



AMERICAN FIREWORKS NEWS

Now in our 36th year

HE WHO HATH ONCE SMELT THE SMOKE IS NE'ER AGAIN FREE

No. 407

August, 2015

STROBING DRAGON EGGS SPARKLERS, ETC.

by Ian von Maltitz

History does have a habit of repeating itself. A year ago I had to make the same decision: carry on with my planned schedule of AFN articles or report on my July 4th experiences? Again I have decided on the latter. So my apologies to my AFN readers who were looking forward to an article on alcohol-powered pyro or more information on Teflon®-coated dragon eggs.

Well at least AFN readers will get some fresh information on dragon eggs, although these are not the Teflon® coated kind. Next month I plan to have another article on alcohol-powered pyro. This will happen if nothing else intervenes.

Recently I discovered strobe fuse and ordered some specifically to experiment with dragon eggs sparklers. I have had great success in the past making dragon eggs sparklers, achieved by coating some slow-burning flying fish fuse with dragon eggs composition. Strobe appeared to be a good way to enhance the effects.

Strobe fuse is currently made only in two colors – green and silver. I purchased just the green strobe, deciding that silver did not contrast enough with the silver sparks from the dragon eggs. When the fuse arrived in the mail I lit a short length. The green flashes were good but not what I would describe as a true strobe. Nevertheless I reckoned it to be good enough for dragon eggs sparklers enhanced with a bit of green. But it took quite a while before I actually got to make some strobing dragon

eggs sparklers. This happened a few days before the 4th. I made ten of the beasts, fired one of them for test purposes, and kept the rest for that most wonderful night of the year that we all look forward to with eager anticipation.

Further details on the strobing dragon eggs sparklers are given at the end of this article. The rest describes some of my Independence Day experiences.

A year ago I described how wonderful it was to get away from Colorado Springs with its draconian laws on consumer fireworks. I decided to do the same again but needed to get some more fireworks. Just beyond the city/county line and just next door to a strip joint was a fireworks tent. It seems like the powers that be prefer to restrict fireworks and other vices to outside of city limits, similar to restrictions on prostitution in Las Vegas.

Naturally fireworks on the 4th take me back to fireworks on the 5th (of November) when we celebrated Guy Fawkes Day. Then it was tough being a kid waiting for dusk for what seemed like an eternity. I'm quite a bit older now and have a lot more patience, but I still empathize with the kids. So I decided to make the wait less painful for them by supplying some daylight fireworks in the form of colored smokes.

I fired a white "camouflage smoke" for two of my step-grandchildren, followed by a few colored smokes. Seeing colored smoke was a brand new
Continued on page 3

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This publication may contain depictions and descriptions of fireworks. The information is based on the experience of the author(s) using specific tools and ingredients under specific conditions not necessarily described in the article. No warranties are made. Readers are cautioned that they must form their own opinion as to the application of anything found in this publication.

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experience for them and quite a delight. Shortly before it got dark I fired a few more colored smokes for an audience of both adults and children. Again the reaction was a mixture of surprise and delight. This caused me to reflect on colored smoke fireworks.

I am no stranger to colored smoke. One of my most vivid memories is the beautiful smoke from a smoke grenade used to mark our position to avoid friendly fire from the helicopter gunships hovering overhead. That was 36 years ago and the memory is still vivid. Somehow memories get more firmly implanted in one's brain when one has just survived some too-close-for-comfort AK47 rounds and the adrenaline is still pumping through one's system. And everything looks beautiful after a just-cheated-death experience.

Colored smoke still looks beautiful to me and I am somewhat saddened that it has not gained more attention in amateur pyrotechnic circles. Certainly it has taken time to catch on in both professional and consumer fireworks but I have a distinct perception that we amateurs are lagging behind. I have thought about this a lot and believe I gained some insight to the problems and challenges of colored smoke when I started looking at it from a professional perspective.

I work in the model rocket industry where many have over the decades dreamed about, drooled over, pondered, insisted on, and demanded colored smoke. Still no colored smoke. Why? The answers are rather complicated, largely from a technical perspective. Colored smoke is a challenge to produce, especially within the constraints of the model rocket environment. But it can be done. I know because I have proven that it can. The challenges were a lot more than I had bargained for, yet I overcame them one by one.

So I'm confident that more advanced smoke effects, such as smoke stars, are indeed possible. I've heard a rumor that the Chinese have already got them on the market. Whether that is true or not is irrelevant in my mind. I believe they are within the reach of amateur pyros.

Back to strobing dragon eggs sparklers. They are very easy to make. Although I have written a series of articles on dragon eggs sparklers, everything needed to make the strobing kind is described here. One does not have to refer to my previous articles but if you enjoy this one you will probably enjoy the others.

All one needs in the way of materials for this project is some strobe fuse, some dragon eggs mix,

and some acetone or similar solvent such as MEK. My dragon eggs mix is a mixture of bismuth trioxide and -325 mesh magnesium/aluminum, bound with nitrocellulose lacquer. I use scrap leftovers of dragon eggs mix. This varies considerably in the bismuth trioxide and magnesium/aluminum ratio yet still works very well.

I cut my strobe fuse into eight-inch lengths and painted all but one inch of each length with my dragon eggs solution. This was quite a lot thinner than the putty-like paste one typically aims for when making dragon eggs. I gave each length of strobe fuse just one coat. I thought about more coats but left it at just one after testing. The flashing and banging effect was more than adequate. The thin coat of mix requires merely two to three hours of drying before use. The fuse is lit at the unpainted end.

These sparklers are not hold-in-the-hand types, not even for adults. Light them and retreat to a safe distance. IvM

GREEN FLASH

by John Steinberg

A few years ago, while puttering in the shop of the purveyor of "No Name" chemicals, the question was posed, "Can you make a flash powder that produces a good color?" Never one to turn down a challenge and eager to play with someone else's supplies, I accepted the challenge. As we always tell each other to stay green, green flash it was!

After several tries, the following seemed to be the best color while still making a snappy report.

In parts by weight:

Barium nitrate 21

Potassium perchlorate 8

Magnesium, 200 mesh 12.5

Parlon 8.5

This is an easy mixture to prepare. Just dry mix the ingredients by "diapering". That means rolling the mixture back and forth on a sheet of Kraft paper as you lift and lower the corners. I always spray Static Guard on the paper and containers before starting. While this mix does not have the energy of standard aluminum flash mixtures, it should nevertheless be treated with the respect all flash mixtures command.

A word of caution: This mix is BRIGHT! I wouldn't suggest staring at a test firing at night with your pupils fully dilated. Trust me on this! JS

[Previously appeared in the PGI Bulletin. Reprinted by author's permission.]



BACK IN THE 30s AND 40s there was a radio (yeh, well before TV) commentator named **H. V. Kaltenborn** whose signature opening to every evening's broadcast began: "Ah, there's good news tonight!" That's what we've got for you this month.

GOOD NEWS #1 is for our rocket guys. One of the things that many rocket makers agree on is that tubes produced by **New England Paper Tube** make the best rockets. Well, NEP has seen some bad days for a few years and the older folks running it just gave up and closed the operations. Fortunately for all, an enterprising chap who worked there prior to closing bought NEP and is once again providing the highest quality paper tubes his customers demand. These great tubes aren't cheap but if you gotta have the best... The usual contact info still works.

GOOD NEWS #2 is that Delcor still lives! For many, many years, the folks who do electrical firing have used shooting boxes, slats and cables produced by **Sam Bases** and his **Delcor Industries**, in Yonkers, NY. Sam loved fireworks from his childhood and after he earned his Masters in Electrical Engineering Sam turned his attention to designing and producing a quality line of firing apparatus for us. He passed on some of his knowledge to AFN readers by writing a 2-year series of articles on the subject of electrical firing. Sam died last year and users of his equipment wondered what would become of Delcor. Now here's the good news. **Andrew Collingham**, mentored by Sam for some years, is the new president of Delcor Industries, and is still producing the Delcor line and servicing equipment. Nothing has changed except it's Andrew instead of Sam. Email: delcor11@hotmail.com or visit the website: www.delcorind.com

GOOD NEWS #3: It's turning out to be a terrific season for the **U.S. fireworks trade!** Early reports from the consumer fireworks guys are reporting outstanding sales and bare shelves on July 5th! Likewise, the display operators are seeing more shows and higher budgets. The supplies from China came in on time and there were very few complaints of quality problems, except some shells that caused some concern. Now everybody is looking at mid-September for their yearly trip to China.

GOOD NEWS #4: A tip o' the chapeau and a hearty handclasp to **Richard Nederostek** for his nice donation to the AFN cause. *Salute!*

Jack Drewes

NATIONAL FIREWORKS PRESERVATION ASSOCIATION

The board of directors of the National Fireworks Association, spearheaded by treasurer Bob Kellner (Kellner's Fireworks) has formed a non-profit to act as a nexus in obtaining the funding necessary for an on-going lobbying effort among the alphabets in D.C.

The new organization has been named the *National Fireworks Preservation Association*. It was incorporated as a non-profit in May and has already become operational by hiring lobbyist Mark Anderson, a veteran Washington denizen.

The present political situation is dangerous for the fragile fireworks trade. With more states opening up to consumer use, the picture shifts to D.C. where the restive federal agencies, perhaps sensing a radical change coming in 2017, are producing a flood of regulations, some of which can materially hurt the fireworks trade. One instance is the DOT whose intricate rules absurdly apply to the highly seasonal and tiny fireworks trade. Their weird insurance requirements bear little resemblance to reality, especially when compared to other risky industries. And then there is the CPSC with their unfair and unreproducible 'calibrated ear' requirement. Perhaps even worse is the obvious fact that corporate memory among CPSC staffers apparently no longer includes a history of their involvement in fireworks. Obviously, the hard earned agreements of the past are being revisited by their staffers and there is no guarantee of which direction the new management will go.

It's time for the industry to speak with one voice, at least as much as possible. Not one of our established organizations can afford a sustained lobbying effort. Certainly NFA can't do it, and the APA alone is limited by financial reality. Hopefully, the National Fireworks Preservation Association can act as a management tool to gather the funding and direct the effort. Funding is, as always, the key. Funding must come from the organizations and, as Bob Kellner pointed out, donations from individuals and companies are not solicited.

The plan is to introduce the concept to the attendees at the NFA EXPO in Kingsport, Tennessee during the week of September 8 - 12. The threats on the federal level are real and dangerous to our survival. Tradesmen must support this new effort through the existing organizations. ✨



THE ANONYMOUS PYROTECHNICIAN SAYS...

It all began with the strange case of Paulie dropping a steel mortar on his toes. It was strange because in those days we used a lot of steel mortars and us grunts knew how to handle them without undue fatigue and accidents. But there is always the unexpected.



Through the 50s and 60s, and even into the early 70s, personal protective equipment was more than rare in our little pyro world. Those were still the days when you tied a bandana around your nose and mouth when you were doing very dusty or perhaps toxic operations. And although the boss encouraged us to wear steel-toed shoes, he did not provide them. In reality, wages being what they were then, buying a pair was unlikely.

Well, it wasn't all that bad. You could get rubber gloves from Mrs. Boss if you promised to return them, and leather aprons, when appropriate, (idea brought over from the old country), so we had a few available too. But no steel-toed shoes, which sets up the picture for Paulie and the pipe.

It was a routine display but it was a big show for one of our favorite sponsors and it was an all-turn-out affair. It was routine, but also bigger than his usual annual show because the sponsor was publicly celebrating his 65th birthday and he had loaded the display with more than the usual number of set pieces. So here were me and Paulie and Guido and the uncles and a couple of cousins. Even the boss and Mrs. showed up, dressed to the nines with suit and tie and a fancy hat on the Mrs.

Set up was a two-day affair and the truck, when we could get it started, had to make several trips to bring in all the set pieces and gear. Those were the days when the AHJ required ALL mortars to be dug in, and angled firing was discouraged so one of our most important tools was the good old post hole digger. The uncles were masters of that tool and between them they could get the big holes dug in minutes while the rest of us were digging trenches.

Getting the pipes in, setting up the candle batteries and mines were all routine and then everything was covered with that moldy old canvas so we could attend to the set pieces. It was impractical to cover wheels, Saxons and lancework after they were erected so we had to watch the weather and time the arrival of the truck. But it was routine and went well. In fact, everything went well except for the weather.

It had rained a little overnight and when we arrived at the site the next morning everything was dripping wet. Nothing improved during the day. It was heavily overcast and the humidity stayed very high all day. By show time the dew point was dangerously close but the announcement salutes went off perfectly and we were ready. The sponsor wanted a gigantic WELCOME piece to open the show and, following tradition, he and his wife touched off the leader with a red fusee. The leader caught fire. Usually the sponsor and wife would already be ducking and moving away as the piece would explode into life. Not this time.

The quickmatch sputtered throughout the piece and all lances lit but the effect was not the expected **BVAAP** as the QM burst into flame. It was more like a leisurely flame advancement through the piece. "*Che diavolo?*", one of the cousins hollered and that set the tone for the rest of the show.

The shells were flawless, since it was some of our best material, and the team worked as only an experienced crew of reloaders could: one uncle shooting, one uncle loading and three young bucks feeding from the ready box.

The candle batteries and mines were perfect and the crowd audibly approved. But whenever we fired a set piece the result was sluggish and unexpectedly, well, amateurish. The quickmatch seemed faulty. In fact, some of the lances did not light, which was especially embarrassing on the gigantic lance piece that said

CONGRATULATIONS PASQUALE
ON YOUR 65TH BIRTHDAY

along with a portrait of the gent. The lance in the portrait didn't completely light and one eye was missing, along with half his ear.

And so the show proceeded, with all the aerials working perfectly and none of the set pieces and lancework working well at all. By this time the boss had thrown his suit jacket on the ground and was pulling at the collar around his neck, while Mrs. Boss had gone back to the car and was sitting in the dark with her face turned away.

Meanwhile, the crew was exhausted. The dew point had crashed in and everything was dripping wet, including us. Fog was threatening to set in and we could see some of the shells beginning to break inside the clouds, which were getting lower as we watched.

Disaster was a real threat so we continued the aerials and decided not to light some of the set pieces. Anybody care to guess what went wrong and how Paulie dropping the steel mortar on his toes was the catalyst for this mess? AP

TINY TUBE TRICKS

by **Lloyd Scott Oglesby**

When using tiny brass tubes to toss fireworks effects a few meters into the air it is best that part of any paper tube intended to produce a pop extend beyond the muzzle of the tiny tube. This handles the possible problem of overpressure ruining the tiny tube by providing enough venting of the pressure if the material that closes off the paper tube is external to the brass tube. In that case the frustration of having partly shredded layers of paper still in the tube is about the worst that can occur as those layers of paper reinforce the strength of the little brass tube well enough.

To provide small firecrackers a system of reliable ignition and reliably enough delay to assure they all clear the bore if it was remembered to supply lift, a simple, fast and easy modification of toy firecrackers is all that is required. Unwrap a string of crackers, lay it on a smooth surface, slice away the braid of fuses along the crackers. Then smear a paste of powder on the fuse end of the crackers, pressing that paste well into the depression around the fuse by cramming it down on a layer of wet powder paste. Apply a little more of the powder paste to build a rounded lump of powder paste and press that into dry powder, preferably grain or granulated comp. Using grain for that layer will usually toss the cracker a few inches out of the tube, even if you forgot the lift, and that avoids the frustration of having to clean out crammed in paper shreds.

The timing of the pop is a little irregular because the fuses are not uniformly long inside the folds of paper that close up the fuse end of the tube of paper. If it is desired that the crackers fall to ground level before they pop, use crudely mixed, not well-ground, ingredients and wheat paste or corn starch as binder, and use quite a bit of binder. Heap on quite a thick blob of the paste.

Bursts in air require a thinner layer of faster burning mix. Naturally, the opportunity to improve these with, for instance, spherical titanium fines of other spark effects ingredients makes them more fun at night.

Far better results are easily achieved by making your own special purpose crackers. They can be so precisely timed that control of burst altitude to about a fraction of a meter is possible.

Stainless steel or brass rod about 3/16" (3½ to 4mm) diameter, quarter sheets of writing paper, or if your skills at rolling are well enough, half sheets, but the tubes must be very uniform in diameter. Starch paste will work but these are thin walled tubes and really need more strength if a good pop is to be produced, so white glue is easier to work with.

Make a small star pump-like tool for forming 3mm x 3mm cylindrical forms of the delay compositions.

Those little pill-like chunks of composition should be very well pressed so the weight of mixture in each is as uniform from one to the next as possible. Almost any mix that will light and keep burning will work fine so get your creativity going and experiment. Three or four or some small number of these small pills are required to build the exact length of column of delay required, and at a minimum three are used to assure that any error in measurement of the amount of comp has a high probability of canceling the error in the same measurement in the next. It is inevitable that some will have slightly more or less of the comp, so using several small amounts, each as carefully measured as practical, the actual error is reduced and nicely precise results are produced. A weight on the rod is used to ram each tightly.

When the dried tubes are cut to length they should be pressed a few mm. into a small mold that holds the tube for ramming. It is desirable to have a depression molded into the exposed end of the delay powder; it is fun to deliberately make that non-symmetrical so the effects wander about in spirals, etc. Getting the little tubes to flip end for end at high speed greatly slows them and reduces the altitude at the pop. It takes a surprisingly small difference in the shape of the face of the mold to produce that.

Make a variety of the little molds and try with several types of composition and soon you will have a simple repertoire of effects. The molds should have an external collet that keeps the paper tube from spreading, and the small indentation-forming tool should tightly fit the interior of the paper tube. Tapering of both will make it easy to start the empty paper tube, making the work faster. Soldering up suitable molds from brass tube and rod is simple if you use a short piece of a paper tube rolled with one or two fewer wraps as a holder and positioning guide.

The ramming tools are quite simple. One is almost flat on both ends and the other produces a small indentation in the powder, preferably off center as that makes a better pop in small diameter work. Titanium can be painted inside the tube before it is loaded with the burst and that should be very fast mix, with particle sizes of oxidizer less than one micron, and very fast aluminum and very finely ground additives, if any.

The closure of the tube is critical and needs glue of some sort, gelatin with starch-rolled tubes, or white glue diluted a bit if the tubes had been rolled with that. They will be noticeably better.

Now, how many variations can you come up with that look nice and work well? Yes, more than enough to make a nice variety, and not every one of the little rammed in, no binder star-like pills has to be the same mix. Anything fairly safe to ram can be used. Lots of variation and all fun. LSO

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THE GOOD OLD DAYS

by Donald J. Haarmann

One of Them Used a Roman Candle to Remove an Objectionable Flag.

Rivalry between two stationers in Brooklyn led to a bombardment with Roman candles on Gates Avenue on the Fourth. The stationers are A. S. Phillips and Thomas Ormsby of 701 and 703 Gates Avenue, respectively. As next-door neighbors they are in fierce competition, and never speak as they pass by. Both obtained permits to sell fireworks on the Fourth, and their rivalry became more intense than ever.

Phillips succeeded in making his shop more noticeable to hesitating customers by hanging out a number of flags. This proceeding was not welcome to Ormsby, who claimed that the flags obstructed the view of his shop. In the afternoon, diplomatic relations were suspended and hostilities began.

The first notice of the bombardment received by Phillips was when a bolt from a Roman candle went whizzing through one of the objectionable flags. The startled stationer rushed out of his entrenchments, and, according to his story, saw the enemy in a commanding position, with a Roman candle in his hand aimed at the flags. Phillips's flag was on fire, and he had a hard time extinguishing the flames. He then went in search of a neutral power, in the shape of a policeman, whose friendly offices resulted in the bringing about an armistice. Ormsby denies that he was the belligerent, and, says he was merely indulging in target practice. Phillips finally lowered his colors from the awning, and there was thereafter peace.

July 6, 1898
The New York Times

ROCKET ENHANCEMENT TIP

The next time you're shooting a fair sized rocket, pull out the visco fuse and substitute a piece of blackmatch about a foot long. Make holes with your knife about every few inches and then stick the fuse of a firecracker in each hole. When it is lit, all you will see is BANG - BANG - BANG - WHOOSH! Nobody will guess how you did it.

Anon Girl Pyro
Age 13

HANDY DANDY DEVICE

by Big Bruce

No pyro home should be without this: a 2-ft. long, 2" i.d. steel pipe with one end capped.

Use it to launch festival balls. You can replace that crummy fuse they supply with a 2" piece of good visco. Just light and drop down the pipe. The longer length will compensate for the amount of play between the 1½" i.d. of the festival ball and the pipe.

Also, shoot sky rockets and bottle rockets with it. Place end of stick in mouth of pipe, light fuse and drop.

Also, safety holder for Roman candles. No matter how lousy the quality, I doubt that any 1.4 Roman candle is capable of bursting a 2" steel pipe.

Finally, home defense device, useful in area controlled by anti-gunners. Use to wrap around the head of riff-raff found skulking around your basement. BB





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MYSTERY PICTURE OF THE MONTH

If possible, we try to include a PGI convention group photo in the AFN August issue.

We don't have a photo from 2005, 1995 or 1985 but we did find this gem in the archives. We don't know where it was taken and what was the occasion. Anybody recognize it? If you do, please let us know by email at afn@fireworksnews.com



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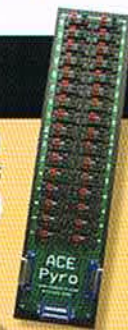
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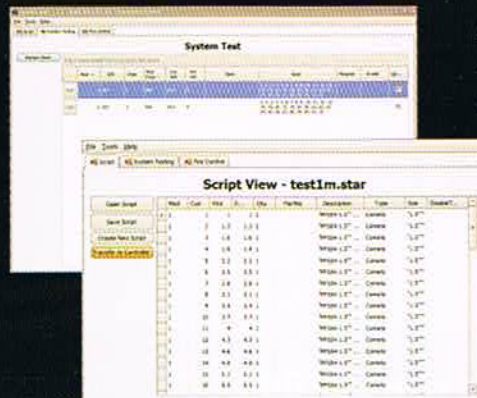
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