearance was as a record-breaking device where a world or national record for distance, duration or altitude could be obtained for these smaller volume balloons. Pilots in both Austria and Sweden have adopted Britishbuilt and registered "hoppers" for this purpose. Oscar Lindholm and Gunter Schabus were active in this sphere and, indeed Schabus even extended his interest to hot-air/helium combination "hoppers" in the form of G-BXAJ.



As the proliferation of "hoppers" in commercial use declined in the mid-1990s, so these became available on the "after-market" and thus re-appeared in private hands in the same fashion as some exmilitary trainer aircraft have done. The three Pepsi "hoppers" G-BOLN, "P" and "R", are now with individual pilots after brief initial use in promotional advertising and subsequent storage by the now-defunct Virgin Balloon and Airship Company, whilst more recent examples of short-run contracts have resulted in 2002 model Cameron Z-31 "Benedryl 2"(G-CBLN) and Lindstrand 42A "N-Power" (G-CBLO) both now operating privately around Bristol. Some "hoppers" were less successful. Camerons, in an attempt to produce a cheap and widely-available one-person balloon, built P-20 G-BIBS in 1980.



This four-gore design was so aesthetically unpleasing that it was never shown in public, though I made what I believe was it's first (and only) free flight at Sunningwell, near Oxford in July 1985. It still lies in store at the Cameron factory in Bristol as far as I know.

Western built a single 31 with a tiny basket, G-AZPX, and having been sold to an eccentric Scottish Landowner in the early 1970's, this re-surfaced in the 1980's and now appears occasionally at one-man and museum events. Similarly built by a small manufacturer, Airtour, was G-BLVC, constructed by Bob Howes at Bob Pooley's facility on the perimeter at Cranfield.



There have been numerous individual attempts at assembling the "hardware" of a seat or basket for these balloons, but homebuilding of envelopes has been much rarer, G-BRBT, Trotter Ax3-20, was assembled by Bob Trotter in a garage in Temple Cloud, near Bristol, but never free-flew because of inadequacies of the deflation system.

It got as far as a test inflation at Churchill Somerset in the summer of 1989, Meanwhile, more recently, Zebedee Balloon Service owner(and Air Britain member), Pete Bish built a 31 near Hungerford based on the standard Cameron Viva design, G-BXIT, which was first inflated (by yours truly), at his 50<sup>th</sup> birthday party! Sadly, nowadays EASA certification rules make it virtually impossible to homebuild a balloon of any sort.

Examples of "hoppers" registered outside the UK are few for the reasons already explained, but some have appeared in Belgium, France and Switzerland including a pair of early T&C "hoppers" flown for a French TV series called "Ushuaia" in unlikely locations such as Tahiti. Thunder & Colt 21A, HB-BLE, lived in Prague until its expiry in 1985, but has now been replaced by OK-9006 (ex G-LUGG).

One thing which is certain is that these small balloons are survivors. Because they are little used they rarely wear out like their bigger brethren. Depending on how you classify them(I broadly include any hot-air balloon with a volume of 42,000 cu ft or less) over 100 have been built since 1970. Every now and then a manufacturer or operator clears out their store and suddenly an example is resurrected, sometimes after decades. A Cameron O-31 C/N 241, built in the mid-1970's, remained in store in Italy until eventually aspiring to become G-NOMO in 2000.



My wife's own T&C 17, G-HEXE lay for ten years unused since manufacture in Oswestry after Camerons took over Thunder & Colt, so it was pristine when first flown in Bath in 2004. It is also heartening to see that a number are in the care of enthusiasts, many of them Air Britain members, because second hand purchase prices and maintenance are within their grasp and storage is easy.

Phil Dunnington.

#### Peter Gray

In our second featured photographer spot, this month we focus on Peter Gray of Balloon Meet Support Services (BMSS), who is probably better known to you all as the Editor of the annual UK/Eire Balloon register and the administrative provider at balloon festivals such as Bristol where he correlates the flying data and also promotes his own events. Peter is also a keen photographer and in his vast collection of prints has naturally a massed a dossier of hopper photographs.

Naturally Peter, who has been around balloons since the early 80's is available for sales of is work should you be interested and can be contacted via email at <a href="mailto:Peter@bmss.freeserve.co.uk">Peter@bmss.freeserve.co.uk</a>.

Peter seems to have the foremost collection of Thunder and Colt hopper photographs that I have ever come across, many date from earlier Chateau D'oex festivals and whilst I cannot pin down the exact dates of these, clearly from the registration dates of the balloons concerned we can tell that they are Post 1993 vintage. The first jpeg is of Colt 42A G-BUSU which I believe is now in Australia, looking like it has a Duo chariot beneath it. Unusual for a demonstrator balloon, particularly in hopper guise to be so big, the jpeg emphasizes the lovely vibrant colours that were trademark of Thunder and Colt demonstrators.



Any more information on the above balloon gratefully received Which is supposedly now registered as VH-JLB?



Another Demo Colt this time a 21A , which has ended up in Austria as OE-ZRB.

Final offering from Peter, taken from a vast array of example shots is this one of the Servo Connector hopper. Built by Cameron balloons in 1993 the Servo Special shape is one of the rarer hoppers as not many Shapes have been produced (only 3 to my knowledge) and had a capacity of 30,000cu ft.



I contacted Phil Hossack of PSH Skypower who have looked after this client for years for some background information on G-OSVO, but unfortunately received no response.

Mike Colliers Article on building a Hopper

This was written in Sport Aviation magazine and copied with thanks from Mikes website at <a href="https://www.ultralightballoons.com">www.ultralightballoons.com</a>

Something Different- The design and construction of an Ultralight cloudhopper.

My homebuilt hot-air balloon project began back in the early 1980's when I began work as an aerospace engineer at Grand Prairie Texas. Typical Hot air balloons that most people are familiar with have envelope volumes between 50,000 and 90,000 cubic feet and are designed to carry a pilot, passengers and enough fuel to fly for an hour or two. These balloons are heavy and require ground crews to help inflation, chase and recovery. Since I didn't have a balloon rating, and didn't like the idea of having to round up a large crew every time I wanted to fly, I decided to build a single-seat ultralight balloon (commonly referred to as a cloudhopper). My first task was to design a balloon to meet the ultralight requirements. I began with the design of an envelope that would allow me to meet the 155 pound empty weight requirement and also be capable of lifting a gross weight of 400 pounds.

I decided to write a computer program to calculate a natural-shape envelope that would provide the desired 400 pounds of lift. A natural shaped envelope is simply a shape that results in zero horizontal stress in the envelope material. With this shape, the outward force acting on the envelope due to the higher pressure inside the balloon is constrained entirely by the vertical tension in the envelope material acting along the vertical curvature of the balloon. My final design of the balloon had a volume of 22,000 cu ft with an 8 foot diameter mouth. Now that the envelope was designed, the sewing began. With about a  $\frac{1}{4}$  mile of seams and another  $\frac{1}{4}$  mile of load tapes to be sewn, a high-

quality, industrial double-needle sewing machine is highly recommended.



The sewing process went surprisingly fast, and I was able to complete the envelope in about one month. Ripstop Nylon, coated for zero porosity, and weighing 1.8 ounces per square yard, was used for the entire envelope including the 8-foot diameter parachute top. Nomex was used for the lower portion of the

envelope at the mouth to help prevent damage from the burner that can occur during inflation. The entire envelope, including suspension cables, weighed in at 67 pounds.



It was now time to build the bottom end. Many different designs were considered, but I was never able to settle on one. This is where further progress ended until work resumed in June 2006. While visiting two longtime friends of mine, Ed Young and Andy Lauer, the decision was made to put our heads together and complete the project. Ed is a pilot and both are airframe and

power plant (A&P) mechanics. Ed volunteered to design the bottom end and buy an inflation fan and Flytech 3040. The Flytech 3040 is a hand-held flight instrument used to display envelope temperature, altitude, and rate of climb. I purchase a used Cameron Mark IV burner, Worthington 10-gallon propane tank, and all the necessary vapour and Liquid valves for the fuel system. Ed came up with a design that all three of us liked, and after a few weekends working together, the bottom end was completed. The entire bottom end, including empty fuel tank, weighed in at 82 pounds, resulting in a total weight of 149 pounds. The first tethered flight occurred in August 2006, and this thing is a lot of fun to fly. The small size of this balloon results in it being highly responsive to blasts from the 12 million BTU/Hour propane burner. Altitude can be controlled to within 1-foot tolerance if needed. Dragging your feet in treetops is hard to resist. The sense of accomplishment you get when you successfully fly something that you designed and built by yourself is, by itself, worth the time and effort you put into a project like this. For those looking for a project that can be completed with minimum amount of time and money, an ultralight Cloudhopper may be the answer if you are looking for something different.

Mike Collier.

## Homebuilding Section

# Manufacturer News / Updates / Event News

Another small but significant step forward was achieved this month with some editorial coverage of our activities in the UK

with a magazine called LOOP. This magazine is freely distributed to all active pilots (of any variety) in the UK and is also downloadable at <a href="www.loop.aero.com">www.loop.aero.com</a> and will appeal to any of you who multi type fly. The main reason it is seen by me as a significant step forward for us is this. As fixed wing flying gets ever increasingly more expensive there will be a natural migration to cheaper forms of aerial activity. We are handily placed to secure some of those disheartened pilots who will naturally see hopping as a cheap thrill alternative to their highly sanitized pursuits. Even the manufacturers have recognized the effort with a recent communication from one thanking us for pushing the product to a new segment of the potential clientele.



First impressions of what the Kavanagh Skywalker Hopper range will look like were received this month. Hopefully more details and prospective prices will follow soon from Australia.

In another exiting month of whirlwind negotiating, it looks as if we have been instrumental in helping Richard Sargeant from Switzerland sell his Lindstrand 35A hopper. Richard contacted me to see if I could help put a buyer together with him and following on from last months sale of G-CDIW, I contacted a few Of the members who narrowly missed out last time on a bargain. Hopefully by the time you read this, HB-QIV will be on its way to a new home proving once again this is the place to buy and sell your hopper. Once again the forum was the first place for selling information.

#### **Event News**

With the Solo Meet now imminent, the next big events are for us Europeans, Metz and The EUROHOP. Metz is self explanatory to anyone who lives this side of the pond. Probably Europe's largest gathering of balloons and for this year now officially including hoppers. Hope to see some of you all there with your kit and expecting to do a "mass" launch one morning (yet to be decided when).

On the other hand work has continued with the EUROHOP with Barbara Reed working very hard to secure us a great reception. We now have an itinerary of events for those who choose to sign up to the event, some free gas is included, meals for both pilot's and crew and a full weeks FUN!!!

Dates are Sept 1<sup>st</sup> -7<sup>th</sup> based in Gauvigny France.

Entry Fees per balloon/pilot are a miserly £35-00 to cover costs. Accommodation is available locally and camping is also available on the local airfield where we have use of facilities.

BUT NOW WE NEED YOU TO TELL US IF YOU ARE COMING!!!

Enquiries to me <u>Steve.roake@ntlworld.com</u> marked EUROHOP please or ring me after 7pm weekdays UK time 0044 1276 516125

<u>Gallery Pages-</u>Editors choice of New and Older choice hoppers and Duo chariots



Sent in by recent new member G-DUMP belongs to Paul Bailey and is a Customcraft A-25.

Also sent to me via both Neil Ivison (and Graham Bell who confirms that two ex British lindstrand hoppers were present when he attended with his duo chariot) was this stunning uniquely liveried Lindstrand 31A G-BVZB which dates from 1995. C/n 187, was seen at a recent festival held at Torreon in Mexico. Graham has agreed to supply us with further jpegs and his thoughts on flying over the pyramids here for next month's issue.



Still looking remarkably good after all these years, Graham tells me the bottom end was/is decidedly non standard! The other

balloon present was G-BZKZ ex Demo balloon .Also present and flying cluster balloons was John Ninomiya.

#### For Sale / Wanted Section -

Nothing new to report this month on the For Sale side, Please remember this works both ways, should you have a specific need contact me to get it listed and we shall see what we can do for you.

#### Next Issue

In the next edition of the newsletter, I will be hopefully looking into the following items.

- More from Greg Winker on his Homebuilt hopper
- "Dinger in Mexico" .Graham Bell takes his duo to Mexico
- Weather permitting , reports from the SOLO MEET

## And finally



Sent in by another new member, Giovanni Aimo who joins us from Mondovi Italy, a shot of hopper time in Italy .Giovanni is probably well known to most of you who visit him for winter flying, Giovanni becomes our 289<sup>th</sup> member and welcome to each and everyone of our newcomers.

Fly Safe everyone, Membership stands at 289 plus (mid March 2007).

Soft landings and happy flying Steve

All articles for inclusion in future issues, please forward to the editor at <a href="mailto:Information@cloudhoppers.org">Information@cloudhoppers.org</a> and all feedback good, bad or indifferent will be welcome. In future we might even run a letters/email section. Views aired by contributors may not be those of the editor.

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