

# The Story of Celluloid

by Jack Tempest



*The German company of 'Schuco' made many tin-plate wind-up figures. Usually with tin-plate heads. However, this 'Father & Son' waltzing couple had celluloid heads, perhaps the material gave a truer likeness to the original well-known cartoon characters they represented, featured in a German newspaper of the 1920s?*



*Celluloid was widely used in doll making up to the outbreak of the Second World War, particularly by the Germans and Japanese. This collectable British character doll is of the well-known 'Diddums' baby, a creation of Mabel Lucie Attwell.*

Many antiques began to be manufactured from the new plastic material named 'Celluloid' created by an American named John Wesley Hyatt in 1870. Hyatt was in the printing business but he also had an inventive turn of mind. When he read a newspaper advertisement offering a reward of \$10,000 (a tidy sum of money in those days!) for anyone that could come up with a suitable substitute for ivory, Hyatt lost no time in working on the idea. It transpired that there was a developing decline in the ivory required for the production of billiard balls and the industry concerned felt that it was time to discover an alternative material.

Hyatt's research led him into the realms of physical experimentation with various mixtures of fibres, sawdust, varnish, shellac, and other materials, using machinery devised by himself and his partner, John Kinnear. Together they had founded the *Hyatt Billiard Ball Company* but the search for perfection had to continue for some time. The solution came when, a couple of years or so later, Hyatt upset a bottle of liquid collodion used in the printing business in which he was still employed, and noticed how it eventually set into a hard bone-like mass. The chemical experiments thereafter followed by Hyatt paved the way to better synthetic billiard balls - and the invention and patenting, in 1870, of the first of our modern plastics - celluloid.

'Celluloid' was originally the trade name for the cellulose acetate created by Hyatt, who had also later added camphor to his formula. 'Celluloid' was destined to become a word of common parlance, just as the trade names 'Thermos' and 'Hoover' entered the English language as everyday terms for 'vacuum flasks' and 'vacuum cleaners'! The English scientist Daniel Spill, working for Alexander Parkes, had discovered a similar material to celluloid in 1869 and named it 'Xylonite', by forming a combination of cellulose acetate with camphor, but litigation with Hyatt ended in victory for the American-produced 'Celluloid'!

For many years celluloid was the world's first plastic material. It had much going for it. It could be made into billiard balls - though there are stories told of them exploding during play! The main drawback to celluloid is that it was a highly flammable material that would certainly not be allowed in manufacturing today! Many accidents, some fatal, happened through celluloid's flammability but its use in the mass-production of toys and novelties was widespread. The material was used to produce 'ivory' look-alike items, combs, clock cases, imitation tortoiseshell items, beads, cameo brooches, gentlemen's collars, corset stays, dominoes, dice, mah-jong tiles, the covers of photo albums, decorative photo frames, ornamental picture-postcards, and even toilet-seats! Such examples have now become collectables in their own right.

Without celluloid the development of ciné photography and 'moving pictures' would have been impossible. The principle of animated photography was well known, but the only suitable transparent material at the time of its development was glass. Photographs printed upon glass slides was OK for use in projecting still-pictures but no suitable way could be found to pass a series of sheet-glass illustrations, photographic or otherwise, on glass rapidly through a projector lens. Imagine the hopelessness of feeding a chain of wooden-framed illustrated glass-plates through the intricacies of a mechanical ciné projector! The eventual ability to print a series of photographs upon flexible transparent celluloid film solved the problem. Fed from a reel the celluloid film could easily thread its way through the projector's mechanism in front of the lamp's beam.

This was another test of the flammability of celluloid. A breakdown in the projector's mechanism, however, could easily



result in serious fire as the static material could not withstand the heat of the lamp and soon burst into flames! Several cases were also recorded of the film passing through the projector safely, but failing to rewind onto the lower pick-up reel. The film then continued its journey down into the audience and onto the heads of the cigarette and pipe-smoking audience below! Ignition was not always avoided in such cases and many a cinema was burned out, usually resulting in death or injury to members of the stampeding audience!

Early ciné-film celluloid can 'sweat', a fact known to enthusiasts who collect old cinema apparatus. This appears as moisture on the film and, in this case, great care must be taken in its handling. Collectors guard against any such spontaneous combustion of their old films usually by storing them in a concrete garden bunker built a safe distance away from their house. Running film, which is in such a state of decomposition, through the hands can possibly result in serious burns - even the loss of one or two fingers! Such instances may be avoided by having the original film copied and expert advice should be taken on the safe disposal of the original film!

The importance of the material in solving problems of fire risk led to experiments into the production of non-flammable optical film and other safe plastics to use in a variety of common artefacts. Many toys and dolls were produced from the new celluloid, which was far less, if at all, prone to spontaneous combustion than the celluloid originally used to make ciné film. The material proved ideal for moulding into doll and other forms. Doll and toy manufacturers around the world were responsible for a huge output of such items.

### Opposite

*Celluloid heads used as illuminated Christmas-tree decorations.*



*This is a 1920-30s Japanese mechanical toy with celluloid figures that perform a merry dance when the motor is turned on.*

One of the biggest suppliers of dolls was the German-based 'Rheinische Gummi und Celluloid Fabrik Co.' which originally produced only moulded rubber ('gummi' in German) dolls. Their celluloid products, first launched in the early 1870s, were marked with the famous turtle trademark still used today on the dolls they now make from modern plastics.

Many celluloid dolls were also manufactured in the USA, France, and in Japan. The Japanese also featured celluloid figures in many of their mechanical tin toys. Most celluloid dolls were hollow and could easily be squashed, though they did not break apart as a dropped ceramic doll would be inclined to do. They were cheaper to produce and, therefore generally inexpensive to buy. They are quite collectable today, especially now that early ceramic dolls have, more or less, disappeared into private collections. The values of examples from the 1920-30s have tended to increase accordingly across recent years. As for safety - they are still flammable items that should be treated with a great deal of respect and common-sense, avoiding storage near to heating equipment, fireplaces, flames, and anywhere they might suffer ignition!

Plenty of antique artefacts and novelties have been produced from celluloid across the years. Some of the older items made a century or more ago are, naturally, entitled to be classed as genuine antiques. Celluloid was the first of the synthetic industrial manufacturing materials, an invention that paved the way to our modern, safer plastics.

A word of warning to would-be antique collectors. There is a saying "All that glisters is not gold". Another version worth remembering is the fact that "all that resembles ivory may very well be celluloid!" If it is known to be at least a century old, then it really is an antique. If it's less, then it may be a reproduction, or simply a non-antique example well worth collecting!



*A 1920s novelty celluloid head which could be illuminated by a flashlight bulb as a party decoration. Origin uncertain. Possibly German or Japanese.*



*This Japanese celluloid clockwork clown acrobat from the 1930s, will cheerfully perform somersaults when switched on!*



*Another popular Japanese figure was this celluloid 'British Bobby' controlling imaginary road traffic. Again a clockwork toy from the 1930s.*