

gan hanging dolls in the trees to appease the girl's spirit. Dolls on the island are threatening, even in the bright light of midday, but in the dark, they are especially disturbing. After 50 years of collecting dolls and hanging them on the island, Julian was found dead, drowned in the same spot where the girl did. After Julian's death in 2001, the island has become a tourist attraction.

This is what is so great about our world. Just when you think you've seen it all, just when you begin to think the world can no longer shock you, that it holds no secrets, that you've seen enough to never be surprised again – along comes a sight that changes everything.

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THE HISTORY OF PAPER: FROM ITS ORIGINS TO THE PRESENT DAY

The History of Paper: Chinese Origins. Cai Lun was a eunuch who entered the service of the imperial palace in 75 CE and was made chief eunuch under the emperor Hedi of the Dong Han dynasty in the year 89. About the year 105 Cai conceived the idea of forming sheets of paper from the macerated bark of trees, hemp waste, old rags, and fishnets. The paper thus obtained was found to be superior in writing quality to cloth made of pure silk, as well as being much less expensive to produce and having more abundant sources. [1]

The History of Paper: Reaching the Arab World. The Arab world discovered the secrets of papermaking in AD 751, when the governor-general of the Caliphate of Bagdad captured two Chinese papermakers in Samarkand and, with their help, founded a paper mill in the Uzbek city.

From here, aided by an abundance of hemp and linen, two high-quality raw materials perfect for making paper, production spread to other cities in Asia, particularly Baghdad and Damascus. The process for making paper employed by the Arabs involved garning and macerating rags in water to obtain a homogenous pulp, which was then sifted to separate the macerated fibres from the water. The sheets thus obtained were subsequently pressed, dried and finally covered with a layer of rice starch to make them more receptive to ink. In the same period, people in Egypt and North Africa also started to make paper using the same techniques employed in the Arab world.

Paper Reaches Europe. It wasn't until the 11th century that paper arrived in Europe, with the Arab conquest of Sicily and Spain. However, paper was quickly considered an inferior-quality material compared to parchment, so much so that, in 1221, Holy Roman Emperor Frederick II prohibited its use for public documents. Rice starch, in fact, was an attractive food source for insects, which meant sheets of paper did not last long.

The history of paper owes much to the paper makers of Fabriano, a small town in the Marche region of Italy, who started producing paper using linen and hemp in the 12th century. By using new equipment and production techniques, these papermakers introduced important innovations:

They mechanised rag grinding by using hydraulic hammer mills, significantly reducing the time it took to produce pulp.

They started gluing sheets with gelatine, an additive that insects didn't like.

They created different paper types and formats.

They invented watermarking.

Watermarking involved using metal wires to add decorations to paper which became visible when the sheet was held up to the light, allowing hallmarks, signatures, ecclesiastical emblems and other symbols to be inserted.

From the 14th century, papermaking began to spread to other European countries and, at the end of the 15th century, with the invention of movable-type printing, production really took off. The discovery of America and the subsequent European colonisation brought papermaking to the New World. Interestingly, in his book "Paper: Paging Through History", Mark Kurlansky tells a curious anecdote: when the North American colonies rebelled, they boycotted all British goods, except the fine paper produced by London's paper mills.

Paper as a Means of Mass Communication. The industrial manufacture of paper began in the 19th century with the expansion of mass-circulation newspapers and the first best-selling novels, which required

enormous quantities of cheap cellulose. In 1797, Louis Nicolas Robert created the first Fourdrinier machine, which was able to produce a 60-cm-long sheet. As demand for papermaking rags outstripped supply, alternative materials were sought, like wood pulp. With the development of new techniques for extracting fibres from trees, the price of paper fell dramatically, and paper soon became a product of mass consumption. In Britain alone, paper output soared from 96,000 tonnes a year in 1861 to 648,000 tonnes in 1900.

The Environmental Impact of Paper. Paper manufacturing uses significant amounts of natural resources: between 2 and 2.5 tonnes of timber and 30-40 cubic metres of water are required to make one tonne of paper. What's more, electricity and methane gas are needed to power the industrial machines used in the various production phases and, depending on the type of paper, a host of polluting chemical additives. [2]

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BIODEGRADABLE PLASTIC

The world has produced over nine billion tons of plastic since 1959s. 165 million tons of it have trashed our ocean, with almost 9 million more tons entering the oceans each year. Plastic pollution is one of the most dangerous of environmental issues, that kill our planet every day. Scientists think that exists two ways to solve this problem. One of them is try to reduce consumption of plastics all over the word. Other way is trying to use more biodegradable plastics and recyclable materials.

Although the process of recycling plastic is a good technology to reduce plastic waste in the environment, there are a lot of problems encountered during this process. Recycling costs are sometimes higher than the cost of production of new plastic. Petroleum based plastic is not a degradable material and can last for hundreds of years. Plastic is inert to microorganisms, ultraviolet, heat and water. Plastic not only cause disposal prob-