Ageing

衰老

Cheating death

躲过死神

Science is getting to grips with ways to slow ageing. Rejoice, as long as the side-effects can be managed

科学界正逐渐掌握延缓衰老的方法。这值得庆祝，只要副作用可控即可

IMAGINE a world in which getting fitted with a new heart, liver or set of kidneys, all grown from your own body cells, was

as commonplace as knee and hip replacements are now. Or one in which you celebrated your 94th birthday by running a marathon with your school friends. Imagine, in other words, a world in which ageing had been abolished.

试想有这样一个世界：在那里人们能够换上由自身细胞培育而成的新的心脏、肝脏或一对肾脏，就像现在的髋关节和膝关节置换手术一样稀松平常。或者再想象一下，你和一班同窗好友跑一场马拉松来庆祝你的 94 岁生日。换句话说，试想一个衰老已被消除的世界。

That world is not yet on offer. But a semblance of it might be one day. Senescence, the general dwindling of prowess experienced by all as time takes its toll, is coming under scrutiny from doctors and biologists. Suspending it is not yet on the cards. But slowing it probably is. Average lifespans have risen a lot over the past century, but that was thanks to better food, housing, public health and some medicines. The new increase would be brought about by specific anti-senescence drugs, some of which may already exist.

目前那样的世界还可望而不可及，但某天与它类似的情形有可能会出现。人体机能总会在时间流逝中衰退，衰老人人难逃，医生和生物学家正在仔细研究这种情况。停止衰老尚无可能，但延缓衰老

大概还是有希望的。人类的平均寿命在过去一百年已经大幅延长，但这得益于饮食、住房、公共医疗的改善以及一些药物的作用。若要进一步延长寿命也许就要靠专门的抗衰老药物，有些可能已经研发出来了。

This, optimists claim, will extend life for many people to today's ceiling of 120 or so. But it may be just the beginning. In the next phase not just average lifespans but maximum lifespans will rise. If a body part wears out, it will be repaired or replaced altogether. DNA will be optimised for long life. Add in anti-ageing drugs, and centenarians will become two a penny.

一些乐观的人说，这会使很多人的寿命延长到如今的寿命上限，即 120 岁左右。但这大概还只是个开始。到下一阶段，不止平均寿命，最长寿命也会延长。如果身体的某一部分耗损了，可以将其修复或整个置换。为了实现长寿，DNA 将被优化。再加上抗衰老药物的作用，满大街都将会是百岁老人。

Man and superman

人和超人

To this end, many hopeful repairmen are now setting up shop. Some of them want to upgrade worn-out tissues using stem cells (precursors to other sorts of cell). Such bio-renovation is the basis of an unproven, almost vampiric, treatment in vogue in some circles: transfusion into the old of the blood of the young. The business of growing organs from scratch is also proceeding. At the moment, these “organoids” are small, imperfect and used mainly for drug testing. But that will surely change. Longevity is known to run in families, which suggests that particular varieties of genes prolong life. Some are investigating this, with the thought that modern gene-editing techniques might one day be used to make crucial, life-extending tweaks to the DNA of those who need them.

为了实现这一目的，很多满怀希望的“修理工”现正开店设厂。有些人想用干细胞（其他各种细胞的母体）升级损坏的组织。这种生物修复构成了在某些圈子里很流行的一种疗法的基础。此疗法尚未经证实，而且听来像吸血鬼一样：将年轻人的血液输入老年人体内。除此之外，从零开始“种”出器官的生意也正在推进。目前，这些“类器官”都比较小、存在瑕疵且主要用于药物试验。但是这一情况肯定会改变。我们知道长寿是家族遗传，这意味着有某些特殊的基因能够延长寿命。有些人正在对此进行研究，希望有朝一日可以用现

代基因编辑技术对 DNA 做出关键性微调，帮助有需要的人延长寿命。

From an individual's viewpoint, this all sounds very desirable. For society as a whole, though, it will have profound effects. Most of them will be good, but not all.

就个人而言，这听来十分令人神往。但对于整个社会而言，这将会产生深远的影响。大多数影响都会是好的，但也并非全部。

One concern is that long life will exacerbate existing social and economic problems. The most immediate challenge will be access to anti-senescence treatment. If longer life is expensive, who gets it first? Already, income is one of the best predictors of lifespan. Widening the gap with treatments inaccessible to the poor might deepen divisions that are already straining democracies.

顾虑之一是长寿会让已有的社会和经济问题进一步恶化。最迫切的问题就是如何让所有人都享有抗衰老治疗的机会。如果要长寿得花大价钱，谁会先享受？收入已经是寿命的最佳预测指标之一。以穷人无法获得的疗法扩大寿命差距，这可能会加深已让民主国家备感压力的贫富分化。

Will older workers be discriminated against, as now, or will numbers give them the whip hand over the young? Will bosses

cling on, stymying the careers of their underlings, or will they grow bored, quit and do something else entirely? And would all those old people cease to consider themselves elderly, retaining youthfully vigorous mental attitudes as well as physical ones—or instead make society more conservative (because old people tend to be)?

年老的员工会不会像现在这样被歧视，亦或人数增多会让他们比年轻人更占上风？老板们会不会占着位子，妨碍下属的晋升，还是他们会开始厌烦，于是辞职，继而开始做完全不同的事情？这些老年人是否有可能会不再认为自己是老人，始终保持同身体状态一样年轻而有活力的精神状态，还是会让这个社会更加保守（因为老年人通常会这样）？

A reason for hoping that the elderly would turn out less hidebound is that life itself would be more a series of new beginnings than one single story. Mid-life crises might be not so much about recapturing lost youth as wondering how to make the most of the next half-century.

我们希望老年人能变得不那么墨守成规，原因之一便是生命本身将更可能是一系列新的开始，而不再是从头到尾一个故事。中年危机可能更多是关于思索怎样好好利用下一个五十年的时间，而非设法找回逝去的青春。

Retirement would become a more distant option for most, since pension pots would have to be enormous to support their extended lifespans. To this end, the portfolio career would become the rule and education would have to change accordingly. People might go back to school in their 50s to learn how to do something completely different. The physical labourer would surely need a rest. The accountant might become a doctor. The lawyer, a charity worker. Perhaps some will take long breaks between careers and party wildly, in the knowledge that medicine can offer them running repairs.

退休对于大多数人而言将成为一个更加遥远的选择，因为退休金必须非常丰厚才能支撑他们已经延长的寿命。为此，多种多样的职业生涯将变得司空见惯，教育也应做相应的调整。人们可能会在五十多岁时重返校园，学习如何去做一些全然不同的事。体力劳动者肯定需要歇一歇。会计师可能成为医生，而律师可能会去做慈善义工。

有些人或许会在两份工作之间休长假，聚会狂欢，因为他们知道医学可以帮他们修复身体的损耗。

Boredom, and the need for variety, would alter family life, too. How many will tie the knot in their 20s in the expectation of

being with the same person 80 years later? The one-partner life, already on the decline, could become rare, replaced by a series of relationships, each as long as what many today would consider a decent marital stretch. As for reproduction, men's testes would presumably work indefinitely and, though women's ovaries are believed to be loaded with a finite number of eggs, technology would surely be able to create new ones. Those who wished to could thus continue to procreate for decades. That, and serial marriage, will make it difficult to keep track of who is related to whom. Families will start to look more like labyrinthine networks. In the world where marriages do not last, women everywhere will be freer to divorce and aged patriarchs will finally lose their hold.

无聊以及对变化的需求也会改变家庭生活。有多少人愿意在二十多岁永结同心，期盼着八十年后身边厮守的仍是同一个人？从一而终的人已经在减少，以后可能会更罕见，取而代之的将是一段段新恋情，每段关系延续的时间都和今天很多人认为的一段像样的婚姻那样长。说到繁衍，男性的睾丸可能会工作不休；虽然人们认为女性的卵巢只存有一定数目的卵子，但科技必将创造出新卵子。因此只要他们想，可以连续几十年生育子女。这一点，再加上一段又一段的婚姻，会把血缘关系弄得很复杂，使家庭看起来更像错综复

杂的迷宫。在婚姻不长久的世界，各地的女性会更自由地离婚，年迈的族长最终将失去掌控。

Such speculation is fun, and mostly optimistic. The promise of a longer life, well lived, would round a person out. But this vision of the future depends on one thing—that a long existence is also a healthy one. Humanity must avoid the trap fallen into by Tithonus, a mythical Trojan who was granted eternal life by the gods, but forgot to ask also for eternal youth. Eventually, he withered into a cicada.

这样的推测很有趣，并且大部分是乐观的。更长寿、活得更好的希望让一个人更圆满。但对未来的这一憧憬取决于一个因素——长命的同时也得很健康。人类要避免像提托诺斯（Tithonus）那样落入陷阱。希腊神话中，这个特洛伊人请求诸神赐予他不死之身，但忘了祈求永葆青春。最终，他日渐枯萎，化为一只蝉。

Forward to Methuselah

期待彭祖之寿

The trap of Tithonus is sprung because bodies have evolved to be throwaway vessels for the carriage of genes from one

generation to the next. Biologists have a phrase for it: the disposable soma. It explains not only general senescence, but also why dementia, cancer, cardiovascular problems, arthritis and many other things are guarded against in youth, but crammed into old age once reproduction is done with. These, too, must be treated if a long and healthy life is to become routine. Moreover, even a healthy brain may age badly. An organ evolved to accommodate 70 or 80 years of memories may be unable to cope when asked to store 150 years' worth.

提托诺斯的陷阱已挖好，因为身体已经进化成为用完即弃的容器，用来盛放代代相传的基因。生物学家对此有个说法：可抛式躯体。这不仅解释了一般的衰老问题，也解释了为什么年轻时人们能免受痴呆、癌症、心血管疾病、关节炎和很多其他问题的困扰，而到了晚年繁殖完成之后这些问题就蜂拥而至。要使长寿而又健康的生活成为常态，这些疾病都必须加以治疗。而且，即便是健康的大脑也可能严重老化。一个进化成能存储七八十年记忆的器官一旦要储存 150 年的经历，可能会无法应付。

Yet biological understanding is advancing apace. Greater longevity is within reach—even if actual immortality may not be as close (or as interesting) as some fantasists would like to believe. Be sure to draw up a very long bucket list.

不过，生物学研究正在突飞猛进。尽管真正的长生不老可能并不像一些幻想家所认为的那么近在咫尺（或那么有趣），但长寿还是可以企及的。一定要记得写一份长长的遗愿清单。