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STRATAGENE METHOD—TIME 2.5 HOURS
2 HOURS 15 MIN 15 MIN 30 SECONDS

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FIGURE 1:
Figure Legend: Fractionation of end labeled DNA markers on 3mm thick 0.8% agarose by the VAGE apparatus and transfer to Duralon—UV™ membranes using the PosiBlot pressure blotter.
A. Ethidium stained gel showing high resolution.
B. Same gel after pressure blotting.
C. Autoradiogram of membrane after pressure transfer.

12 HOURS 4 HOURS 12 HOURS 2 HOURS
CONVENTIONAL METHOD—TOTAL TIME 30 HOURS
The Stratalinker™ UV Crosslinker fixes nucleic acids to solid supports such as nitrocellulose or nylon membranes, in less than one minute. This compares favorably to vacuum baking, which requires 2 hours. The Stratalinker actually monitors the ultraviolet energy flux and deactivates the light source upon reaching the user-programmed energy level (Figure 4). Figure 3 shows an autoradiogram of a human genomic Southern blot performed using the VAGE, PosiBlot and Stratalinker all in 2.5 hours.

The Stratalinker™ UV Crosslinker fixes nucleic acids to solid supports such as nitrocellulose or nylon membranes, in less than one minute. This compares favorably to vacuum baking, which requires 2 hours. The Stratalinker actually monitors the ultraviolet energy flux and deactivates the light source upon reaching the user-programmed energy level (Figure 4). Figure 3 shows an autoradiogram of a human genomic Southern blot performed using the VAGE, PosiBlot and Stratalinker all in 2.5 hours.

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Children and adolescents in today's world are being shaped by circumstances far different from those that influenced older generations. Most of us lived in a two-parent home and had interactions with parents and other members of a nuclear family. A mother was present in the home. Divorce was rare. Today, most married women are in the work force. Time for relaxed parental interactions with adolescents is minimal. The media—particularly TV—and peers are often more influential on adolescents than their parents. The result is what many experts perceive as a generation in crisis.

David Hamburg, President of the Carnegie Corporation of New York (a foundation), has devoted major financial and intellectual resources to the matter. His efforts have led to important reports and two recently published books that analyze factors impacting the young. The books also describe some of the productive experiments that have been performed dealing with childhood and adolescent problems. Hamburg himself is author of one book.*

Fred Hecinger, formerly Education Editor of The New York Times, prepared the other.† Extensive reviews of both of the books might well have appeared in the current Book Issue of Science were they not so recent in appearance.

In his book, Hamburg provides a historical perspective and treats the development of humans from conception through adolescence. He describes the many circumstances that often lead to deleterious consequences at various stages of child development and recommends changes in education. Hecinger devotes his book to the adolescent and presents an analysis that supplements that of Hamburg. In what follows I present a tiny sample of material from the books.

The authors touch only briefly on effects of TV, but the comments have impact. The average 18-year-old has spent a total of 15,000 to 22,000 hours watching TV, compared with 11,000 hours spent in school. Youths will have been exposed to as many as 18,000 televised murders. In their TV viewing, young people are treated to glamorous messages portraying sex, smoking, drinking, and risky behavior. American TV viewers are annually exposed to some 9230 scenes of suggested sex or innuendo, and fully 94% of sex on soap opera involves people not married to each other. The TV messages amplify a tendency for youth to experiment with risk taking. American girls under 18 have proportionately four times as many babies as Swedish or Dutch counterparts. The United States is experiencing an alarming rise in syphilis. Sexually active girls of 10 to 19 have the highest rate of gonorrhea of any age group.

Other results of exposure to TV are also injurious to health. Smoking, alcohol, and junk foods take their toll. A partial answer utilizes potentials of the school. Students are naturally curious about their own bodies and more eager to learn more about themselves than about the earthworm. Instruction can inform adolescents about the importance of proper nutrition and exercise and the effects of substance abuse. An understanding of sexually transmitted diseases can help to prevent irresponsible sexual activity.

Despairing of a lack of success in schools, a large fraction of blacks and Hispanics drop out before they reach high school. To minimize this loss, it is desirable to employ remedial measures in earlier grades. Many experiments have been conducted that demonstrate that improved results can be obtained. A successful project in New Haven is cited by Hamburg. It involved the leadership of Professor James Comer of Yale University and efforts with two schools. Ninety-nine percent of the students were black and almost all were poor. Comer and his colleagues promoted children's development and learning by building supportive bonds between children, parents, and school staff. The program took a team approach to working with children having difficulties. With time, the staff learned how best to deal with the concerns and needs of developing children. Earlier, the students in the two schools had ranked lowest among the city's 33 elementary schools, but with the program, they came to rank third and fourth.

The changing circumstances require new approaches to the nurturing of the young. The books provide stimuli for thought and action.

†Fred M. Hecinger, Fateful Choices: Healthy Youth for the 21st Century (Hill and Wang, New York, 1992), $18.95; also available as a Carnegie Corporation of New York Report.
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Antarctic Environmental Concerns

After two news items about Antarctic science appeared in Science (News & Comment, 17 Jan., p. 276; Briefing, 24 Jan., p. 406), it occurred to me that readers might be interested in an elaboration of what the National Science Foundation (NSF) is doing to clean up the Antarctic environment and to minimize pollution.

Antarctica's principal use is as a research laboratory. Last year 26 nations signed a protocol to strengthen existing Antarctic Treaty measures to protect the environment. Joseph Palca's 17 January article suggests that the new protocol will make conducting research more difficult. We believe it is making our program more accountable. The U.S. Antarctic Program, managed by the NSF, has not waited for the protocol to enter into force; it is complying as quickly as possible. Research stations, some of which have supported science for 35 years, are being cleaned up, and improved methods of waste management have been put into practice.

The NSF's $30-million Antarctic cleanup program, begun in 1990, provides for improvements in many areas, including specialized activities such as identification, packaging, and removal of hazardous waste to facilities outside Antarctica for proper disposal. For some two-thirds of the U.S. Antarctic Program, McMurdo—the largest station in Antarctica—is the center for logistics and waste management. All the waste from dozens of outlying research camps, plus solid and hazardous waste from America's year-round station at the geographic South Pole, is handled through McMurdo. A smaller U.S. operation near the Antarctic Peninsula is centered at Palmer, a research station long admired as exemplary in its waste handling.

Substantial improvements began around 1980, when the NSF issued an environmental impact statement for the U.S. Antarctic Program (1). McMurdo's open shoreside dump was replaced with a fenced waste processing area away from the sea, at a site called Fortress Rocks, and a general cleanup was commenced. As might be expected, there were some problems. For example, the Fortress Rocks site had to be closed last year when materials containing asbestos were found. The asbestos-laden material as well as the total accumulation of all other surface debris were removed from the site during the 1991–1992 austral summer. In one case, noted in the 24 January Briefing, old, unstable laboratory chemicals found in storage were safely destroyed at a remote location on the Ross Ice Shelf.

Most wastes and recyclables are sorted and saved for removal on the cargo ship that arrives with resupplies once a year in midsummer. This year the ship retrograded 2581 tons of sorted waste and recyclable materials along with carefully identified hazardous waste for approved disposal outside Antarctica. An incinerator installed at McMurdo this season is used to burn kitchen waste and food-contaminated packaging; the ash is removed from Antarctica. Formerly, these wastes were burned in the open at Fortress Rocks, and the ash was left as landfill. Other improvements have included replacing fuel bladders with steel tanks; replacing old, short-length fuel hoes with new, long-length sections that have "dry-break" connections; and the staging of control and containment equipment ready to recover spilled fuel.

The NSF practices diligent control of environmental aspects of its activities in Antarctica. Research proposals are not considered for funding until the investigator addresses environmental concerns. Construction and disposal projects do not begin until potential environmental impacts have been considered. The NSF's Antarctic personnel manual describes each person's environmental responsibilities and notes legal penalties for noncompliance. McMurdo's weekly newspaper carries stories on environmental successes and lessons learned from the infrequent but inevitable mishaps that occur. Books and films prepared by the NSF are shown to each participant. The responsibilities of the NSF extend beyond its own program. Tour companies are provided educational materials regarding Antarctic environmental protection, and NSF observers are placed aboard tour ships to monitor compliance.

Investigators are studying both the remnant environmental impacts of past practices and the effect of today's improved procedures. Recent investigations have shown that, over the years, activities at McMurdo have polluted the bottom of Winter Quarters Bay, a roughly triangular embayment about 600 feet on a side. They also have shown that, immediately outside the bay, levels of pollutants are two orders of magnitude lower, and sites half a mile away are not polluted (2, 3).
of Rb/Tl-doped C₆₀ and the Tₑ of Rb₂C₆₀. Consequently, the most reasonable interpretation of the present results is that the conditions used for thallium alloy doping result in thermal diffusion barriers, which interfere with thermal equilibration, and that similar thermal barriers are not present for C₆₀ doped using only Rb. A corresponding time-dependent lack of thermal equilibration cannot explain the Tₑ enhancement in LFS data observed by B.L.R. for the K/Tl and Rb/Tl samples, as the LFS data were taken after waiting at each temperature until a constant LFS signal was obtained and the same results were obtained for both decreasing temperature and increasing temperature runs. Nevertheless, these results might also be explained by assuming that the effect of using thallium as a codopant is to increase thermal diffusion barriers within the samples. Despite the use of samples consisting of no more than 20 mg of C₆₀, it appears that these thermal diffusion barriers resulted in an increased temperature drop across the samples, which provided the apparent Tₑ enhancement compared with that for the corresponding K- or Rb-doped samples measured in the same manner.

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REFERENCES AND NOTES
2. We thank K. V. Rao, J. L. Costa-Kramer, S. Glarum, A. A. Zakhidov, J. K. Krause, and B. C.Dodrell for their important measurements and valuable discussions.

Correction
In the 24 April “Inside AAAS” article “AAAS organizes more meetings of the mind” (p. 548), it is stated incorrectly that Paul Berg of Stanford University will be giving the keynote address and that Helen Donis-Keller of Washington University will be presenting a paper at the Science Innovation ’92 meeting in San Francisco (21 to 25 July 1992). The Science Innovation ’92 program was tentative at the time the article was written. Joseph Martin of the University of California, San Francisco, will deliver the keynote address on one of the major themes of the meeting, “Mapping the Human Brain.” Helen Donis-Keller and Paul Berg were invited to speak but will not be on the program this year.
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was rapidly transformed in the plume.

23. It has been suggested that the smoke from the Kuwait fires reached Hawaii and Wyoming (B. A. Bodhaine, J. M. Harris, J. A. Ogren, D. J. Hoffmann, Geophys. Res. Lett., in press). This does not contradict our conclusion that the smoke had insignificant effects on a global scale because the amounts of smoke claimed to have reached Hawaii and Wyoming are small and would have insignificant effects on climate.


30. The number of fires is based on daily reports from the Kuwait Oil Company as compiled by the Arabian Gulf Program Office, National Oceanic and Atmospheric Administration.

31. Johnson et al. (3) reported total soot emissions of $1.75 \times 10^9$ metric tons per day. However, they actually measured total particle volume, converted it to mass, and assumed all this mass was soot.

32. The U.S. Interagency Airborne Study of the Kuwait oil fires, which was supported by the National Science Foundation, the Department of Energy, the National Oceanic and Atmospheric Administration, and the National Geographic Society, would not have been possible without the dedicated efforts of many individuals. In particular, we thank R. Greenfield and R. Anthes for coordinating funding. We also thank all of the scientists, engineers, and pilots who participated in this project. In Bahrain, M. Isa provided office space and K. Fakhro helped in coordination.

Our measurements show that ~40% of the mass of particles was salt and sulfate. We measured $1.2 \times 10^4$ metric tons per day of particles (of all compositions) with diameters <3.5 μm. About 20% of the oil well fires were extinguished between the time of the measurements of Johnson et al. and ours.

"We were a control group back in Behavioral Sciences 202 and we've been together ever since."
nor in one about art, but rather in one about science. Why? I would be hard pressed to explain, except that, I think, Slobodkin has purposely made his book an example of his thesis. Its outline is simple, but the complicated substance of it bears little relation to the outline.

Sometimes his thesis does illuminate the subject matter. Thus, on the "religions of the book," Judaism, Christianity, and Islam: Judaism cast off the complex theology of preexisting polytheism, a significant simplification, but substituted for it a legal system of endless detail. Christianity (eventually) replaced the Jewish legal code with a few simple ethical principles but compensated by creating a theology complex enough to keep its philosophers busy. Islam, in its turn, banished theological complexity but returned to a detailed, legalistic code of behavior.

Games are an obvious example of simplification. All players, rich and poor, are (in principle at least) equal on the playing field, and, for once in life, everyone knows the rules. But games take place in, and are always related to, the larger, more complicated world outside the playing field. The prize for winning is almost always something that is not useful within the game itself.

This brings us to a discussion of three dinner parties. (How? Please, don’t ask.) One is a lavish Italian dinner, the second an elegant Japanese lunch, and the third a Passover Seder in Slobodkin’s own home. The Seder, a ritual dinner, is full of symbolic foods and activities, obvious simplifications of complex tribal memories, complemented by notable elaborations of food and custom. The Japanese lunch brings to light the Japanese chef’s ideal (very different from that of the Western chef) to be transparent, not to intrude between the diner and the ingredients (the same idea will later reappear in the wish of a musician not to intrude between the audience and the composer). The Italian dinner took place in Pavia, where Slobodkin was obviously the honored guest of a cultured and well-off host. It is the standard Italian meal: antipasto, pasta course, fish course, meat course, all with appropriate wines and other accompaniments, and two rich desserts. Judging by Slobodkin’s description of the food, conversation (mainly about food), and the rest of the dinner scene, I would rate him a dependable reporter (this review is being written in the town of Grottaferrata, just outside Rome).

To continue through the book chapter by chapter would be to do Slobodkin an injustice, because the book would then seem to be summarized, and it is not a book that submits easily to summary. It is a meandering discourse, loaded with specific stories and facts (Slobodkin calls them his “menagerie of examples”). For example, people who have their natural lenses re-
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was lacking in Emmon's original data. The only disappointment that one might voice is that there couldn't have been more. It is unfortunate but entirely understandable that de Laguna deferred Emmon's valuable but still unpublished material on the history of Tlingit clans and tribes to a later publication. During the last stages of preparation of the manuscript for The Tlingit Indians, de Laguna quipped, "It's taking me longer to edit this thing than it took Emmon to write it!" In the final product, however, her commendable editorial efforts and her contributions incorporating current research trends combine with Emmon's original field observations of more than a century ago to create a comprehensive and definitive work that will be of interest to the general reader and indispensable to students and specialists in the field. It is the most important single resource now available on the Tlingit people.

Richard L. Dauenhauer
Language and Cultural Studies, Sealaska Heritage Foundation, Juneau, AK 99801

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