

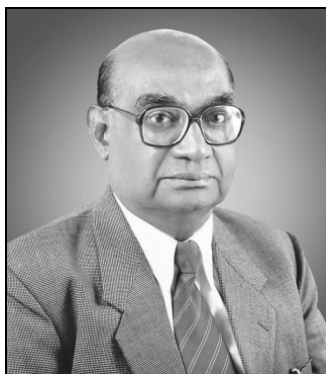
HISTORY OF THE FIREWORKS INDUSTRY IN INDIA

by A. Chelladhurai

Mr.A.Chelladurai (photo), general director of Standard Fireworks Ltd., India passed away on 15th August 2001.

He was a noted pyrotechnist who contributed much to the Indian fireworks industry for more than 50 years.

Mr.Chelladhurai contributed two articles to the EPAN, both depicting the Indian fireworks culture. As a tribute to Mr. Chelladhurai and the Indian firework industry- and culture the articles are reprinted on these webpages.



Introduction

Mr. Chelladhurai is General Director of "Standard" Fireworks Ltd. From Sivakasi, India. The establishment of this fireworks company lead to a number of different

factories being formed, among which is a paper factory, and the Mepeco company who specialize in metal powders, which are widely exported to many countries.

FIRE has been the most important factor in the development, even the survival, of the human race. It has also been the most important stimulus to the development of man's inventive capacity. We cannot but marvel at the fact that fire is necessary for almost every operation. Fire is an immeasurable, uncontrollable element, concerning which, it is hard to say whether it is destructive whether it consumes more or produces more.

We do not know when man achieved the art of fire-making. It seems likely that the art of pyrotechny or fireworks owes its inception to fire and salt. It is possible that a quantity of saltpeter fell by chance into the embers of a cooking fire to inspire the first experiments in practical pyrotechny. The embers would glow, sputter and sparkle -obviously, saltpeter would assist combustion. Later, accidental ignition of a quantity of this may well have been responsible for how fireworks were born!

Fireworks for religious display purposes are traditionally ascribed to the Chinese and the Indians. China developed this to a great extent over the centuries to sway the world with its monopoly. The Chinese developed it as an art, and then exported this invention to various countries for religious, festive and victory celebrations.

In India, however, the adoption of fireworks making was restricted to only few items made of gun powder and iron borings. The present day chemicals such as potassium chlorate, barium and strontium nitrate, aluminium and magnesium powder had not then been discovered. India restricted its manufacture to making rockets and high blast crackers with gunpowder, and Flower Pots, with gunpowder and iron filings only. Even today, Bengal venerates her discovery of the fascinating Flower Pots (Tubris) by holding street to street competitions. After the gradual appearance of chlorates, nitrates, and metal powders, the firework makers improved their production, progressively adding these elements to obtain colour, brilliance, flash, sound and special effects. In the early days the use of these new elements, with imported chlorates, nitrates, aluminium and magnesium, was restricted only to making large types of fireworks for festive and religious occasions. Subsequently, smaller items such as rockets, mud Flower Pots and Bengal Lights appeared on the market for

family consumption. Let us call these 'Small Fireworks' in comparison with Display Fireworks.

Bengal showed more interest in the manufacture of both Display Fireworks and Small Fireworks, sometimes restricted by controls and bans due to the so called anarchist activities. With the availability of chemicals and metals, unloaded through Calcutta Port from European countries, Bengal took its first serious steps, and today the word "Bengal Lights owes its origin to Bengal just as Chinese Cracker does to China. However, there is a reference in the issue of "RANI" Weekly dated 12.12.1982 that there are old manuscript records in Tamil, that show formulations of fireworks. They reads as follows:

"சட்டுச் சவகியம் வெடி-மத்தாப்பு"

வெடிகள், பாணக்கை, மத்தாப்புகள் செய்தல் முறைமை விவரம்
 தமிழ் சட்டுச் சவடி ஒரு செக்கனியம் கீழ்த்தொழில் வெடிகள்
 தர வகத்தில் இருக்கிறது. இது 200 ஆகத்து முன் எழுதப்பட்டது.
 முழுமையில் பண்டம் தான் எழுதப்பட்டது இருக்கிறது. இதை அச்சிட்டு
 வெளியே குயறிவிட நடக்கிறது."

In the early 20th Century, one Mr. Das Gupta set up a Match Factory in Calcutta with small semiautomatic Japanese machines, frames and gadgets imported from Japan. He made some experiments with Colour Matches, and also produced some gerbs, fountains and large size crackers. At that time, two enterprising young men, Mr. A Shanmuga Nadar and Mr. Iya Nadar (cousin brothers, both now deceased), set out to Calcutta on business, where they stumbled upon the small Japanese match factory next to the lodge they stayed in. These two gentlemen toyed with a few match sticks there, brought with them a few materials and attempted to make their first matches in Sivakasi.

The idea of match making mooted them to make Colour Matches also, because the processes were more or less similar. During this period, Colour Matches and Star Matches were imported from Germany. Books on chemistry helped them to improve the quality of their products. Having achieved a measure of success in Safety Matches, Colour Matches and Star Matches, they ventured upon the making of sparklers -then the most popular item in the Small Fireworks

family, which were at the time imported from the UK and Germany. China was then exporting only firecrackers of several sizes and ranges but no other fireworks.

It may be confidentially said that the germinal seed for the making of modern family Fireworks or Small Fireworks was planted in the year 1934 when the Central Excise Duty on Matches was promulgated. Until the outbreak of World War II in 1939, there were only a handful of factories in Sivakasi, Trichur and Irinjalakuda in Kerala State. From 1938 to 1944 the import of fireworks and firecrackers was obstructed by war. This shortage gave a fillip to the indigenous industry, which was in its infancy. During the year 1940, the Indian Explosives Rules were enacted whereby a system of licensing was introduced for manufacture, possession and sale. Thus came to be set up in the year 1940 the first organized factory with several precautions and safety measures. The shortage in the market helped these, then seasonal, factories to work even during off-season and build up stocks. With World War II coming to an end and the gateway for import of raw materials having been reopened, the indigenous industry enlarged itself. Not only the existing factories broadened their efforts, there came into existence several new units, of which National Fireworks, Kaliswari Fireworks and Standard Fireworks were prominent in the year 1942. These three factories started marketing their products throughout the length and breadth of India. These were later supplemented by new units at the average of 10 per year. What started as 1 or 2 factories in 1923, rose to 3 in 1942, and by the year 1980 the number of factories had risen to 189. By the end of 1986 the total number of factories was 260 in Tamil Nadu alone. Other States also took up this production -Kerala very earnestly. The past 15 years have seen organized factories starting up in Maharashtra, Gujarat, Karnataka, Andhra Pradesh, West Bengal and U.P.

This phenomenal growth was only due to demands accelerated by the increase in living standards and earning power, and the requisite raw materials such as nitrates of barium and strontium, potassium chlorate, red phosphorous, zinc oxide, pyrotechnic aluminium powder, mag-

nesium powder, etc., being produced indigenously and in plentiful quantity. An important factor is that factories producing these raw materials were not far off Sivakasi, the main fireworks producing center. Another factor that contributed to the spurt in production is that many important raw materials were produced by the firework makers themselves at separate sites. The founding fathers of the Fireworks industry mooted this venture.

Low rain fall and a dry climate prevailing in the Sivakasi area contributed to unabated production. What could have been consumed in three hours of the Diwali Day came to be produced in 300 days, almost with overtime jobs during six months of the year. In monetary terms there has been a steady increase of 10% annually, and today's production stands at an outstanding figure of 200 crores of rupees at the market value.

The Fireworks Industry, after having fully met the domestic markets, set out to collide with China who were monopolizing the world markets. For the first time, in the year 1977 -78, India broke the world monopoly of China, exporting nearly 40 lakhs rupees worth of Fireworks and Firecrackers which were accepted as being superior to the Chinese product. Our goods traveled to the shores of Japan and the Middle East also. Subsequently, no worthwhile exports could be done because of cut-throat competition from China and its geographical proximity to the world market. India was outdone both in freight and competition in spite of the widespread acknowledgments of the superiority of the Indian products over the Chinese. If only a concessional Ocean freight could be offered, which is on the anvil of the Shipping Lines and Export Promotion Council, India could play a vital role, her export earning precious foreign exchange. The items and ranges of Chinese production are very large. They number over 1000 whereas the Indian variety is below 100! Their catalogues illustrate innumerable ranges. India must step up her ranges to reach this level in the next few years to gain a rightful place in the world markets. According to authentic US Department of Commerce Official Statistics, import from the four countries -China, Taiwan, Hong Kong and Macao Islands

alone accounted for a total value of US \$ 11,825,938 or nearly 9 Crores of rupees in the year 1977 against India's export of US \$ 11,900 or Rs. 85,000. There was a drop in the export until 1993. The years 1993 and 1994 have entered a steep rise up to an extent of US \$ 562,570 or rupees 17,720,955.

It has to be admitted that the name of the Fireworks Industry has been tarnished to some extent because of accidents involving lives and limbs. After certain controls exercised by Government, the accident rates fell considerably from the year 1978. In spite of the increase in the number of factories from 169 to 260 in the year 1986, the number of deaths was only 4 and injuries only 5. Against this, there were an alarming number of accidents and deaths involving illegal and home-made fireworks. The organized and legal fireworks makers are in no way responsible for these boot-lagger's and Mafia-like gangs, who are operating in this center in a big way. The government must take steps to protect the legalized manufacturers.

Legally made fireworks in licensed factories are safer than many would believe. India's accident rates in licensed factories have been much less compared to that in the US. There were 460 deaths in 1903, 131 in 1910, 30 in 1916, 20 in 1937, 13 in 1939, 11 in 1941, 6 in 1946 and 1 in 1977 apart from a few injuries. India's accident and death rates, when compared with advanced countries like US are much lower in proportion to the number of people employed, the volume and nature of work and other environmental conditions. Thanks to the Department of Explosives and its team of Officers who made this possible. Neither we nor the Department of Explosives is responsible for untoward happenings with illegally home-made fireworks.

A survey conducted shows that the accident rates in other industries are higher than in fireworks. It is much below 1%, while in all other industries, the accident rate was from 5 to 47%. Actually, there are more casualties resulting from automobiles, liquor, swimming pools and other misdemeanors in one day than are found in fireworks in five years throughout the world. In India itself, house fires claim 15,000

lives and 10 billion rupees worth of property every year. In road accidents alone, 40,000 were killed last year in our country. In the State of Tamilnadu alone, there were 3836 deaths in road accidents in the year 1983, and it is much more now. Thus the Fireworks Industry, prone to fire and explosion, has a better safety record, and there is nothing to be anxious about.

The Fireworks Industry is proud of its record in World War II, the Indo-China War, and Indopakistan War. A few factories were engaged in the manufacture of pyrotechnic materials for the Army, Navy, and Air Force. Even now, a few members have offered their services again to the Ministry of Defense. The Fireworks Industry is perhaps the most readily available and convertible to essential defense production of all Indian industries. It stands ever ready to put its shoulder to the wheel -manned by skilled and experienced pyrotechnic craftsmen.

The total taxes paid by the Fireworks Industry cannot be compiled easily. Every rupee paid is needed and should be welcomed by the National and Local Government receiving them. They offer steady employment to several thousands persons in their plants and sales outlets. A major contribution is the Wage Bill which is more or less equal to the self-cost of raw materials and packing. Transport people also benefit immensely.

There is an imposition of an Excise Levy of 20 % on these handmade products of a recognized Village Industry. This move, out of a misinterpretation of facts, has dampened the enthusiasm of both the manufacturers and traders. Already, the Sales Tax Levy itself-ranging from 5% to 15%, has to some extent hindered the potential growth. Advanced countries have to come to encourage the Fireworks Industry opening schools for fireworks, for successful operations and improvements. The US government has supported touring firework displays. They have commemorated the importance of this industry on postage stamps. When the famous Grucci plant in the US suffered an accident involving loss of lives and properties, it was public and government who made the Grucci plant re-establish itself in a period of six months. Such

was the support from both the public and government because it was an unparalleled art that they wanted to preserve and adore. There are a few hundred patents established by firework makers in different countries -which shows the high strides the Fireworks Industry has established in those countries -and the miles the Indian industry has to walk today. Fireworks are really an art like music, dancing, sculpture, etc. The rules, regulations and licence fees are equated with High Explosives for blasting purposes. It is high time that a different Code of Laws and Regulations are separately carved out for Small Fireworks as in the UK, USA and Canada. This would lead to enlarged designing and preparations to match Chinese products.

In today's space age, it is gunpowder, mother of all explosives, and its first product, the rocket, that have provided the impetus for the present rocket technology and space travel. Gunpowder and rockets were the pivot on which modern warfare came to revolve. Haley's comet comes and goes, but fireworks are always with us. They are as old as civilization. The gun and cannon are mere offshoots of the Fireworks Industry. Fireworks have always had a strong association with happiness. They are used to venerate, commemorate, celebrate, inaugurate, and titillate. At no time was there or is there a product that has contributed more to relaxation, merriment and enjoyment -both for young and old alike. Let us enjoy fireworks!