美丽英文系列丛书

大师人生

THE LIFE OF MASTERS

每个人都渴望拥有名誉和辉煌，那么，名人是如何做到的呢？名人是如何奋斗的呢？本书编选了众多文学、艺术、科学等方面的名人传记。

励志美文 英汉对照

余平姣◎编著

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Leo Baekeland

In the opening scene of The Graduate, Benjamin raddock (played by a young Dustin Hoffman) is awkwardly working an affluent Southern California crowd at a graduation party **arranged** for him by his parents when a family friend offers one of the century's most famous pieces of cinematic advice: "I just want to say one word to you. Just one word: plastics."

Millions of moviegoers winced and smiled. The scene neatly captured their own late '60s ambivalence toward the ever more synthetic landscape of their times. They loved their cheap, easy- to-clean Formica countertops, but envied and longed for the **authentic** touch and timelessness of marble and wood. The chord struck by that line in The Graduate underscored how much had happened in the six decades since the summer of 1907, when Leo Baekeland made the laboratory breakthrough that would change the stuff our world is made of.

A Belgian-horn chemist-entrepreneur, Baekeland had a knack for spotting profitable opportunities. He scored his first success in the 1890s with his **invention** of Velox, an improved photographic paper that freed photographers from having to use sunlight for developing images. With Velox, they could rely on artificial light, which at the time usually meant gaslight but soon came to mean electric. It was a far more dependable and convenient way to work. In 1899 George Eastman, whose cameras and developing services would make photogra -phy a household activity, bought full rights to Velox for the then astonishing sum of $ 1 million.

With that windfall, Baekeland, his wife Celina (known as "Bonbon") and two children moved to Snug Rock, a palatial estate north of Yonkers, N.Y., overlooking the Hudson River. There, in a barn be converted into a lab, he began foraging for his next big hit. It wasn't long before the burgeoning electrical industry seemed to say just one word to him: insulators.

The initial tease for Baekeland——"Doc Baekeland" to many—was the rising cost of shellac. For centuries, the resinous secretions that Laccifer lacca beetles deposited on trees had provided a cottage industry in southern Asia, where peasants heated and filtered it to produce a varnish for coating and preserving wood products. Shellac also happened to be an effective electrical insulator. Early electrical workers used it as a coating to insulate coils, and molded it into standalone insulators by pressing together layers of shellac impregnated paper.

When electrification began in earnest in the first years of the century, demand for shellac soon outstripped supply. Baekeland recognized a killer ap when he saw one. If only he could come up with a synthetic substitute for shellac.

Others nearly beat him to it. As early as 1872, German chemist Adolf Von Baeyer was investigating the recalcitrant residue that gathered in the bottom of glassware that had been host to reactions between phenol (a turpentine-like solvent distilled from coal tar, which the gaslighting industry produced in bulk) and formaldehyde (an embalming fluid **distilled** from wood alcohol). Von Baeyer set his sights on new synthetic dyes, however, not insulators. To him, the ugly, insoluble gunk in his glassware was a sign of a dead end.

To Baekeland and others aiming to find commercial opportunities in the nascent electrical industry, that gunk was a signpost pointing toward something great. The challenge for Baekeland and his rivals was to find some set of conditions—some slippery ratio of ingredients and heat and pressure that would yield a more workable, shellac-like substance. Ideally it would be something that would dissolve in solvents to make insulating varnishes and yet be as

moldable as rubber.

Starting around 1904, Baekeland and an assistant began their search. Three years later, after filling laboratory books with page after page of failed experiments, Baekeland finally developed a material that he dubbed in his notebooks "Bakelite". The key turned out to be his "bakelizer", a heavy iron vessel that was part pressure cooker and part basement boiler. With it, be was able to control the formaldehydephenol phenol reaction with more finesse than had anyone before him.

Initial heating of the phenol and formaldehyde (in the presence of an acid or base to get the reaction going) produced a shellac-like liquid good for coating surfaces like a varnish. Further heating turned the liquid into a pasty, gummier good. And when Baekeland put this stuff into the bakelizer, he was rewarded with a hard, translucent, infinitely moldable substance. In a word: plastic.

He filed patent applications and soon began leaking word of his invention to other chemists. In 1909 Baekeland unveiled the world's first fully synthetic plastic at a meeting of the New York chapter of the American Chemical Society. Would-be customers discovered it could be fashioned into molded insulation, valve parts, pipe stems, billiard balls, knobs, buttons, knife handles and all

manners of items.

It was 20th century alchemy. From something as vile as coal tar came a remarkably versatile substance. It wasn't the first plastic, however. Celluloid had been commercially available for decades as a substitute for tortoise——shell, horn, bone and other materials. But celluloid, which had developed a reputation as a cheap mimic of better traditional materials, was derived from chemically treated cotton and other cellulose——containing vegetable matter. Bakelite was lab-made through and through. It was 100% synthetic.

Baekeland founded the Central Bakelite Corp. to both make and license the manufacture of Bakelite. Competitors soon marketed knockoffs——most notably Redmanol and Condensite, which Thomas Edison used in a failed attempt to dominate the nascent recording industry with "unbreakable" **phonograph** disks. The presence of inauthentic Bakelite out there led to an early 20th century version of the "Intel Inside" logo. Items made with the real thing carried a "tag of genuineness" bearing the Bakelite name. Following drawn out patent wars, Baekeland negotiated a merger with his rivals that put him at the helm of a veritable Bakelite empire.

Bakelite became so visible in so many places that the company advertised it as "the material of a thousand uses". It became the stuff of everything from cigar holders and rosary beads to radio housings, distributor caps and telephone casings. A 1924 Time cover story on Baekeland reported that those familiar with Bakelite's potential "claim that in a few years it will be embodied in every mechanical facility of modern civilization".

In truth, Bakelite whose more chemically formal name is lyoxybenzyl methylenglycolanliydrid——as just a harbinger of the age of plastics. Since Bakelite's heyday, researchers have churned out a polysyllabic catalog of plastics: polymethylmetliacrylate (Plexiglas), polyesters, polyethylene, polyvinyl chloride (PVC, a. k. a. vinyl), polyhexamethylene adipamide (the original nylon polymer), polytetnifluoroethylene (Teflon), polyurethane, poly-this, poly-that.

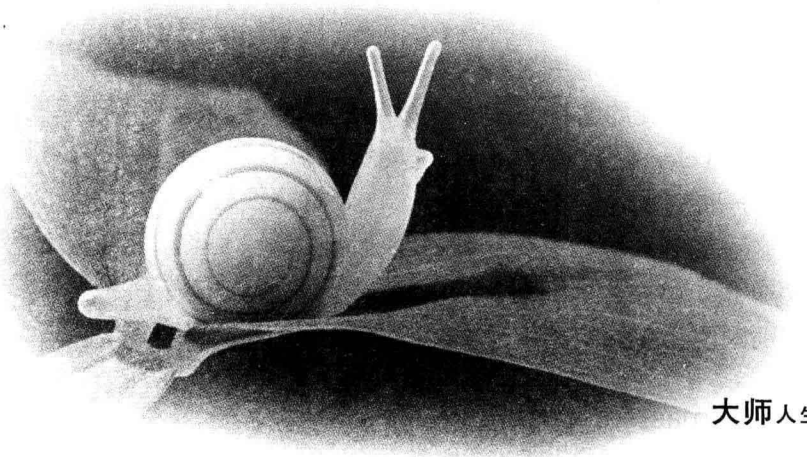
In 1945, a year after Baekeland died annual plastic production in the U.S.

reached more than 400,000 tons. In 1979, 12 years after The Graduate, the annual volume of plastic manufactured overtook that of steel, the symbol of the Industrial Revolution. last year nearly 47 million tons of plastic were produced.

Today plastic is nearly everywhere, from the fillings in our teeth to the chips in our computers (researchers are developing **flexible** transistors made of plastic instead of silicon so they can make marvels such as a flat-panel television screen that will roll like a scroll up your livingroom wall). Plastic may not be as vilified now as it was in 1967, but it's still a stuff that people love and hate. Every time a grocery clerk asks, "Paper or plastic?", the great debate between old and new, natural and synthetic, biodegradable and not, silently unfolds in a shopper's breast in the instant it takes to decide on the answer.

热词空间

arrange v. 安排,准备,筹划;整理,排列,布置
authentic a. 真的,真正的;可靠的,可信的
invention n. 发明(物);捏造;发明(创造)的才能
distill vt. 蒸馏,用蒸馏法提取;吸取,提炼
phonograph n. [美]留声机
flexible a. 易弯曲的,柔韧的;灵活的,可变通的



利奥·贝克兰

电影《毕业生》的片头场景中，本杰明·布拉多克（由年轻的达斯廷·霍夫曼扮演）在父母为他举行的毕业晚会上，很不习惯地周旋在一群富裕的南加州人中，此时，他的一位友人说出了本世纪（20世纪）最著名的一条电影对白："我只想跟你们说一个词，就一个词：塑料。"

无数的电影观众对这条对白先是感到震惊，然后报以微笑。这个场景巧妙地抓住了他们对60年代末这个时代更多人造景观的矛盾心理。他们喜欢厨房里便宜的易擦洗的福米卡塑料工作台面，但羡慕——甚至渴望得到——大理石和木头的真实触感和永恒感。《毕业生》里的那句话唤起了自1907年夏天以来60年中着重体现事物的巨大变迁的记忆。就在1907年，利奥·贝克兰在实验室里取得了突破，改变了组成世界的物质。

贝克兰是一名出生在比利时的化学家及企业家，善于捕捉有利的机遇。19世纪90年代他因发明了Velox而首获成功。Velox是一种改进了的照相纸，摄影师不必采用阳光也能使它产生图像。有了Velox，摄影师们可以依赖人造光，如当时通常用的煤气灯，以及不久后出现的电灯。这是一个更具可靠性、更便捷的工作方法。1899年，乔治·伊斯门令人吃惊地以100万美元买下了Velox的全部使用权，他的照相机和冲洗服务后来使照像成了一项家喻户晓的娱乐。

有了这笔意外之财，贝克兰及其妻子塞丽娜（也称"夹心软糖"）和他们的两个孩子移居到了Snug Rock，那是一座可以俯瞰哈得孙河的豪华别墅，该别墅位于纽约州扬克斯北部的一处。在那儿，他将一间谷仓改建

成实验室，为他下一个惊世之作开始搜寻资料。不久，发展中的电力工业似乎在向他展示一个词：绝缘物。

贝克兰——许多人称之为“贝克兰博士”——首先难以处理的事是紫胶价格的上涨。几个世纪以来，紫胶虫积存在树上的树脂状分泌物为南亚的家庭小工业提供了原料，该地区农民把树脂分泌物加热过滤，生产一种用作涂料和保护木制品的清漆。紫胶恰巧还是一种有效的绝缘物。早期的电力工人将它用作涂料，隔离缠绕在一起的线圈，还将注满了紫胶的纸一层层地压紧制成单独的绝缘物。

当电气化在本世纪 (指20世纪) 初真正开始发展时，紫胶很快就变得供不应求。贝克兰独具慧眼，他迫切希望找到紫胶的合成替代物。

他的研究几乎被别人超越。早在1872年，德国化学家阿道夫·冯·拜耳就在研究主要由酚（从煤气照明工业大批量产出的煤渣中提炼的类似松节油样的溶剂）和甲醛（从本醇中提炼的防腐液体）之间的反应所产生聚集在玻璃器皿底部的棘手的残渣。然而冯·拜耳将目光放在了新的合成涂料上，而非绝缘体上。在他看来，玻璃器皿中这种令人讨厌的不易溶解的黏东西毫无研究价值可言。

但贝克兰和其他在刚起步的电力工业中寻求商机的人认为，这个黏糊糊的东西将导致某种伟大的发现。贝克兰和他的对手面临的共同挑战就是要找到某组条件——某种难以掌握的成份比率及热量和压力——能生产出更有效的类似紫胶的东西。最理想的是它能在溶剂里溶解成为绝缘漆，但又能像橡胶那样具有可塑性。

1904年左右，贝克兰和一个助手开始了他们的寻找工作。三年后，在实验室的记录本上记满了一页又一页的失败试验后，贝克兰终于制造出了一种他在记录本上昵称为“Bakelite（酚醛塑料）”的材料。后来证实关键的东西是他的“bakelizer (塑料合成器)”，一个部分是压力锅，其他部分是地下锅炉的重铁容器。有了这个容器，他能比所有前人更加细微地控制甲醛和酚的反应。

开始加热时，酚和甲醛（需有酸或碱作为两者反应的催化剂）便产生了像紫胶样的液体，能像清漆一样涂于物体表面。再加热，液体变成了糊状的更具黏性的东西。当贝克兰将这种东西放进了合成器后，他获得了一

种坚硬的、半透明的、具有无限可塑性的物质。它就是：塑料。

他申请了专利，不久之后就开始向其他化学工作者透露了自己的发明。1909年，贝克兰在美国化学协会纽约分会的一次会议上，向世人展示了世界上第一块全合成塑料。未来的客户发现它能够制造成铸模绝缘材料、阀门零件、细长的物品、台球、球形柄、纽扣、刀柄以及各种各样的物件。

这是20世纪的炼金术。从某种像煤渣那样污秽的东西中炼出了一种用途十分广泛的东西。然而这还不是首批塑料。几十年来，赛璐璐一直在商业上充当龟甲、角、骨和其他材料的代用品。众所周知，赛璐璐虽价格低廉，能仿制质量较好的传统材料，它却是取自化学处理的棉花和别的含有赛钱璃纤维素的蔬菜之中。酚醛塑料则完全是实验室的产品，是百分之百的合成物。

贝克兰建立了通用酚醛塑料公司，不仅制造酚醛塑料，而且颁发它的生产许可证。竞争者不久就开始销售假冒产品——最有名的是Redmanol和Condensite，托马斯·爱迪生曾使用过这些产品，企图以“不碎的”唱机盘片独占刚起步的唱片工业，但最终宣告失败。从那儿开始的假冒酚醛塑料的出现引出了20世纪早期的“Intel Inside”商标形式。用真材实料制成的物品都带有一个标有酚醛名字的“真货商标”。经过持久的专利战，贝克兰和他的对手签约合作，使他获得了一个真正的酚醛塑料大企业的领导权。

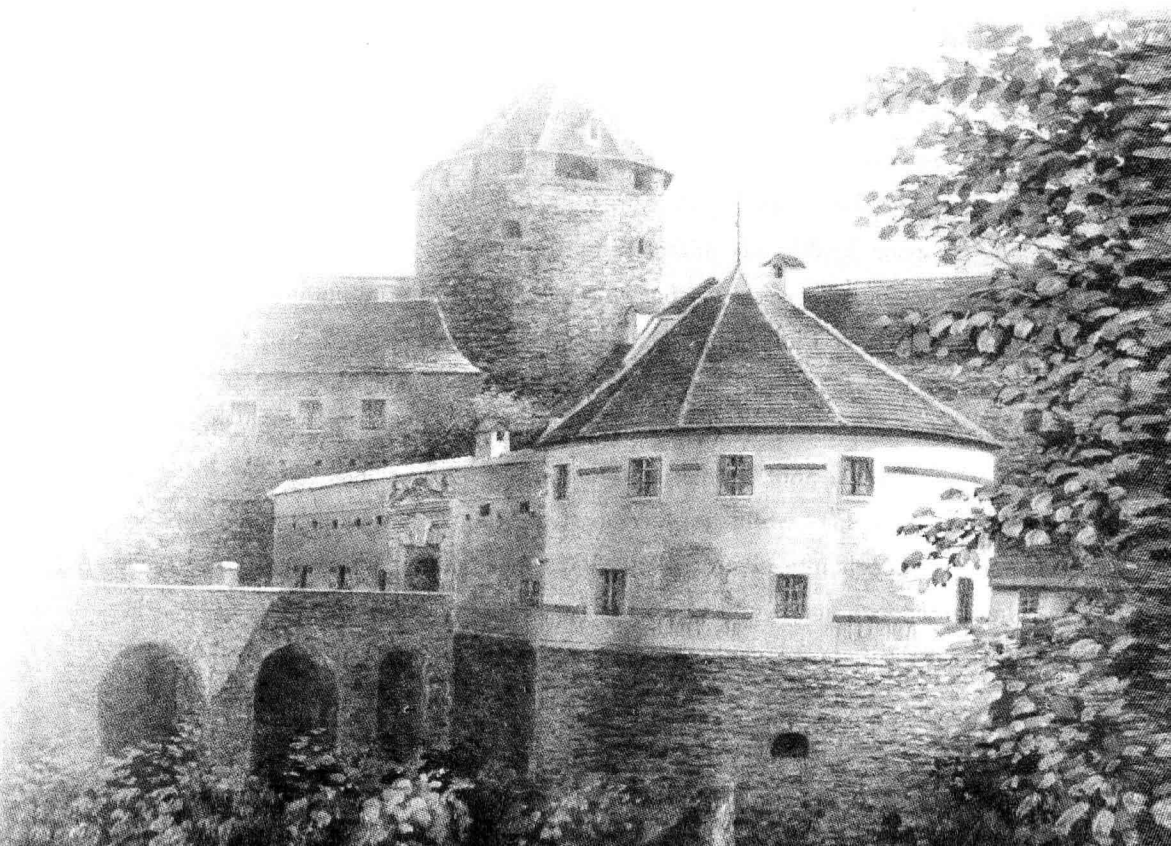
酚醛几乎到处可见，以致于公司打出广告称它为“万能材料”。其用途十分广泛，从雪茄烟烟柄和寺庙中僧人手中的念珠到收音机的外壳、配电盘盖和电话机的机壳。1924年以贝克兰为封面的一期《时代》杂志的封面人物故事报道说，那些知晓酚醛潜力的人“声称再过几年它就会体现在现代文明的每一个机械设备上”。

事实上，酚醛——其正式的化学名称是聚甲苯甲醛甘醇酐——只是预示了塑料时代的到来。自酚醛的发展高峰期以来，研究者们已研制出了多种多样的塑料：聚甲基丙烯酸甲酯（有机玻璃）、聚酯、聚乙烯、聚氯乙烯（PVC，也称乙烯基）、聚亚乙基乙二酸胺（原先的尼龙聚合物）、聚四氯乙烯（特氟隆）、聚氨酯等等。

1945年，贝克兰逝世一年后，美国的塑料年生产量已达到了40多万吨。1979年，电影《毕业生》放映12年后，塑料年产量超过了钢——工业革命的象征。很快，塑料产量已近4700万吨。

今天，几乎各个领域都在使用塑料，从补牙材料到计算机的芯片（研究者们正在研制用塑料而非硅制作的易弯曲的晶体管，这样他们可以创造出像悬挂在客厅墙上可卷起或展开的平面直角式电视屏幕那样的奇迹）。塑料可能不像在1967年那样受到诋毁，但人们对它仍是既恨又爱。每当杂货店售货员问“要纸还是要塑料”时，新旧观念、天然的还是合成的、能否进行生物分解等等问题就悄悄地在购物者考虑答案的瞬间，在他的心中展开争论了。

There is a skeleton in the cupboard.
问题皆有两面。



Alexander Graham Bell

It is such a common occurrence that no one ever wonders from whence it came. But the telephone has a fascinating story behind it, one that could be entitled. "The Conquest of Solitude." It is the story of Alexander Graham Bell.

He was born in Edinburgh, Scotland. In 1847, the son of a man who was consumed, passionately consumed, with the workings of the human voice, how it is produced and used, and especially, in teaching the deaf how to use it. For in those days, you see, the deaf lived in permanent solitude. Not only could they not hear, they could not speak. After all, how could they pronounce words, they couldn't hear? Perhaps this obsession of the elder Bell was one of the reasons he married whom he did. For the woman who would give birth to the inventor of the telephone···was deaf!

Young Alexander Graham Bell grew up with his father's passions. In 1870, because of poor health, he migrated to Canada. It was not long before his success in teaching the deaf to speak brought him to the attention of a wealthy merchant in Boston who had a deaf daughter, Mabel. Would Mr. Bell please teach Mabel how to speak? Yes, he would. And did. And they fell in love. It was she who inspired him through an of the exhausting **experiments**. who pulled him through the depressions that often inflict those whose drive to succeed is so intense, while he developed the then remarkable instrument that transformed speech into electrical **impulses** that could then be converted back into human speech at the end of a wire. he had pierced yet another solitude, the one that up until then had denied human speech between people distant from

one another. A year later, in 1877, he and Mabel were married. He later became an American citizen.

Oh, ALexander Grahahl Bell was showered with the praise of the world. Honors came to him from all the points of the compass. Yes, he would go on to other discoveries, many of them. But in his own view, he was most proud of his **efforts** to help the deaf.

So, when the government of France awarded him the Volta Prize for inventing the telephone, he combined this monetary award with the money he made from selling the patent on another invention to establish the Volta Bureau in Washington, D. C. . Its purpose was to fund research on deafness. Today, it is called the Alexander Graham Bell Association. Its role has been changed to providing the latest information to the deaf of the world on how best to cope with their disability.

Alexander Graham Bell died in 1922, Mabel five months later. She loved him that much. His name is likely to live as long as man recalls history. After all, there is this constant reminder of how he brought the human family into closer touch.

The first voice to travel over a wire was even a surprise for its inventor. Alexander Graham Bell. He was experimenting in his laboratory late one night, and quite by accident he succeeded in **transmitting** a message to his assistant in the next room. What Mr. Bell could not know at the time was that that night in 1876 would mark the start of a revolution in **communications**.

At first, two iron wires connected each pair of telephones. Then switchboards brought phone wires into one location. Other inventions—the vacuum tube to amplify sound, and coaxial cables to link long distances on land and under the seas—greatly expanded phone service. Transistors replaced the old vacuum tubes, and by the 1960s communications satellites eliminated the necessity of landlines. Today, bundles of glass fibers carry calls on laser beams of light.

Many of these inventions –including sound motion pictures and stereo