

# Stories of Innovation and Change

## Innovation as a Result of Problem-Solving

### 1. The El Cortez Hotel

El Cortez Hotel in San Diego provides an excellent example of the advantage of listening intently to employees at every level. The hotel management decided to install an additional elevator to better serve their guests.



Engineers drew up plans which included cutting holes through each floor of the hotel. A janitor, who was concerned with this, made the comment that this would make a great deal of mess. The janitor was told not to worry because the hotel would be closed to guests during the construction.

The janitor suggested, "You could build the elevator on the outside of the hotel." At the time, this architectural concept had never been done before, but after investigation by the engineers, it proved an idea that was worth developing, and is now commonplace in buildings worldwide.

The janitor's idea saved the El Cortez thousands of dollars in guest revenue, employees from losing salary, and major clean-up costs related to the construction of the new elevator.

### 2. Swan Vesta

Due to the drop in the number of smokers and the increase in availability of cheap lighters in the 1970's, Bryant and May (makers of Swan Vestas matches) suffered a downturn in profits and asked their marketing people to find a way of increasing sales, and their senior production managers to find ways of decreasing production costs.

Legend has it that after the great and the good had tried and failed to find any significant solution, a shop floor worker asked to see the M.D. claiming to have an idea that would cut production costs by over 30%. He said he would only tell the MD his idea after they had agreed what percentage of the cost savings he would be awarded.

Initially he was rebuffed but the MD's curiosity was such that he offered half of any cost savings to the individual.

The man was summoned to the MD's office. He pointed out two simple facts:

1. The sandpaper strips that the company put on both edges of the box were the most expensive component in a box of matches
2. One strip of sand paper could (just) survive the striking of a full box of swan matches.

From that day onwards Swan Vestas matches only have sandpaper on one edge of the box.



### 3. The QWERTY Keyboard

Look at the keyboard of any standard typewriter or computer. Q,W,E,R,T and Y are the first six letters. Who decided on this arrangement of the letters? And why?

The first practical typewriter was patented in the United States in 1868 by Christopher Latham Sholes. His machine was known as the type-writer. It had a movable carriage, a lever for turning paper from line to line, and a keyboard on which the letters were arranged in alphabetical order.

But Sholes had a problem. On his first model, his ABC key arrangement caused the keys to jam when the typist worked quickly. Sholes didn't know how to keep the keys from sticking, so his solution was to keep the typist from typing too fast.

He did this using a study of letter-pair frequency prepared by educator Amos Densmore, brother of James Densmore, who was Sholes' chief financial backer. The QWERTY keyboard itself was determined by the existing mechanical linkages of the typebars inside the machine to the keys on the outside. Sholes' solution did not eliminate the problem completely, but it was greatly reduced.

The keyboard arrangement was considered important enough to be included on Sholes' patent granted in 1878, some years after the machine went into production. QWERTY's effect, by reducing those annoying clashes, was to speed up typing rather than slow it down.



The new arrangement was the 'QWERTY' arrangement that typists use today. Of course, Sholes claimed that the new arrangement was scientific and would add speed and efficiency. The only efficiency it added was to slow the typist down, since almost any word in the English language required the typist's fingers to cover more distance on the keyboard.

The advantages of the typewriter outweighed the disadvantages of the keyboard. Typists memorized the crazy letter arrangement, and the typewriter became a huge success.

## Innovation as a Result of Unexpected Opportunity

### 1. Kellogg's Cornflakes

In 1894 Dr. John Harvey Kellogg was superintendent of a famous hospital and health spa in Battle Creek, Michigan. His younger brother, Will Keith Kellogg, was the business manager. The hospital stressed healthful living and kept its patients on a diet that eliminated caffeine, meat, alcohol, and tobacco.

The brothers invented many foods that were made from grains, including a coffee substitute and a type of granola, which they forced through rollers and rolled into long sheets of dough. One day, after cooking some wheat, the men were called away. When they finally returned, the wheat had become stale. They decided to force the tempered grain through the rollers anyway.

Surprisingly, the grain did not come out in long sheets of dough. Instead each wheat berry was flattened and came out as a thin flake. The brothers baked the flakes and were delighted with their new invention. They realised they had discovered a new and delicious cereal, but they had no way of knowing they had accidentally invented a whole new industry. Will Keith Kellogg eventually opened his own cereal business, and its most famous product is still sold today.



### 2. Velcro

For thousands of years, man has walked through fields of weeds and arrived home with burrs stuck to his clothing. It's amazing no one took advantage of the problem until 1948. George de Mestral, a Swiss engineer, returned from a walk one day in 1948 and found some cockleburs clinging to his cloth jacket.

When de Mestral loosened them, he examined one under his microscope. The principle was simple. The cocklebur is a maze of thin strands with burrs (or hooks) on the ends that cling to fabrics or animal fur. By the accident of the cockleburs sticking to his jacket, George de Mestral recognised the potential for a practical new fastener.



It took eight years to experiment, develop, and perfect the invention, which consists of two strips of nylon fabric. One strip contains thousands of small hooks. The other strip contains small loops. When the two strips are pressed together, they form a strong bond. VELCRO, the name de Mestral gave his product, is the brand most people know. It is strong, easily separated, lightweight, durable, washable, comes in a variety of colours, and won't jam.

### 3. Penicillin

Penicillin was discovered by chance in 1928, after Alexander Fleming accidentally left a dish of staphylococcus bacteria uncovered for a few days. He returned to find the dish dotted with bacterial growth, apart from one area where a patch of mold (*Penicillin notatum*) was growing.

The mold produced a substance, named penicillin by Fleming, which inhibited bacterial growth and was later found to be effective against a wide range of harmful bacteria.

Penicillin was finally isolated by Howard Florey and Ernst Chain. Fleming, Florey and Chain received a Nobel prize in 1945 for their discovery which revolutionised medicine and led to the development of lifesaving antibiotics.

