一部包罗万象的知识宝典　　一套营养丰富的文化大餐

◎ 主编／孙静确

BILINGUAL ENCYCLOPEDIA FOR TEENAGER

双语青少年百科

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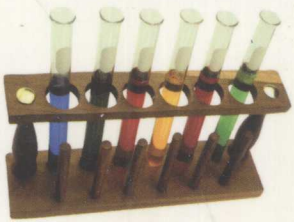

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双语

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□主编 / 孙静确

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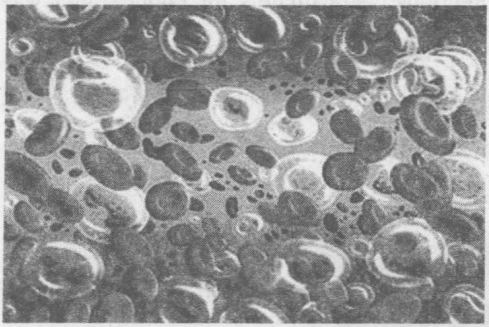
目　录

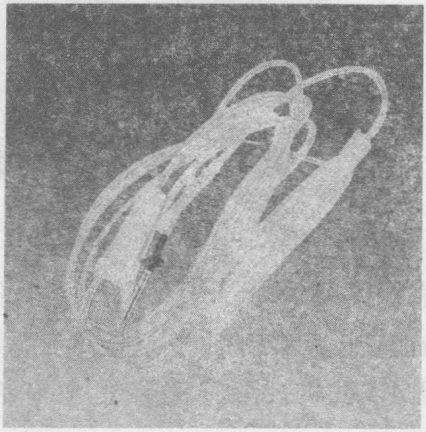
Artifical Blood
人造血液

Synthetic substitutes now being tested may be safer, more practical and save even more lives.

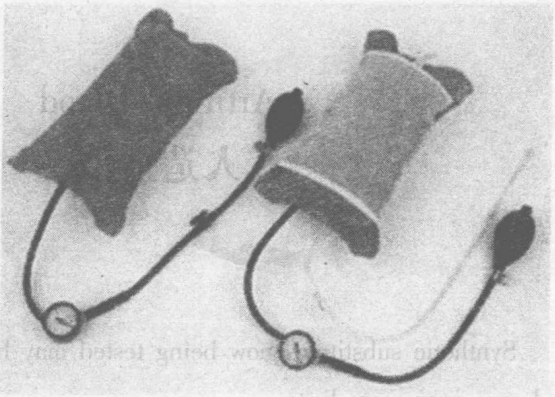


人工合成血液正在接受临床测试，它也许比人血更安全、更实用，进而可以拯救更多的生命。

Edna Fodor was enjoying a lazy summer evening at her son's cottage in Canada when the bonfire she was tending flared suddenly, searing her body from the waist up. Emergency rescue teams choppered her to Hamilton General Hospital in Ontario, where doctors would normally have cut away the burned skin to prevent infections, then grafted healthy skin to replace it. But such surgery involves



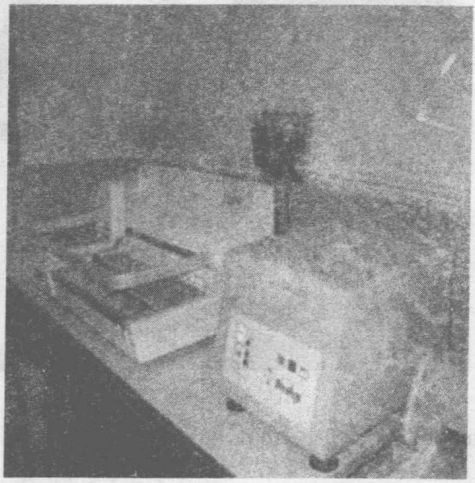
extensive bleeding—and Fodor is a member of a religious group that refuses blood transfusions. "We faced two deadly alternatives," says Dr. Brian Egier, director of the intensive-care unit. "We could either perform the surgery and have her bleed to death or let her die from the infections." Fortunately for Fodor, Egier was able to suggest a third option—so-called bloodless surgery using an experimental blood substitute called Hemolink. Although the product is not yet approved, Egier obtained an exemption for Fodor. Two years later she is happy, healthy and "lucky to be alive," she admits.



埃德娜·福多尔正在儿子的一幢位于加拿大的乡间别墅中懒洋洋地享受着夏日傍晚的悠闲。突然她正在摆弄的篝火冲起大火，火烧伤了她身体腰部以上的部分。急救小组迅速用直升机将她送往安大略省的汉密尔顿总医院，在那儿医生通常会将烧伤部位的皮肤切除以防止伤口感染，然后将健康皮肤移植到被切除部位。但是该手术会导致大量流血，而福多尔所信仰的宗教拒绝输血。特

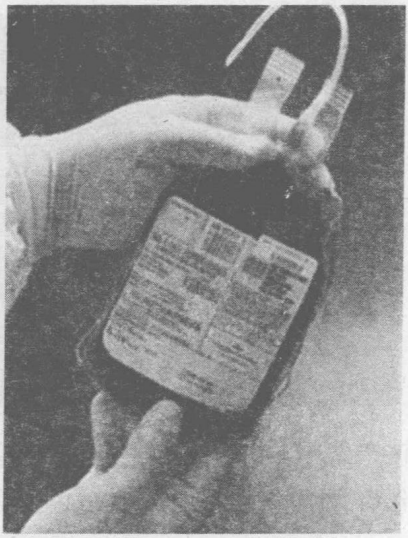
别护理部的负责人布赖恩·埃吉尔博士说:“我们面对的两个选择都是致命的,要么进行手术而她会大量流血而死,要么任其伤口感染而死。”对福多尔来说,幸运的是,埃吉尔能够提出第三种选择,使用一种叫“血链”的试验性血液替代物,进行了所谓的不流血手术。尽管该产品还未获政府的医疗批准,但埃吉尔为福多尔申请到特许。两年后,她健康快乐地生活着,并且说:“很幸运自己还活着。”

Hemolink is just one of a half-dozen blood substitutes that are nearing the market after decades of research. Known technically as “oxygen therapeutics”, they aim to replace only oxygen-bearing red cells rather than whole blood with its additional plasma, platelets and infection-fighting white cells. Red cells are the most frequently transfused component of blood—tallying more than 12 million units a year—and the one that faces periodic shortfalls. Replacements could not only alleviate shortages, but also offer important advantages, including longer shelf life and compatibility with any blood type.

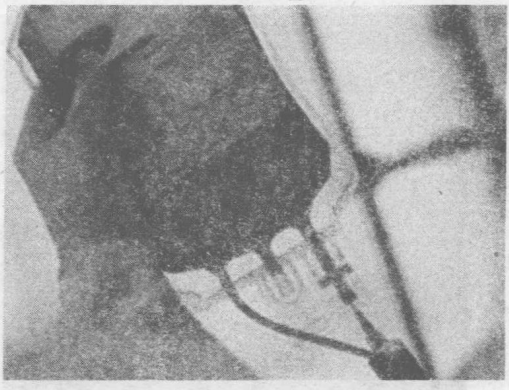


“血链”只是经过几十

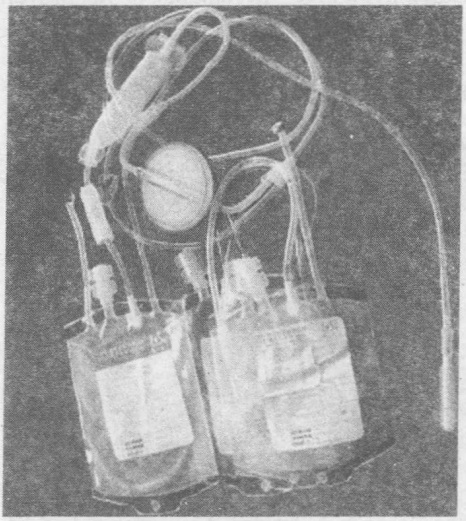
年的研究后即将投放市场的6种血液替代物之一。它们在技术上被称为“氧气疗法”，其目的只是替代担负运送氧气的红细胞，并非血液的全部(包括其他成分，如血浆、血小板和抗感染的白细胞)。红细胞是输血中最常用到的血液成分，算起来每年要1 200万个单位的用量，也是会出现阶段性短缺的物质。替代物不仅可缓解紧缺，还有重要的优点，如更长的存放时间和与任何血型都相容。



Oxygen therapeutics could reduce the risks. These blood substitutes fall into two general types. The first is a synthetic chemical called a perfluorocarbon, or PFC, which would not risk contamination by blood borne pathogens. The second type is based on actual hemoglobin extracted from discarded human or cow blood. The four companies in clinical trials with these products use stringent multistep processes to extract hemoglobin from red cells, then purify and stabilize it, so only hemoglobin is left. In theory, that should eliminate the possibility of disease transmission, whether of madcow disease from bovine hemoglobin or a suspected new strain of



hepatitis from human products.

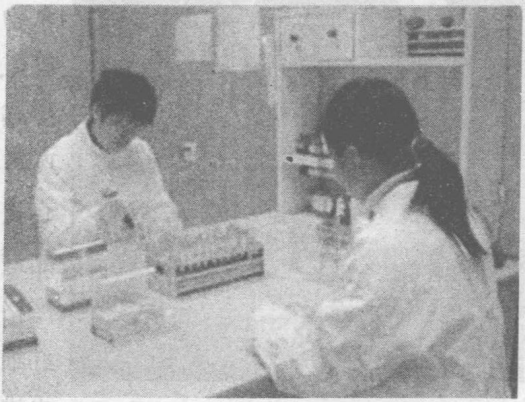


氧气疗法能降低风险。这些血液的替代物总的来说分成两类。第一类是合成化学物质过碳氟化合物，简称PFC，它没有被血液传播病原体感染的危险。第二类是从废弃的人血和牛血中提取的真正的血红蛋白。用这些产品进行临床试验的四家公司严格按照多个步骤的程序从红细胞中提取血红蛋白后，再进行纯化和稳定处理，最后只剩下血红蛋白。从理论上说，这样可以消除疾病传播的可能性，无论是来自牛血红蛋白的疯牛病或人血中感染的新型肝炎病。

For practicality, oxygen therapeutics also excel. Banked blood lasts only 42 days, has to be refrigerated and must be cross-matched to patients to avoid negative reactions with incompatible blood types. But oxygen therapeutics last months to years at room temperatures and lack blood-typing proteins, which are found on the coats of red cells. That could make them particularly useful in ambulances, which cannot carry large stocks of refrigerated blood, and also on the battlefield. What's really intriguing about

oxygen therapeutics, though, is that they appear to deliver oxygen to areas inaccessible to red blood cells. Early evidence—it remains to be proven in trials—is that they might slip past a clot that was causing a heart attack or stroke and deliver crucial air to oxygen-starved tissue.

从实用的角度来看，氧气疗法也更具优势。血库中的血液必须用冰箱保存并只能存放42天，为避免不同血型间的不相容所产生的不良反应还必须与病人的血液做交叉配血试验。但氧气疗法的替代物可在常温下存放数月到数年，并且没有红细胞外表所含的与血型相关的蛋白。它在那些无法携带大量冷藏血液的救护车上以及战场上，将会非常管用。然而，氧气疗法的更诱人之处是，看来它还能把氧气送到那些红细胞不能到达的地方。早期的证据（还有待进一步试验的检验）表明它可能从导致心脏病或中风的血栓旁溜过，将至关重要的氧气送到缺氧组织。



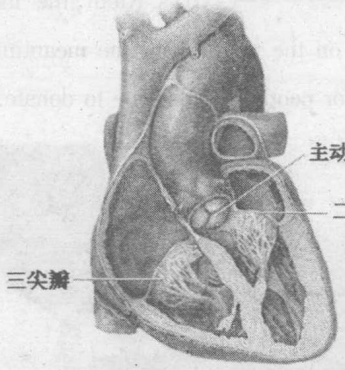
There are downsides to oxygen therapeutics, though. PFCs cause a transient drop in platelet counts, while most of the hemoglobins cause a temporary increase in blood pressure. No one knows

why these problems occur or whether they signal other complications yet to be discovered. Doctors are still learning how to use these products effectively. And since none of the substitutes lasts long in the body, they would not help patients who need chronic transfusions. Whatever their drawbacks or virtues, points out NIH's Klein, the most obvious limitation is that they are not yet on the market. In the meantime, the best way to fill the need for blood is for people to continue to donate.

当然，氧气疗法也有其缺点。PFC 会产生暂时性血小板数量降低，而多数血红蛋白则导致临时血压升高。没人了解这些问题的原因或这是否表明还有其他复杂情况有待于发现。医生们正在学习如何有效地使用这些产品。由于所有这些替代物都不会在体内存在很长时间，它们对那些需要长期输血的病人用处不大。国家卫生研究院的克莱因指出，无论其缺点或优点如何，目前最明显的限制是它们还未上市。在这期间，解决输血需求最好的办法还是请大家继续献血。

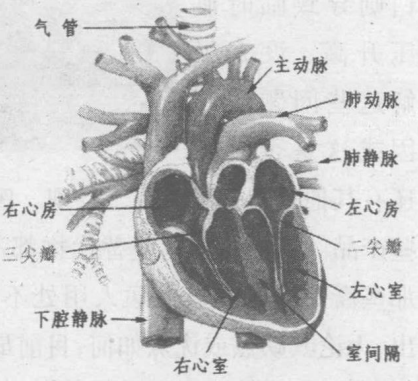
Repair Damaged Hearts
修补坏死的心脏

New research suggests doctors may someday fix hope lessly damaged hearts with bits of tissue from other parts of the body.



最新的研究表明，将来某一天医生可以用人体其他部位的一小片去修补无法治愈的坏死心脏。

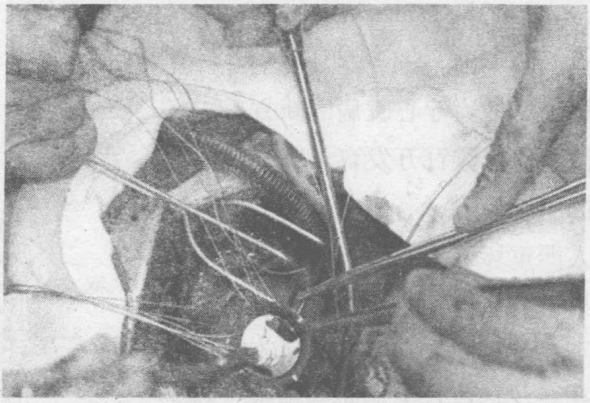
Preliminary studies conducted in the United States and Europe raise the possibility that cells taken from bone marrow or muscles can be used to revive seemingly dead patches of heart muscle.



根据美国和欧洲的初步研究，下面的技术——骨髓细胞或肌细胞被用于修补心肌表面坏死的部分已成为可能。

"If this proves efficacious, we will improve the quality of life of our patients and their survival. This will

replace heart transplants," said Dr. Nabil Dib of the Arizona Heart Institute.



亚利桑那心脏病研究所的内比尔·迪比博士说:"如果这种技术证明有效,我们将会提高我们的病人及其幸存者的生活质量。这种技术将会替代心脏移植。"

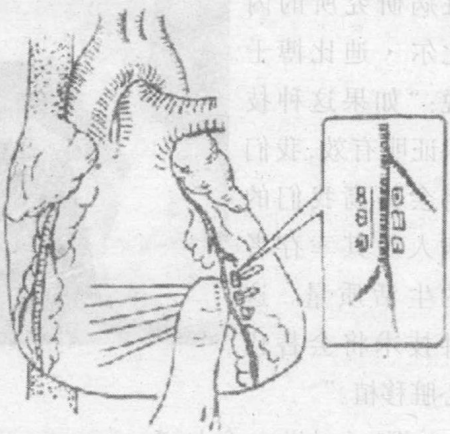
The inability of the heart to pump forcefully enough, a condition called heart failure, is a large and growing health problem afflicting an estimated 5 million people in the United States alone.

心脏供血能力不够强大,这种情况称为心力衰竭,这是一个巨大且日益突出的健康问题。仅仅在美国,大约就有 500 万人遭受这种病的折磨。

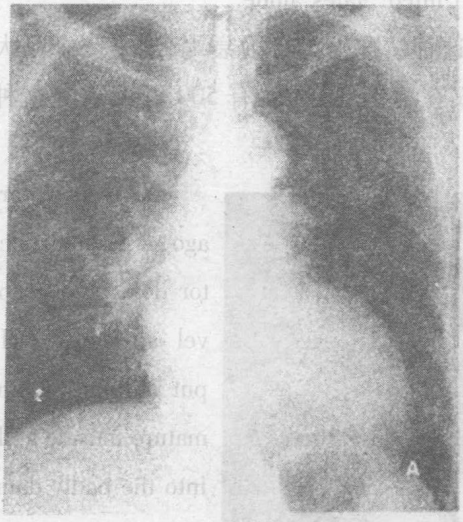
Two years ago, a French doctor described a novel alternative: He put millions of immature muscle cells into the badly damaged heart of a 72-year-old man. His

heart began to pump more powerfully, although it was unclear whether the benefit came from the new cells or from coronary bypass surgery he received at the same time.

两年前，一位法国医生提出一种治疗心脏病的新方法。他把数百万发育未完全的肌细胞植入一位72岁老人严重坏死的心脏当中。结果，这位老人的心脏开始有了更大的供血活力，虽然不清楚这是得益于那些新细胞还是他同时接受的植入冠状动脉替代管的手术。



That physician, Dr. Philippe Manasche of Bichat Hospital in Paris, has now repeated the approach on 10 patients, and similar experiments are being conducted by teams in the United States, Germany, England and Poland.



巴黎Bichat医院的医生菲利普·梅纳切博士现在已经给10位病人施用了这种治疗方法。美国、德国、英国和波兰的医疗队也正在进行类似的试验。

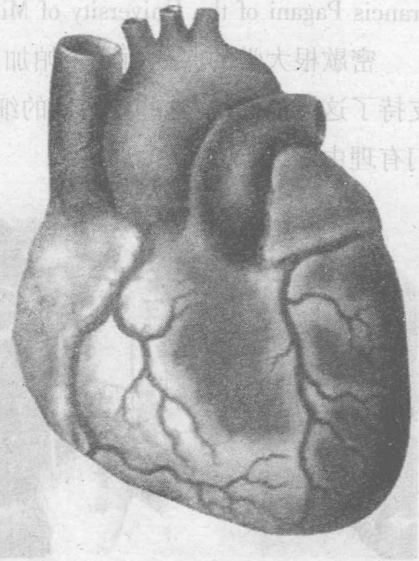
Preliminary but encouraging data on these experiments were reported

at the annual scientific meeting in Chicago of the American Heart Association. Doctors said the shifted cells can live inside the heart's dead scar tissue and show at least some signs of contracting like the original heart muscle.

在芝加哥举行的美国心脏病协会的科学年会上，公开披露了关于这些试验的初步的、但令人鼓舞的资料。医生们认为，被植入的细胞可以在坏死的心脏组织内成活，与原来的心肌一样，只是看起来有一点萎缩。

"This is quite exciting and definitely new," said Dr. Timothy Gardner of the University of Pennsylvania, who is not involved in the studies.

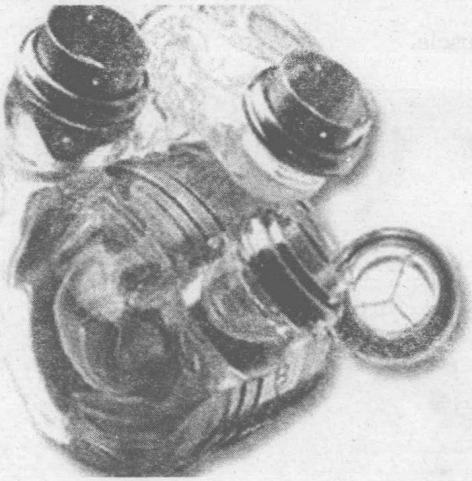
宾夕法尼亚大学的蒂莫西·加德纳博士没有参加这项研究，但他说道："这是非常令人兴奋的，无疑是最前沿的研究。"



For now, all that researchers can say for sure is that the transferred cells take root and flourish in dead areas of the heart. Whether they make the heart pump more

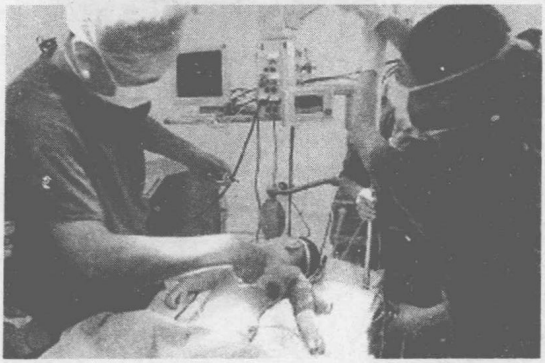
forcefully remains to be proved, although researchers say they see encouraging evidence that this may happen.

目前，所有研究者都确信，被移植的细胞能够在心脏的坏死部位成活并发育。尽管研究者说他们相信令人振奋的证据可能出现，但这些被植入的细胞是否使心脏更有活力仍有待证明。



"The results so far support the hypothesis that these cells will do some good. It gives us a reason to go on," said Dr. Francis Pagani of the University of Michigan.

密歇根大学的弗朗西斯·帕加尼博士说："迄今为止，这些结果支持了这样的假说：这些被植入的细胞发挥了它们的作用。因此，我们有理由继续下去。"



Pagani is working with Dib, whose team tested the approach on 16 patients getting either coronary bypasses or temporary pumps to keep them alive until they could have heart transplants.