CRYONICS

2nd Qtr. 2003 A PUBLICATION OF THE ALCOR LIFE EXTENSION FOUNDATION Volume 24:2

Under Construction: Alcor Is Growing

page 4

Meet Alcor's Newest Employees

page 11

The Futurists' Quiz

page 22

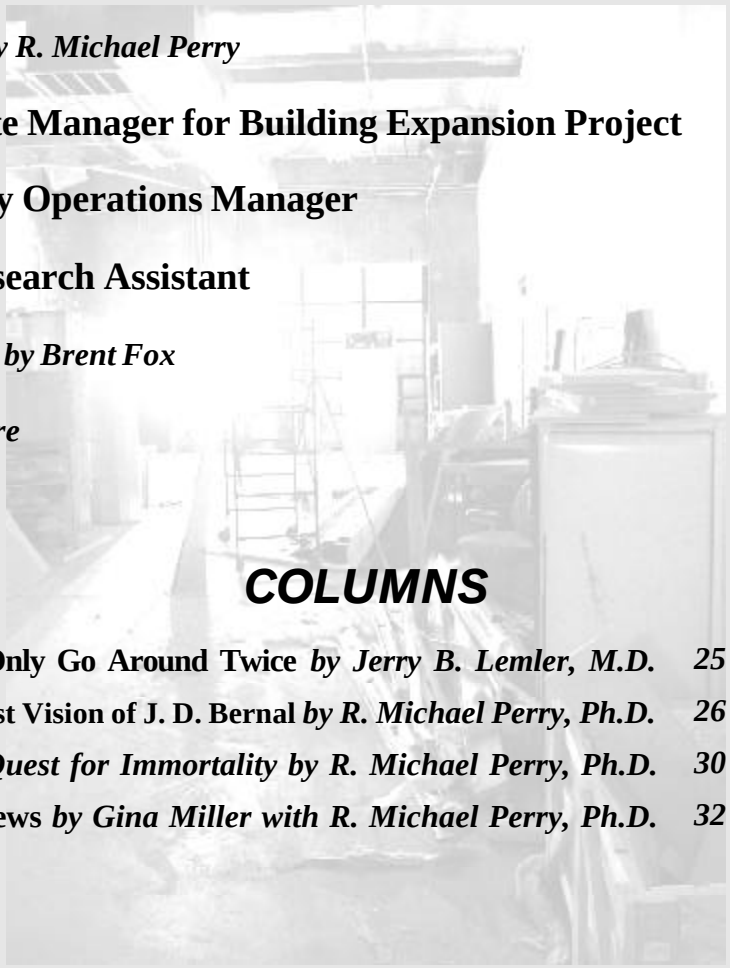
Medical Alert Tattoos for Cryonicists?

page 20

ISSN 1054-4305
$7.50

Cryonics

Vol. 24:2
2nd Quarter 2003



COLUMNS

ALCOR UPDATE

Alcor: The Origin of Our Name

In September of 1970 Fred and Linda Chamberlain (the founders of Alcor) were asked to come up with a name for a rescue team for the now-defunct Cryonics Society of California (CSC). In view of our logical destiny (the stars), they searched through star catalogs and books on astronomy, hoping to find a star that could serve as a cryonics acronym. *Alcor,* 80 Ursae Majoris, was just what they had been looking for. It not only had some acronymic "fit" for cryonics but was also symbolic for its historical use as a test for eyesight and was located in a very well known constellation.

Alcor, a companion star of Mizar in the Big Dipper's handle, is approximately 5th magnitude, barely within the threshold of human vision. Additionally, it is quite close to Mizar from an angular standpoint, and dimmer. Only with excellent vision can one tell there are two stars rather than just one. For thousands of years, people in the Middle East have used Alcor as a critical test of visual sensitivity and focus. If you could see Alcor, you had excellent vision indeed. In the early days of cryonics, few people could see the need for a rescue team or even for cryonics itself. Symbolically then, Alcor would be a "test" of vision as regards life extension.

As an acronym, Alcor is a close if not perfect fit with *Allopathic Cryogenic Rescue.* The Chamberlains could have forced a five-word string, but these three seemed sufficient. *Allopathy* (as opposed to *Homeopathy)* is a medical perspective wherein *any treatment that improves the prognosis is valid. Cryogenic* preservation is the most powerful method known to halt the rapid, entropic disorganization of people following clinical death. *Rescue* differentiates a cryonics approach from (yet to be developed) proven suspended animation. The acronymic interpretation of Alcor is therefore *use of a cryogenic procedure, though unproven, to preserve structure and potential viability, since failing to do so allows further disorganization to occur and reduces the probability (prognosis) of reversal and reanimation at any future time.*

Some of these thoughts were presented at a CSC dinner meeting in the autumn of 1970. A number of people who have subsequently become members of the Alcor Life Extension Foundation were present at that gathering. Over the months that followed, it became increasingly evident that the leadership of CSC would not support or even tolerate a rescue team concept. Less than one year after the 1970 dinner meeting, the Chamberlains severed all ties with CSC and incorporated the "Rocky Mountain Cryonics Society" in the State of Washington. The articles and bylaws of this organization specifically provided for "Alcor Members," who were to be the core of rescue team activity. Difficulties in securing nonprofit status in Washington then led to reincorporation in California, this time under the name "Alcor Society for Solid State Hypothermia." In the late 1970s, to further broaden the organization's objectives, the present name (Alcor Life Extension Foundation) was adopted.

Despite many transitions, the symbolism of the name remains. How long will it take for more people to see that "Ashes to ashes and dust to dust" is a meaningless destiny... to see that it is possible to reach for a distant tomorrow and perhaps to attain it... to *see* Alcor for what it really is: a vehicle with which to attempt that fantastic voyage!

—Reprinted from *Cryonics,* August 1984.

Cryonics is a quarterly publication of the **Alcor Life Extension Foundation**

Editor
Lisa L. Lock
llock@winterthur.org

Volume 24:2

2nd Qtr. 2003

ISSN 1054-4305

Submissions may be sent via e-mail (jlemler@alcor.org or llock@winterthur.org) in ASCII, Word, or PageMaker format. Mailed submissions should include a PC diskette with the file in any previously mentioned format (although printed text alone will be considered). All submitted media become property of the Alcor Life Extension Foundation unless accompanied by a self-addressed stamped envelope. The Alcor Life Extension Foundation assumes no responsibility for unsolicited manuscripts, photographs, or art. Send all correspondence and submissions to:

Cryonics
Alcor Life Extension Foundation
7895 E. Acoma Dr., Suite 110
Scottsdale, AZ 85260

Visit us on the Web at www.alcor.org

How to Join Alcor

Your research is finally complete. You browsed our web site (www.alcor.org), presented your questions to our Membership Administrator (jennifer@alcor.org), and toured our facility. Now you are ready to establish your membership with Alcor Foundation. Congratulations and welcome!

Upon receipt of your application for membership and application fee, Alcor will send you various membership documents (samples available upon request). After reviewing these documents, you will need to execute them in the presence of two signing witnesses. Perhaps a representative of your local bank can notarize the single document that also requires this official witness. After returning all of your documents to Alcor for approval, you can expect to receive one original copy of each for your personal records.

Most people use life insurance to fund their suspension, although cash prepayment is also acceptable. If you do not already have an insurance policy, Alcor recommends that you apply for one at your earliest convenience, as the underwriting process can last several weeks. Jennifer Chapman, Alcor Membership Administrator, can provide you with a list of insurance agents who have previously written policies for this purpose. These agents can assist you with satisfying Alcor's various funding requirements, such as naming Alcor as the owner and irrevocable beneficiary of your policy and ensuring that your benefit amount is sufficient.

With your membership documents completed and your funding approved by Alcor, you will be issued emergency identification tags engraved with your personal Suspension Number. This is your confirmation that Alcor will provide you with suspension services, should our emergency technicians ever receive a call on your behalf. Certainly, Alcor hopes that you will not need our services anytime soon, but as a member of Alcor you can feel confident that our organization will care for you and your future. Please call 480-905-1906 ext. 113 today to request your application.

TO ALL ALCOR MEMBERS AND THOSE IN THE SIGN-UP PROCESS

Please! Please! Please!

When you move, or change phone numbers (work number as well), change e-mail addresses, or undergo any medical procedure where general anesthesia is used, please inform us as far ahead of time as you can.

Too many times we have tried to contact our members and found out the contact information we have is no longer valid.

Other times we find out well after the fact that a member has undergone a medical procedure with life threatening potential.

Help us to serve you better!
Keep in touch!

ALCOR IS GROWING

by Steve Van Sickle

Alcor is growing, and not just in the size of its membership. We have undertaken a program to expand the offices and working areas of the building we occupy in Scottsdale, Arizona, which is practically bursting at the seams.

Purchased nearly ten years ago, the building in the Scottsdale Airpark had one great advantage: it was subdivided into 11 separate "bays." Alcor originally occupied three (and shortly after four) of these bays, paying a nominal rent to Cryonics Property LC, of which Alcor's Patient Care Trust is a major owner. The rest of the bays were rented to local companies for their own use. Despite some fears that few would want to rent from "those people," it has been a resounding success, and the income has paid a major portion of the patient care expenses, allowing the cash reserves of the Trust to be invested more for the long term.

About a year ago, due to the initiative and much appreciated donations of Judy and Mark Muhlestein, a renovation of the office areas of Alcor began, with new paint, furniture, and in particular a beautiful new stone tile floor to replace the old and ragged industrial carpeting.

Some tentative plans were made for further expansion, at which point it was realized that a more careful look at the needs of Alcor and its staff, and what we could afford, was needed. To this end, a building renovation committee consisting of Charles Platt, Steve Bridge, and myself was formed.

We quickly arrived at several conclusions: first, that there was a great need for workshop, laboratory, and office space. Second, that since Cryonics Property LLC would have to charge us full rate for any new bays that became available, we could only afford two new bays. Third, that the Patient Bay was nearly full to capacity and needed to be moved or expanded. And fourth, that we wanted to do this with with as little disruption and new construction as possible.

The result is as you can see in the diagram on the next page. Most of bay 106 would be the new Patient Bay, with the forward portion set aside for a new, slightly larger conference room, with window space directly into the patient area allowing visitors to view the patients without actually entering the room. This was something we decided was a very important safety and security measure. Most of bay 107, in turn, would be a new operating area, large enough (barely) for two operating tables. This will allow us to keep one table ready at all times for an emergency, while allowing another to be broken down for refitting, testing, experimentation, and training. It would also permit us to do two simultaneous perfusions in the increasingly likely case of simultaneous emergencies. The front area of the bay will also permit a reception area, an office, and overhead storage over the operating room.

New conference room with window

The rest of the building that we currently occupy will be undergoing changes of its own. The new STASIS vehicle, which is replacing the old ambulance, will be moved to fully alarmed covered storage outside. The air conditioning system is a unique type that will allow the system to be plugged into building electricity, permitting the vehicle and its contents to stay cool (even in Arizona weather) full time.

This move, and the move of the Patient Bay, will allow a large area to be dedicated to suspension and transport kit storage and assembly. No longer will the "lab" area be overwhelmed by stacks of kits and half assembled tubing packs. Furthermore, the old operating room will now become part of the research lab. Between these two changes, Alcor will have a larger area dedicated to research activities than it has ever had before. Since what we have now is essentially overwhelmed by suspension preparation, it will be quite an improvement.

Other smaller changes are also being made: The "caves," a dark, poorly used area in bay 108, have been converted to a crew rest area for those late night emergencies as well as an office/storage room. We may or may not move the offices in front to create a single, windowed corridor across the front rather than the current snakelike pathway. This will likely be determined by the budget.

In short, this is what we have done, and plan to do, in the various phases:

Phase One: The crew room, storage room, and new office cubicles. The new conference room, and window into the patient area. These have been completed.

Phase Two: Front office and reception area in bay 107. Handicapped accessible lavatory, and O.R. storage and scrub room. Currently under construction.

Phase Three: New operating room ceiling, second-floor storage, lights, and electrical utilities. Moving operating room. Planned next, and likely under construction as you read this.

Phase Four: The new Patient Bay. Painting, roof crane, ceiling hatch, doors, lighting, emergency ventilation, and liquid nitrogen distribution. A new bulk storage liquid nitrogen tank has been purchased. Some items are being worked on simultaneously with others, some items are awaiting structural tests to ensure the safety of roof modifications. As soon as this phase is done, the patient dewars will be moved.

Phase Five: The current patient, cooldown, and ambulance bays will be built out for overhead storage, and for transport and perfusion equipment assembly, and part and kit storage. Cabinets, work benches, and electrical utilities. This will have to wait until the patients are moved.

Phase Six: The new laboratory areas will be finished, to include (as needed) cabinetry, flooring, electrical utilities, plumbing, and ventilation. The Research Committee has already begun outfitting this area with general laboratory equipment and more specialized gear to further developing research plans.

Phase Seven: Finishing touches on office areas, possibly to include moving the front corridor (as funds permit).

This is a long project, and it has already taken longer than we hoped. But once it is finished, I am confident that we will have an attractive, usable facility that we will be proud to show to visitors.

As usual with any Alcor project, we welcome your comments and suggestions. You may e-mail me at sjvans@ameritech.net or contact any of the Alcor staff. And if you really think there is something Alcor needs that we are missing here, directed donations are always welcome.

l

A Look Back . . .

Alcor Purchases New Building in 1994

by David Pizer

Setting the Stage for the Necessity to Move

The following is my recollection of the events that led up to the purchase of the present Alcor building on Acoma Drive in Scottsdale, Arizona. This is from memory and there may be others who remember it differently.

The idea of Alcor moving out of Riverside, California, came up after the Dora Kent affair which started in December 1987. For those new to this part of cryonics, Dora Kent was allowed to deanimate in the Alcor facility in Riverside in hopes that she could get a better suspension. This event led to an investigation and a "raid" of the Alcor facility by Riverside officials.

After the raid, I filed a suit on behalf of myself and five other Alcor members who were there that day and had been taken into custody, and Riverside eventually paid us a total of $90,000 in damages. In addition, Keith Henson filed suit on behalf of himself and a few others for a violation of e-mail privacy stemming from the incident and received a $30,000 settlement. The fact that the Riverside bureaucracies were now paying us money for their heavy-handed dealings brought a temporary halt to the harassment of Alcor and its members. However, after the Dora Kent affair (I believe), some officials in the California Department of Health Services became angered over a death certificate issue involving another of Alcor's patients, and the "war" with the bureaucrats was on again.

Also during this time there had been a movement within Alcor by some members to replace Carlos Mondragon as president and Steve Bridge came on board as the replacement. During Steve's tenure, I served first as Alcor's Treasurer, and later as Vice President.

During this time several bureaucratic divisions of California and Riverside attacked Alcor and tried to close us down. For instance, the Riverside Planning Committee revoked Alcor's legal authority to do animal research at its facility. At that time Alcor was getting active in research again (after the crisis over Dora Kent had nearly halted it), and this ability to continue was considered important by the Board.

Then the Building and Safety Department examined Alcor's building and determined that the whole second story would have to be removed. That was about 40 percent of our usable space. It happened at a time when Alcor desperately needed more space and the loss would have been catastrophic. Also some interior walls on the bottom floor might have to be removed.

There were several other ongoing "attacks" against Alcor at the time, and there was the other long-standing concern that southern California was not the safest place physically for long-term patient storage, since we were in a known earthquake zone. A major earthquake might collapse the building, but an even greater concern was that it would damage the freeways enough to seriously interrupt deliveries of liquid nitrogen.

Because of the various legal attacks and the danger of earthquakes, the Board decided that Alcor needed to move somewhere where both the political and the physical climates were safer. Since I had experience in real estate I volunteered to help in site selection. It did not take me long to conclude that Arizona was the safest place for Alcor. I felt that Arizona had the best, most conservative political climate, and Alcor Director Mark Voelker did an in-depth search of several areas and came up with hard data showing, among other things, that Arizona was the safest place from earthquakes, tornadoes, and the closing of airports due to weather.

The First Building

Armed with this information, I began a search for a building that Alcor could make a good deal on. After several months I found a two story, 10,000-square-foot building at a bargain price in the Scottsdale Airpark. The Airpark was my target area because it had the right zoning, and there was regular liquid nitrogen delivery to other businesses in the park. It was considered an upscale environment, much better than Alcor's old address, and it would add to Alcor's image.

After I had the tentative purchase agreement on this first building tied up for Alcor, the Board began discussions about it, and there was much debate. There were legitimate questions, and I was unable to convince a majority of the Board that this was the right move. The Board remained deadlocked (some Directors favored moving to other locations) and someone else bought the building. It was very disappointing to me. But I started looking for another building.

The Second Building

After several months I found Alcor's present building on Acoma Drive. I negotiated a wonderful financial deal, and to be sure that this one would not get away, I purchased the building in my own name with the right to substitute a nominee (common in some commercial real estate deals) at close of escrow. I was determined that if Alcor did not want to go for this one, I would buy it myself—it was such a bargain. I think that when the other Directors saw I was going to take the building if Alcor did not, it convinced them that this was indeed a good deal. But there were other important concerns.

There was a lot of opposition to this building also. At nearly 20,000 square feet it was four times the size Alcor thought they needed. The argument for the bigger building was that Alcor would continue to grow and eventually would need the extra space. Having a bigger building would prevent Alcor having to move several times in the coming years. Each time we needed more space we could simply not renew the lease of one of the tenants and use the space ourselves. As it turned out, the far-sighted Directors who eventually supported this larger building saved Alcor much time and money inasmuch as we have indeed needed more space and have claimed it by lease-withholding.

Also there was the theory of leveraged buying that was new to the Board and considered risky by some. The large building cost more than we had the ready cash for. If we bought it, we would have to have a mortgage. The financial argument in favor of the deal was that we could rent part of the building out and make money on that. The rental income would actually pay the mortgage and in effect the tenants would buy the building for Alcor. At first we would only use about a quarter of the space and rent the rest out. This building came with 11 separate units, most with their own electric meters. So it was easy to rent the units out to several smaller tenants.

The Board went back and forth until the day before the option to buy the building would run out. That evening we held a Board meeting, and finally the supporters of the move were able to convince the Board to close escrow. At the time, the Riverside building was about to be closed down if we didn't remove the second story and do other remodeling—we had to go somewhere.

The Move

The next big hurdle was moving all of Alcor's equipment and the patients. A lot of this was handled by Alcor Director Ralph Whelan (see following article by R. Michael Perry).

Final Results

The building deal turned out even better than I had hoped. Early on, the Mayor of Scottsdale, Herb Drinkwater, invited Alcor's President, Steve Bridge, to his office and had a sort of key-to-the-city meeting. It turned out that Bridge and Drinkwater had some things in common in the area of liquid nitrogen. And Bridge with his boyish charm easily won over the other local officials and bureaucrats.

At the time I had agreed to be the building manager, and it was not long before I had the building filled with tenants. We had one setback when a tenant filed for bankruptcy and we lost a few months' rent on several units but that was not a threat. By then the economy was performing even better and Arizona real estate was appreciating rapidly.

As I mentioned before, we had a leveraged purchase, which means we put a small payment down and assumed a several hundred thousand dollar mortgage. Our appreciation was multiplied because our investment was leveraged.

Great Financial Opportunity for the Patient Care Fund

In a few years, when the mortgage balloon came due, I persuaded Alcor to have the Patient Care Fund (PFC) buy out the mortgage instead of rolling over the note for five more years. Alcor and the tenants paid rent to Cryonics Property LLC, and they in turn reimbursed the PCF. This turned out wellfor the PCF when the stock market went bad and Alcor at least had this money in a high-paying mortgage, and continued to gain on it, while other investments (for the whole nation) were going badly.

Now, Alcor is growing and the fact that we bought more building than we needed is really working in our favor. It would be a massive chore to have to move again, but we don't have to. As before, by not renewing leases we obtain additional space to occupy. Since we purchased it ten years ago at the bottom of a real estate cycle, we are in effect getting the space for a small fraction of its present cost. The building is now worth several times what Alcor (really our tenants) paid for it. As a successful real estate investor, I can tell you, "It does not get any sweeter than this!"

The political climate too has been wonderful. In fact, not long after we moved, a reporter tried to bait one of the Scottsdale Councilpersons (Mary Manross, who later became mayor) into saying something bad about us. He asked her, in a disparaging tone, "What do you think of those body-freezers who recently moved to Scottsdale?" She replied, "Scottsdale has one of the best local hospitals in the state. If someone is too sick or injured for our local hospital, we now have the Mayo Clinic." (The world-famous Mayo Clinic had built a branch in Scottsdale a few years earlier.) "If the Mayo Clinic can't help them, ultimately we have Alcor."

Ahh—at last, Alcor could feel safe.

l

A Look Back . . .

Moving to Scottsdale

by R. Michael Perry

By 1993 it was clear that Alcor's facility in Riverside, California, was no longer suitable. The small size of the building, a hostile regulatory climate, and the danger of earthquakes were major problems, and relocating had become a priority. Consideration was given to moving out of the state to a place that would be more stable geologically and more favorable politically. The three main requirements for the move were (1) getting a place to move to, (2) clearing the necessary legal hurdles, and (3) physically carrying out the move. After extensive searching and negotiating, a controlling interest was acquired in the present site on Acoma Drive in Scottsdale, Arizona. This was in September 1993, and it still left the other two obstacles.

Negotiations and other scurrying over legal issues were pursued concurrently with acquiring the building site and dragged on afterward until almost the day of the move. A particular problem was that someone in the Arizona Department of Health Services thought that cemetery-style regulations should apply to the transport into the state and subsequent storage of "dead human bodies" or what we would call whole-body patients. (Apparently the problem didn't exist for head-only patients, or neuros, who could be treated as "tissue samples.") So, for instance, it was said that we had to provide for storage in hermetically sealed containers, which is impossible with liquid nitrogen because the liquid in the containers must have the means to continually boil off. Such low-temperature storage, where tissue is completely inert, does not pose the health problems that might occur with above-freezing storage. And we made the additional case that whole-body anatomical donations, such as would be used as medical cadavers, did not fall under the cemetery rules and did not require storage in hermetically sealed containers. The official who had been making the trouble continued to dispute our arguments, but grudgingly gave the necessary okay.

At about this time Mother Nature herself furnished a reminder that we did indeed need to get moving. An earthquake shook our facility on January 17, 1994, and caused minor problems. An oxygen cylinder toppled with a crash and there was a one-hour power outage. Such small quakes were common in our area, and we had several in the time we were there. I remember that you would first start to hear a gritty sound as if maybe fine gravel or sand was being sprayed against window glass. Then the solid concrete floor would start to tremble, and you'd be wondering how long this would be going on and how far it would go. Luckily it never got very far—for us—but with the San Andreas Fault not far away (among other things), we knew it could.

Meanwhile there was a problem obtaining the necessary paperwork for some of our whole-body patients. The State of California had been unwilling to issue death certificates during their long, if finally unsuccessful, struggle to put Alcor out of business. Some certificates still had not been obtained, and they in turn were needed so permits could be issued to move the patients. Actually, when the bureaucrats realized we wanted to move out of state they became remarkably more friendly and cooperative, which helped considerably, but still the going wasn't always smooth.

There was one case in particular where the principal obstacle was actually not the state or the bureaucrats but the son of the patient, a cryonicist himself whose very uncompromising "dedication" threatened to derail the whole enterprise. For, when asked to furnish information for a death certificate for his mother, he stubbornly refused, insisting, "my mother isn't dead!" He said he was ready to go to court to "prove" this. (For what it's worth, the Donaldson case, which concluded two years before, showed that the California courts very definitely considered a frozen human to be legally dead and were not likely to be swayed by contrary arguments!) In fairness to this man it can be said that he was a staunch and loyal advocate of cryonics and also very devoted to his mother, in addition to having shown generosity in befriending Alcor. (And he is still with us and is one of our ardent supporters.) We also know that tough emotional stresses attend the deanimation of our loved ones, and even hard-headed cryonicists are not impervious to these feelings but often have them in abundance. At any rate, the man would not see the logic of simply supplying the information asked for, however the state or anybody else chose to look at it, so the move could be made. Finally we got the necessary information from another relative (a noncryonicist at that), and the death certificate was obtained. Other paperwork issues were resolved for this and other patients, and by February 17, all was in readiness.

Fifteen days before, on February 2, there had been a "dry run" to test the heavy moving equipment that would be used

Bigfoot is loaded onto its flatbed truck with forklift; lifting was from the top.

Another view of nearly the same scene shows truck's front end or "tractor."

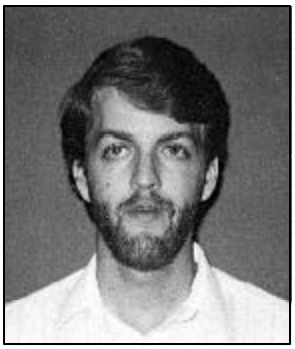
(flatbed trucks) and see that stresses to the dewars would not be severe. A bigfoot dewar filled with liquid nitrogen and some objects (but no patients) was loaded onto one of the big trucks. Also onboard the truck was an apparatus developed by Hugh Hixon that incorporated an oscilloscope, a weighted bathroom scale, a primitive crackphone, and a video camera for recording. This was for detecting any bouncing or shifting around and estimating the g-forces. The trip to Arizona went off without a major hitch. Some lateral motion inside the bigfoot was noted, and, as a consequence, wooden supports were wedged between the pods (metal containers) holding the whole-body patients for the real move. With these precautions any likely stresses should be within acceptable limits. Some of the large quantity of Alcor materials, including personal items from some of the staff, also went over on this trip, accompanied by some Alcor personnel. On arrival two of them, Scott Herman and Tanya Jones, stayed to tidy things up, returning to Riverside on February 13.

The main move occurred eight days later on February 21. A somewhat draconian undertaking, it nevertheless was handled so smoothly by our moving company, Dunkel Brothers, Inc., as to be almost anticlimactic. A bigfoot dewar full of liquid nitrogen and patients weighs about 5,500 lbs., and a shorter neuro container, including the enclosing, concrete vault we used at the time, was maybe 8,000 lbs. The heavy, sturdy vaults were an earthquake protection measure. The bigfoots were not similarly enclosed—this would have been much more difficult and expensive—but each bigfoot had a wide-based support with five casters—the "big feet"—to make it hard to tip over in case the earth should move. The vaults too were on casters since we might need to move any of our patient containers from time to time. (This generally required the efforts of several strong-backed people but no more than that.) We had four bigfoots and two vaults to move. To prevent rolling on the trip, the containers would rest on heavy wooden supports to elevate the casters.

The Dunkel Brothers crew showed up at 7 a.m. with their big forklift and easily loaded our precious cargo on their trucks—one truck for the bigfoots, one for the vaults, with other things loaded on both where there was room, and one more truck for everything else. This arrangement was chosen not haphazardly but carefully, to minimize any possible delays in transit in case of a mishap. Much credit goes to Ralph Whelan who was in charge of the move and handled the details, including choosing the moving company in the first place. (Dunkel Brothers was more expensive but seemed by far the best choice based on safety considerations.) As for the move itself, Ralph took extra precautions so that, once started, it would be completed swiftly, without any holdup. This was important, among other things, because too much delay could invite unwanted media attention and generally impede things further. Actually, it was thought best to have no publicity whatever for the whole move, so it went off completely unannounced; tarping concealed the containers on the trucks.

Loading the vaults onto a second flatbed. **Right:** ***vault is already loaded and resting securely on its supports.*** **Left:** ***vault is lifted up from underneath by forklift so supports can be placed under it.***

Later: The bigfoots have been tarped, and other items are being added.



Ralph Whelan, who orchestrated Alcor's move to Scottsdale in 1994.

The movers in their trucks, with our then total of 27 human and 10 pet patients, were accompanied in the 350-mile journey by a few Alcor personnel, distributed over three cars: Fred and Linda Chamberlain, Mary Margaret Glennie, Hugh Hixon, Tanya Jones, Mark Voelker, Ralph Whelan, and myself. Finally, a somewhat nervous but friendly feline named Aido also made the journey, resting safely, next to me, in a pet cage. (Newly adopted from the wild, he would become an unofficial Alcor mascot in the coming years and is still with us today.)

The truck with the two neuro vaults had enough extra room on the flatbed to also carry the big forklift that had been used in loading everything. (Yes, these were *big* trucks.) The trucks in fact were being used well under capacity; each one could have carried all the patient containers by itself. Distributing the containers over two trucks was a safety precaution. If the tractor of one truck broke down, the forklift would be used to shift the vaults to the bigfoots' flatbed, and tractors would be exchanged if necessary, so the single truck now loaded with all the patients could get moving again. At 1:10 p.m. we were off. There was some straggling by some of the Alcor people in their cars, but the state line was crossed without major incident, and we arrived at our new home at 9:05 local time (8:05 California time) for a total transit time of just under seven hours. There to greet us were David Pizer, who had been instrumental in obtaining our new building, and Ramon and Laly Comos, an Alcor couple from Spain. Soon we were unloaded and more fully in residence. The patient containers were due for a liquid nitrogen refill—we had traveled as light as we could consistent with safety—and this was started before midnight with a supply we had stocked in advance.

Almost as an afterthought, though important enough in its own right, a second move on March 2 brought over the Alcor staff that had not already relocated and nearly all the remaining material goods. (It is a measure of the dedication of Alcor's then crew of eight that all of them moved with their organization to a new state.) CEO Steve Bridge and accounts administrator Joe Hovey made the move at this time, and Alcor in its new home was intact.

l

Sources:

"Thomas Donaldson et al. v. John Van de Camp," *Cryonics* (March 1992): 13–16.

Stephen Bridge, "Alcor Places Deposit on Building in Scottsdale, Arizona," *Cryonics* (July/August 1993): 15–17.

Stephen Bridge, "Notes from the President: Current Status of Legal Discussions in Arizona," *Cryonics* (October 1993): 6–8.

Ralph Whelan, "The Cryonicists Are Coming! An Update on Alcor's Impending Move to Scottsdale, AZ," *Cryonics* (November 1993): 13–15.

Stephen Bridge, "Notes from the President: Update on Alcor's Arizona Situation," *Cryonics* (December 1993): 9–10.

Stephen Bridge, "Notes from the President: Alcor and Cryonics Today," *Cryonics* (First Quarter 1994): 5–8.

Ralph Whelan, "We're Movin' on Out!" *The Alcor Phoenix* (February 1994): 1.

Stephen Bridge, "Notes from the President: Showing Good Form(s) in Arizona," *The Alcor Phoenix* (February 1994): 2–4.

Ralph Whelan, "A Well-Organized Sort of Paranoid," *The Alcor Phoenix* (February 1994): 10–11.

Ralph Whelan, "If It's Wednesday, This Must Be Scottsdale," *The Alcor Phoenix* (March 1994): 1.

Ralph Whelan, *"Turnover Point," The Alcor Phoenix (*March 1994): 2–3.

Stephen Bridge, "Notes from the President: Alcor Moves to Arizona," *Cryonics* (Second Quarter 1994): 4–7.

Ralph Whelan, "Determined Not to Lose Our Patients," *Cryonics* (Second Quarter 1994): 16–17.

In addition I used personal notes and recollections; I also thank Hugh Hixon for contributing his knowledge and impressions.

Aido

An interview with Tim Carney

On-site Manager for Building Expansion Project

Tim Carney is our newly appointed on-site manager for the building expansion project. He works under the direction of the Board-appointed Building Expansion Subcommittee, which includes Chairman Steve Van Sickle, Steve Bridge, and Charles Platt. Recently, *Cryonics* magazine had the opportunity to sit down with Tim between his many duties long enough to conduct this interview.

CM: Tim, tell us how you came to be involved with Alcor in the first place.

TC: I spent 14½ years installing high field superconducting magnets, infrared spectrometers, MRI's, CSI (clinical ship imaging, which is what MRIs basically are), and I got tired of the travel and quit my job last June. I took the summer off, and my sister, who works across the street here at Ships, which used to be Health International, told me you were here. I really didn't hear of it before, but I figured I would drop off a resume, and I just stopped in and dropped off a resume. About a week later Charles (Platt) called me and wanted me to come over and talk with him. That's how I got involved with Alcor.

CM: How did that first interview go? Charles can be a tough interviewer.

TC: Oh, just fine. He talked so fast, I just sat there and he typed into his laptop. We got along just fine from the start, and he asked me if I had any reservations about working at this place. I told him I had worked around animal research, medical facilities, and other places that had security, so I had no problem at all.

CM: When did you start with us, Tim?

TC: Right around the first of the year. December 2002 was when I talked with Charles, and we got the truck in February, I believe.

CM: I understand your first project was a van conversion. Can you tell us a little about that—what kind of progress you are making on it, and then how you got diverted into much bigger and better things.

TC: The van conversion is more than half finished. The hardest part about that was the insulation factor because of where we live. You have to insulate on all six walls, not just the outside walls. And adding wiring was difficult, especially since Charles gave me changes and I had to pull out some things and put them back in. I now have all the wiring in, all the insulation in, and I'm doing the final paneling on it. The biggest obstacle currently is the heat; in the middle of the day it is too hot to work in the truck. We have air conditioning in the truck, but that doesn't help when the door is open all the time.

CM: And I understand, Tim, that this van, once it is fully operational and converted, is not just going to be for the local area here in Scottsdale, but the plans are this could be our traveling van to places that are more than a thousand miles away. Is that your understanding?

TC: I'm trying to get it to be more or less a mobile clinical lab. So you can take it anywhere in the country.

CM: And what will actually take place inside this van?

TC: Cooldown and perfusion of the patient as you are coming back to Alcor. I've got a holding tank for the chilled water that will be run through it. I'm putting in a compressor with medical grade oxygen, or medical grade air filters on it, so we can use the thumper for life support. We have a generator and an electrical panel inside for all the equipment that can be hooked up to it. I haven't heard all that is going into it yet, so we're still working on that. It's more or less going to be the same thing as your operating area, only mobile.

CM: I'm pretty sure the original plans call for us to have a fleet of these vans once we are large enough and can afford it. I think, this being the prototype, it is very important, of course, to iron out all the bugs.

TC: On the next ones we can buy some of the insulated boxes with things already built into them, rather than having to do it from scratch.

CM: But then, somewhere along the line you got diverted from the van project to the building expansion project. Can you tell us how that came down?

TC: I was over here talking with Charles one day and he was describing the remodeling project, and I guess I didn't keep my mouth shut. I kept on giving him suggestions about what he should be looking at, and he liked that and asked me to oversee more and more of the remodeling project. One thing I did note was there was a floor plan, but some of it was not an operational plan that fit into the floor plan, so I came up with some suggestions for changing some of that. So far it is going alright. If we can get decisions in a timely manner and keep the work going on, then at the end of the summer we'll be in decent shape.

CM: What obstacles have slowed down the construction, Tim, and halted or delayed the progress, if any?

TC: Some is engineering. We need to get engineers to OK structure changes. Some of it is moving things from one area to another so we can proceed. But we're actually taking up more space with moving storage area and time, and then cleaning up previous work that was done that is not structurally sound for what we're going to use it for. That all causes delays. And as the ideas come through changes, that has to go through the committees, and people have to understand what change we're making, so it's not big delays but it does take up time, and that ends up delaying the whole final project.

CM: How often do you need to alter the organized plans on the spur of the moment, once you're actually in there, on-site, and you see that something isn't going to quite work? Has that happened, or is it an infrequent occurrence?

TC: It kinda happens frequently. What we were doing was small sections at a time, so the changes were affecting only one little area. Like, Corey had started on the conference room, and then we went over to look at what we were doing at the new crew rooms, and there were some changes added there after we had already started the construction, but he still had things to finish off in the conference room. Like, we had to wait for the tile, and the glass for the window, and things like that, so he can go back and forth on some of it. If we can keep two or three areas working at the same time it works out just fine. We can make up time on other areas. It's still a little slow because the Building Committee is not local. They all have to decide what to do, and most of that is by e-mail and phone, so it does take time.

CM: Finally, Tim, tell us a little about your background. How has your education, training, and experience led you in the first place to Alcor? Go as far back as you need to go to explain how you came upon us in the first place.

TC: I've done everything from operating farm equipment when I was growing up, working on a railroad, and I was in the service. Originally I was from New Lenox, Illinois. The town outside Joliet, which is outside of Chicago. There used to be 1,200 people there when I was in the service, and now it's probably a bedroom community for Chicago. I've worked for General Motor, as a material and parts expeditor, for six or seven years. I've worked for GE, too. Actually, I was getting laid off so much from General Motors that I decided to go back to school, and I decided if I was going to be broke going to school I was going to be warm, and I moved to Phoenix and went to Devry. That's where I got a four-year degree in electronics and engineering technology. My first job was with GE nuclear magnetic resonance instruments, and that was for field service, which I didn't mind because I like to travel. And that's how I got into high field superconducting magnets. I did that since 1988. I've been working on NMRs and CSIs, and I finally got tired of being gone all the time, and that's when I decided to look for something local.

CM: Great. Tim, what about your personal life? What's that been like for you over the years?

TC: I'm single. I do like to travel. I get along with people, but I'm not a person that hangs out with crowds; I don't go out bar hopping. I am a motorcyclist and have been since 1972, and I enjoy the time by myself out on the road, and that's my basic form of transportation. I've been married twice and divorced twice, so I'm single. No kids. I live in Scottsdale now, having moved out here in 1984.

CM: Oh, you're practically a native then.

TC: Yeah, yeah. Well, to me when it gets down to 70 degrees at night it's cold! I stay at my sister and brother-in-law's house. Because I used to travel a lot, I had a house in North Carolina, but I gave that up. Being gone all the time, it didn't make sense to pay $1,200 for basically storage. I enjoy Arizona and don't plan on moving, although I might move out of the Phoenix area, I don't plan on moving out of Arizona. I like the Southwest, and I'll stay below the frost line.

CM: Understood. We certainly appreciate your taking the time from what I know is your very busy schedule to sit down with *Cryonics* magazine and give us this interview. I think our readers will appreciate knowing our on-site building manager is very much involved with what is happening on a day-to-day basis. So, thank you, Tim, very much for letting us conduct this interview.

TC: You're welcome.

l

An interview with Cindy Felix

Facility Operations Manager

Cindy Felix has become Alcor's newest Facility Operations Manager. During a momentary pause in her many activities, *Cryonics* magazine was able to run her down and conduct the following interview:

CM: Cindy, I know you are new to Alcor, and congratulations on becoming Facility Operations Manager. What was the process whereby you became an Alcor employee?

CF: I answered an ad on Monster.com for the position and sent in my resume to Mr. Platt, Charles Platt, and was called in for an interview.

CM: Perhaps you would like to share a little about your background, where you were brought up, and some about your early years and schooling and so forth so our readers can get a little bit broader picture of who Cindy Felix is.

CF: OK. I was born and raised outside of Florence on a ranch. We had several horses, cattle, goats, that type of thing. Obviously we had to make the corrals and take care of the ranch, plus I hung around with a lot of male cousins, and that's where I learned to do a lot of what I can. My uncle was very strict, but his being that way instilled a strong work ethic in myself. And also respect. I went to high school in Florence, graduated in 1983, and started working for the Department of Corrections. I worked at the Special Management Unit, which is the highest custody level of all the different units. I was part of the Special Security Unit, which meant I would do gang intelligence on prison games, specialized searches, investigations, that type of thing. I worked there for 10½ years. I've had several different jobs looking for some place to settle, some place to call home, and I really like it here. A lot of the jobs I had helped me now with this position. As I've said before, I know how to do a lot of different things, but not an expert on any one thing. I've been the facility manager for Ethan Allen furniture stores here in the Valley, so I'm familiar with the whole furniture process—inventory, cycle counting, loss prevention, etc. I worked for a locksmith company before, so if you ever lock your keys in your car I can get that open for you. I've worked running low voltage wire, installing fire alarms and smoke detectors, so I am comfortable doing that. I have a table saw at home and like to do things with wood. I learned how to weld when I was in high school and helped on the ranch where I grew up. I just like people and enjoy working with them.

CM: What accomplishments have you had so far? I know you have only been here a short time.

CF: When I first got here I was given the plans for an ice bath to be completed so it could be sent to southern California. I welded it together, had a liner made, and finished that. I have now completed four cases that I made for the DuaLoggers to protect them from water and being bumped and changing the data on them. I've done numerous amounts of cleanup and organizing here at Alcor. I've made an area in the shop for the raw materials (pipes, pieces of metal, aluminum, that type of thing). I went into the shop and I did a complete turnaround in there. I've cleaned it all and started organizing it. Getting rid of stuff that has been here a long time that we don't have any use for and trying to help out in whatever and just familiarizing myself with this place. And I redid the plumbing in the kitchen, the whole faucet and underneath the sink. I made sure the Suburban was taken care of mechanically, getting oil changed, general maintenance, and oversaw some changes that needed to be done on it.

CM: One comment I've heard people make consistently about you, Cindy, is that you are so highly organized. Where did that come from?

CF: I don't really know. Perhaps from when I used to work at the prison, because everything had to be organized so when it was time to do count you could make sure you didn't lose anybody or anything.

CM: I think that certainly bodes well. Every time I see you, you are virtually in some type of motion. It doesn't look like you ever sit still.

CF: I like to stay busy. I'd rather be doing something than just sitting and being bored. I've always been that way.

CM: That's great. What about your personal life?

(continued on page 15)

An interview with Todd Huffman

Research Assistant

On June 5 Alcor retained the services of research assistant Todd Huffman from Los Angeles. In a moment apart from his busy schedule, *Cryonics* magazine found the opportunity to sit down with Todd and interview him.

CM: Welcome aboard, Todd. Can you tell our readers what attracted you to cryonics?

TH: One of the first times I ran into cryonics was through the Extropians. I read an article in *Skeptic Magazine* in 1995 discussing the Extropians. I went to their web site and read up on transhumanism. I maintained an interest for a number of years and then this past year became actively interested after a conversation with Regina Pancake. I joined the ACT volunteer network and filled out my membership application.

CM: Todd, can you tell us a little bit about your background. It was somewhat unorthodox, and I think our readers would be interested in knowing how you grew up and some of the more unusual features of that.

TH: I grew up in Long Beach, California. What was unorthodox is that my mother is a left-over hippie and didn't believe in popular culture. So I grew up without television or radio and did not go to the movies very often. She is also a writer, and a lot of people in our family are involved in computers, so as a child in the 1980s we had five computers and no television. My mother got me any book I wanted, no questions asked, so I did a lot of reading in fringe areas not accessible to a typical child.

CM: I believe you were telling me earlier that you had a laptop at age ten?

TH: Yes, I got my first laptop for my birthday when I was ten (1990). It did not have a hard drive, it ran off of floppies, and had a tiny little green LCD for a screen and probably weighed more than my desktop right now.

CM: Where did you go to college, Todd, what did you major in, and what were your interests there?

TH: I started my college career at Southern Illinois University at Edwardsville, and I studied biology. However, after I went to the Extro 4 Conference I became very interested in neuroscience after a conversation with Anders Sandberg. I eventually transferred to California State University at Long Beach, where I designed my own major of neuroscience and took a lot of biochemistry, molecular biology, biopsychology, and philosophy of mind.

CM: You mentioned Regina Pancake as someone you came into contact with, and Regina is of course one of our principal operatives in southern California. How did your meeting with Regina augment your eventually lining up with the southern California group?

TH: I've known Regina for a couple of years now, having met her through the LA Futurist reading group. Regina and I took a vacation with a number of other futurists to southern Utah. We drove out, and while everyone else was asleep Regina and I had 12 hours to talk. We discussed our pasts and what we had done with our lives, and I mentioned I had done EMT training and taken some nursing classes and she got me to talk to Tanya Jones. At some point Tanya put me in contact with Charles Platt. One night in November, right after I walked out of a final exam, Charles called me and asked me if I wanted to be involved with a suspension that had come up unexpectedly. I went to the suspension and have been involved ever since.

CM: So you got your baptism by fire, as it were?

TH: Or by ice.

CM: Excellent. I know you've only been with us a brief time, but what are some of the projects you have been working on so far here, Todd?

TH: I've been trying to learn as much as I can from Hugh Hixon. Learning what the vitrification solutions are, details involved in cryonically suspending someone, and I've been working to document as much of this as possible. I've also been coordinating with the Facility Expansion Committee so we can get a better

inventory control system. And I've also been working with Larry Johnson doing training for the southern California team, and helping him out as much as I can.

CM: My understanding along the lines of training is that you will be helping us with our ACT training session at Creekside October 24 to 27, or were you even aware of that?

TH: I was aware of that, and actually I talked to Charles Platt this morning about it. I assumed I would be doing some of the training, although I don't know exactly what yet.

CM: Todd, what do you plan to accomplish here in Scottsdale before it's all over and done?

TH: I have three primary goals. One is to learn as much as possible about the suspension process and to document it. My objective is to avoid one-point failures at Alcor. Another big project is to get the inventory control system in operation, to streamline our rebound time between suspensions. My third goal is to do research in conjunction with Hugh Hixon and Steve Van Sickle on issues pertaining to cryonics and operations here.

CM: What about your ultimate career goals? Where do those stand as you formulate them in your mind at this point in time?

TH: In a couple years I am going to go to medical school. I am most interested in gerontology or neurology. For four years I worked with Alzhiemer's patients, and the subject has maintained my interest. I have also become interested in neural implants, after working awhile at University of California Irvine doing data analysis on cochlear implant research.

CM: What particular long-term research projects interest you, and what holds fascination for you?

TH: My research interests at Alcor are to work with the intermediate temperature storage and also find ways to determine how well our patients are being preserved. Additionally, I would like to do some investigation on whether or not memory is being preserved through our procedures. Outside of cryonics my main interest is age-related neurodegenerative diseases.

CM: Finally, Todd, what about outside of work? What kind of outside interests do you have? What do you like to do?

TH: Recently I have been getting involved with the Arizona Death with Dignity community, and I am going to be doing some volunteer work with them. I am in the process of building a wearable computer to do constant video recording so I can archive my life. Lately I have been putting a lot of effort into expanding my social network as I do not know many people in the Phoenix area.

CM: Well, thanks a lot, Todd, we appreciate your taking the time to give us this interview.

l

(continued from page 13)

CF: I've been divorced for about four years. I have two children, a 19-year-old son named Donnie and a 12-year-old daughter named Brianna. I also have a 130-pound rottweiler named Daisy. I recently purchased a home at Johnson Ranch, and I enjoy skateboarding and going to concerts.

CM: Who do you like to go see? What's high on your list of rock bands?

CF: I just went to see Matchbox 20. It was a great concert. I like all kinds of music, but that's mainly the type. My son and I like the same kinds of music so we go to concerts together a lot.

CM: Cindy, what do you see as perhaps some of the biggest obstacles facing you in performing the various duties that you do here? What's standing in the way of progress?

CF: I think the main thing I seem to be having problems with is just the lack of experience in cryonics. For instance, when I am given a task such as the ice bath. I completed that, but it would help me if I knew what the thing was going to be doing. In what capacity it was going to be used, that might help me in being able to get a better idea. So I would have to say, lack of experience.

CM: There certainly is no substitute for actually being on a suspension or taking part in one of our training exercises. There will be another one coming up in October, by the way, at Creekside Lodge, and I'm sure we'll want you to be a major part of that. A tough question. Maybe one of the toughest I've asked you or will ask you today. Charles Platt recruited you, and now he is gone. Can you still maintain the same level of enthusiasm and dedication, because I know he meant a lot to you as a mentor?

CF: You are correct there. As he still does. I believe I still can maintain the level of professionalism and the level of motivation that I had. I am very excited about my position here, and I plan on being here for quite some time. It was sad to see Charles go before I had a chance to work with him for long, but the period of time I did work with him he was like a mentor. And he still is, but I am very much dedicated to Alcor.

CM: OK Cindy, is there anything else you would like to add before we sign off here today?

CF: I'm going to be here for a while.

CM: We certainly like to hear that. And on behalf of our readers I thank you for giving us this interview today.

l

Alcor Members Gather for Potluck Supper in Austin

A congenial group of cryonicists gathered in early June for a potluck supper at the home of Natasha Vita-More and Max More. Sixteen adults and one child met on Sunday afternoon, June 8, and stayed until late in the evening. Lots of food and intriguing conversation, a gathering of old friends and a place to meet new ones, made for a memorable occasion. Paula Lemler, visiting from Arizona, brought photographs of the facility, showing the ongoing construction, which were of great interest.

Alcor members attending mostly came from the local area or nearby San Antonio, but several people made the three-hour drive from Houston, and one traveled all the way from Dallas. This group is interested in becoming more active and keeping in touch via e-mail. Projects discussed included procuring meds kits, locating mortuaries and physicians that would be cryonics-friendly, standby team practices, and holding more social events. Two e-mail lists have been started; one for occasional notices and one for more frequent communications. If you live in Texas and would like to be on either or both of these lists, send an e-mail to either Natasha or to Larry Alkoff (natasha@natasha.cc or larryalk@mindspring.com).

The home of Natasha and Max was spacious and comfortable for holding the meeting. Located in a new neighborhood, it has a mesmerizing view of rolling hills sprinkled with horses in one direction and the outskirts of the Texas capital city in the other. A splendid house in an incredible city. And, Natasha has already generously offered to host a Cryofeast for the group in December!

l

ALCOR Update

President's Report

by Jerry B. Lemler, M.D.

This has been a period of significant change within the internal structure of Alcor, both with respect to people and materials. First, with regard to our building expansion, on-site project manager, Tim Carney, reports work is progressing in a timely fashion. The most current specific renovations include an office (next to the shop) for Cindy Felix, and a canopy to shelter the truck.

Cindy, by the way, was recently hired as Alcor's new Facility Operations Manager. She brings not only great enthusiasm to her work, but an exceptionally solid background in maintenance of machinery, mechanical repair, and creative fabrication and construction of equipment. Welcome, Cindy. It's great to have you on board with us!

Former Alcor Vice President David Pizer has been coming to the facility two days a week to volunteer his efforts in assisting Jennifer Chapman in both advancing potential new members through the applicant queue and more recently working with the always problematic attrition pool in an effort to keep these individuals in the fold. Thanks, Dave, for your time and expertise! Speaking of Jennifer Chapman, who diligently maintains (at times singlehandedly) our entire Membership Department, she was recently promoted to the position of Director of Membership Services (from Membership Administrator). Congratulations, Jennifer!

In late June we regrettably accepted the resignation of Chief Operating Officer, Charles Platt. Since initially contracting with Charles in early September of last year, there can be no doubt he has had a significant (and hopefully longlasting) positive impact on our suspension capabilities. Fortunately, Charles is not leaving us altogether. In fact, he will (largely working from his home) continue to perform select contract work in several key areas, including: writing the (now monthly) Alcor News, completing the writing of the new cryotransport manual, revamping the Alcor web site, and (along with Chief Financial Officer Michael Riskin) formulating a major fund-raising proposal. Additionally, Charles has indicated his willingness (if available) to participate on individual suspension cases and assist as an instructor at our upcoming second ACT training session for this year (see below). Charles will also be maintaining his membership on the Building Expansion Committee (along with Steve Van Sickle and Steve Bridge) until the project is completed.

In order to become better acquainted with our "neighbors," Alcor has recently rejoined the Greater Phoenix and Scottsdale Chambers of Commerce. I have been attending both group's monthly meetings, which I hope eventually should lead to some meaningful contact (and perhaps influence with our local area legislators).

While, for a variety of reasons, no follow-up CryoSummit is being planned for this year, Alcor Board Advisor, Dr. Robert Newport (with my support) is working on a draft for the inception of the proposed organization IACO (International Association of Cryonics Organizations). It is possible by the end of this year these standards can be adopted; the first of several criteria that ultimately could lead to the formation of an active functioning body.

On June 14 I attended the Intermediate Storage Conference in Ontario, California, hosted by Board Member Saul Kent. In fact, all seven Board members were in attendance at this gathering (for the first time since the 2001 annual Board meeting in Scottsdale). Following the presentation, Alcor purchased a prototype intermediate temperature storage vehicle, and currently our research assistant, Todd Huffman, is testing various parameters that one day could well lead to our offering an alternative to liquid nitrogen storage.

I have formulated the abstract for my presentation at the Tenth Congress of the International Association of Biomedical Gerontology to Conference Chair Dr. Aubrey deGrey, who responded with great enthusiasm in accepting it. I will deliver this talk on September 22 at Queen's College, Cambridge University, in England, and it will achieve a permanent placement in the Annuals of The New York Academy of Sciences. The significance of this event lies in the fact that it will mark the first (non Ralph Merkle) affirmation concerning the rationale for human cryopreservation in the legitimate scientific literature. My thanks go to those individuals (currently preferring to remain anonymous) who are assisting me in the preparation and delivery of this milestone paper.

Michael Riskin and I (with help from Joe Hovey and Charles Platt) are continuing our dialogue with our friends and benefactors from Future Electronics in Canada. The new brochure they are preparing for Alcor has been slightly delayed, but I estimate the final product should be ready for publication and distribution before the end of the summer.

Alcor will hold its second ACT training course the weekend of October 24–27, once again at the Creekside Lodge in Mayer, Arizona. The October course, by necessity, will be more intense and compact, with participants arriving on Friday for a full evening session and not departing until Monday morning. Charles Platt and Todd Huffman are preparing the curriculum, which will largely be based on the new cryotransport manual being written by Charles as well as the materials utilized during the March training session. If you are an ACT member who has not been recently certified, or would be interested in joining our roster of certified cryotransport volunteers, contact Paula Lemler at paula@alcor.org to register for this event.

Alcor media events were plentiful in the month of June, most of which were handled by Media and Tour Coordinator Paula Lemler. Alcor was featured on the HBO network on the RealSports program, hosted by Bryant Gumbel, while eight-time National Sports Journalist of the Year, Rick Reilly, highlighted his recent book-signing trip to Phoenix by visiting our facility and writing his weekly essay on Alcor in the June 30 issue of *Sports Illustrated.*

***Editors note: For Alcor's response to the article in the August 15 issue of* Sports Illustrated, *please see page 17.*

Additionally, the "Heaven Can Wait" film crew completed their shooting in Scottsdale on Friday, June 27. Other recent interviews have been with the Spanish network Telemundo; Hakon Borgstrum of Swedish magazine; Andy Lee of Korean TV; Peter Walsh of CBC News Canada; and St. Petersburg, Florida, reporter Suzanna Gonzales.

Finally, a word about my own health situation. I truly appreciate your calls and e-mails lending me your support. This surely does bolster my resolve to beat this cancer. My treatment and recovery plan is absolutely right on target, and the few surprises I have encountered have been of a minor nature. My oncologist has been very much up front with me every step of the way so far. I enter the hospital once a month for four days of inpatient chemotherapy and spend (usually) a restful weekend gathering strength as my various blood counts drop and then rise again, just as predicted on schedule. This regimen will continue throughout the remainder of this calendar year, after which the tumors should be in solid remission. While in the hospital, I stay updated on Alcor affairs on a fairly regular basis, and those of you who have contacted me in the middle of a chemotherapy treatment know I am not incapable of making necessary decisions with the IV line in full flight.

l

ACT Training Exercises Scheduled for October

After the great success of the first ACT training session at the Creekside Resort in Mayer, Arizona, in March of this year, Alcor management has secured through David Pizer the resort for our second and final ACT training event of the year. It will be held over the weekend of Friday, October 24 to Monday, October 27.

This will be a more compact event, and while there will be less time for socializing among ACT participants, we hope the training will be every bit as intense and robust as during the March six-day session. Coordinating this event on Alcor's behalf are CEO Dr. Jerry Lemler and new staff member Todd Huffman, along with logistical and tactical support (once again) from Paula Lemler. The specific modules that constitute the curriculum will be formulated within the next two to three weeks. Please be aware if you are currently an ACT volunteer and you have not participated in a cryonics case or a training session within the past two years, Alcor may review your eligibility for continuing discount on your membership dues.

October is a beautiful time of the year in Mayer, which is located approximately one hour north of the Phoenix area. If you are interested in participating in our October session, please contact Paula at paula@alcor.org.

Alcor Membership Status

Alcor has 643 Suspension Members (including 105 Life Members) and 58 patients in suspension. These numbers are broken down by country below.

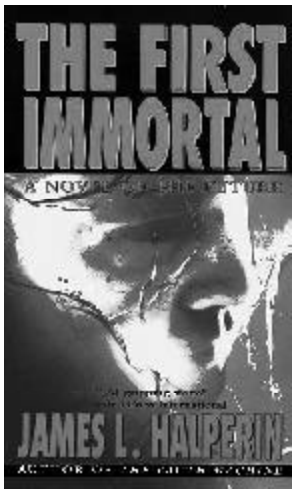
Country	Members	Applicants	Subscribers
Argentina	0	0	1
Australia	8	1	3
Austria	1	0	0
Canada	17	5	11
China	1	0	0
France	0	0	1
Germany	3	1	2
Ireland	0	0	1
Italy	0	2	4
Japan	0	1	2
Lebanon	0	0	1
Mexico	0	0	1
Monaco	1	1	0
Netherlands	1	0	1
Russia	0	0	3
South Africa	0	0	1
South Korea	1	0	0
Spain	0	5	0
Sri Lanka	0	0	1
Sweden	0	0	1
Switzerland	0	0	2
Taiwan	0	0	1
U.K.	14	6	6
U.S.A.	596	76	230
TOTALS	**643**	**98**	**273**

Alcor Foundation Paperwork Update Needed

TO ALL ALCOR MEMBERS AND APPLICANTS:
YOUR ASSISTANCE IS REQUESTED
IN PROVIDING MORE COMPLETE
INFORMATION FOR OUR RECORDS.

To better assess the needs of our members, Alcor is updating our member and applicant files to ensure all required data is available. All Alcor members should have received by mail a Confidential Assessment form from Larry Johnson, Chief Technical Officer. If you haven't already done so, please fill out this form and mail it back to Alcor as soon as possible. If you have not received this form by mail, please contact Larry Johnson at (480) 905-1906 ext. 115.

All provided information is confidential and will be protected by Alcor. None of your data will be released to anyone without your prior approval. Thank you for your efforts to help Alcor better serve you.



Special Offer!

Complete an Alcor Membership application and receive a *FREE* copy of James Halperin's book *The First Immortal. Contact Director of Membership Services Jennifer Chapman for more information: jennifer@alcor.org.*

An engaging story for cryonics enthusiasts and interested novices alike:

In 1988, Benjamin Smith suffers a massive heart attack. But he will not die. A pioneering advocate of the infant science of cryonics, he has arranged to have his body frozen until the day when humanity will possess the knowledge, the technology, and the courage to revive him.

Yet when Ben resumes life after a frozen interval of 83 years, the world is altered beyond recognition. Thanks to cutting-edge science, eternal youth is universally available, and the perfection of cloning gives humanity the godlike power to re-create living beings from a single cell. As Ben and his family are resurrected in the mid-twenty-first century, they experience a complex reunion that reaches through generations—and discover that the deepest ethical dilemmas of humankind remain their greatest challenge....

Medical Alert Tattoos for Cryonicists

by Brent Fox

Scenario:

"What history do we have on this patient, nurse?"

Gently lifting the eyelid, the doctor checked the pupil dilation of the person, lying unconscious on the bed in the ER.

"Subject came in with no I.D. Nothing is known. But Doctor, look at this."

The nurse indicated a small tattoo bearing telephone numbers.

"You, take these numbers down and see what you can find out," the doctor ordered the nurse.

Introduction

Tattooing is the method of decorating the skin by inserting colored inks or dyes under the skin surface with a needle or other sharp instrument. The word *tattoo,* comes from the Tahitian word *tatu,* which means "to mark." The art of tattooing spans more than 4,000 years and has been used by various cultures to denote religion or social status or serve as a form of self expression.[1]

The purpose of this article is to look at what the benefit a medical alert tattoo could be to a cryonicist as well as the risks and drawbacks. The design and placement of the medical alert tattoo will also be discussed.

What would happen should you, as a cryonicist, be in an accident, or worse, be the victim of a violent act and lose all of your identification including your cryonics provider's necklace and/or bracelet? An important communications link may be broken—the communication of a helpful party notifying your cryonics provider in the event of an emergency. Your very life may be in jeopardy because this contact was delayed. Worse yet, it may not even be made.

Why a Tattoo?

The primary reason for a cryonicist to have a medical alert tattoo is to maximize the chance that their cryonics provider will be notified in the event of a life-threatening emergency.

A cryonicist may also get a medical alert tattoo to show their conviction to cryonics and their desire to be placed into suspension upon legal death. What stronger message could be conveyed when one has their skin permanently marked?

Recently, an 85-year-old retired nurse had the words "Do Not Resuscitate" along with the picture of a heart and the universal "No" symbol running across it, tattooed on her chest. She stated that she feared that her paperwork (which she carried in her handbag) might not be checked in an emergency. She further stated that she did not want her family or doctors to be in any trouble for obeying her wishes to be allowed to die.[2]

Whether one would agree or disagree with this person's decision not to be resuscitated is irrelevant. The former nurse has made a clear statement by making her final wishes known through the medium of a simple tattoo.

Tattoos can also be used to identify a body should no other documentation be available. Tattoos aided in the identification of some of the remains of the victims of the World Trade Center terrorist attack.[3]

Things to Ask the Tattoo Artist

Should you decide that a tattoo is appropriate, you should shop around and not be afraid to ask the tattoo artist questions.

Of primary importance are the sterilization methods used on the equipment. The use of an autoclave is best. Check to see that gauze is packaged in a sterile manner and that any towels used are either new or have been thoroughly cleaned. Ask the artist if he wears protective gloves during the process. The gloves will not only help protect you from infection but also protect the artist from any illness that you may have.

Insist that new needles are used for your tattoo.

Look at samples of the tattoo artist's work. Many artists keep a photo album of their work.

Ask to watch as someone gets a tattoo. This will provide an opportunity to see how the tattooing process works as well as a chance to evaluate the tattoo artist.

Remember, you should get a tattoo from a professional tattoo artist who runs a clean and sterile shop, rather than choosing a lesser quality establishment just to save a few dollars.

Design

The tattoo should be of simplistic design, consisting of a medical alert–type emblem, the cryonics provider's emergency telephone numbers, and the member's identification number. A notice of reward may also be included in the tattoo if such a fund or policy exists with the cryonics service provider or the patient's estate.

Extraneous information, such as biostasis protocols in the event of deanimation should be avoided in the tattoo. Such information may cause the primary contact information to be disregarded, especially if other identifiers are on the body. This would nullify the main purpose of the tattoo, which is to ensure that the cryonics service provider is notified in the event of an emergency. Once contact has been made, the cryonics provider will be able to assess the situation with the member's attending medical personnel, or in worst case situations, law enforcement.

The tattoo should be placed in an easily seen area of the body, with the optimum placement being on the left chest area. By placing the tattoo on the left chest, the chance of the tattoo

being noticed by medical personnel would increase due to its proximity to the heart.

The tattoo should not be placed on an extremity, such as the arms or legs, as they may become detached from the torso in an accident or other traumatic event. It can be argued that an identifying tattoo should be placed somewhere on the head, as it contains the most important part of an individual, the brain. However, it may not be the most aesthetic choice.

Figures 1 through 4 illustrate the proposed tattoo design and layout. As presented in Figure 1, the tattoo would be approximately 5.5 cm in height and 3.0 cm in width. Figure 4 depicts the smallest design layout, with dimensions being approximately 4.3 cm x 3.2 cm. The final total dimensions would be dependent upon the number of lines used.

Telephone numbers may include the toll free number, along with the regular telephone number, as well as emergency pager numbers. You should consult with your cryonics service provider to ensure the accuracy of the numbers prior to getting the tattoo.

Cautions

There are risks associated with getting a tattoo. Nonsterile equipment can transmit HIV, Hepatitis B, Hepatitis C, and Tuberculosis.[4] It is also possible to have an allergic reaction to the dye.

Getting a tattoo makes the body vulnerable to infection. An infection in the tattoo can damage its appearance and could cause an uneven effect in the colors. Scarring may also occur. It is imperative to follow all the instructions given concerning proper care.[5]

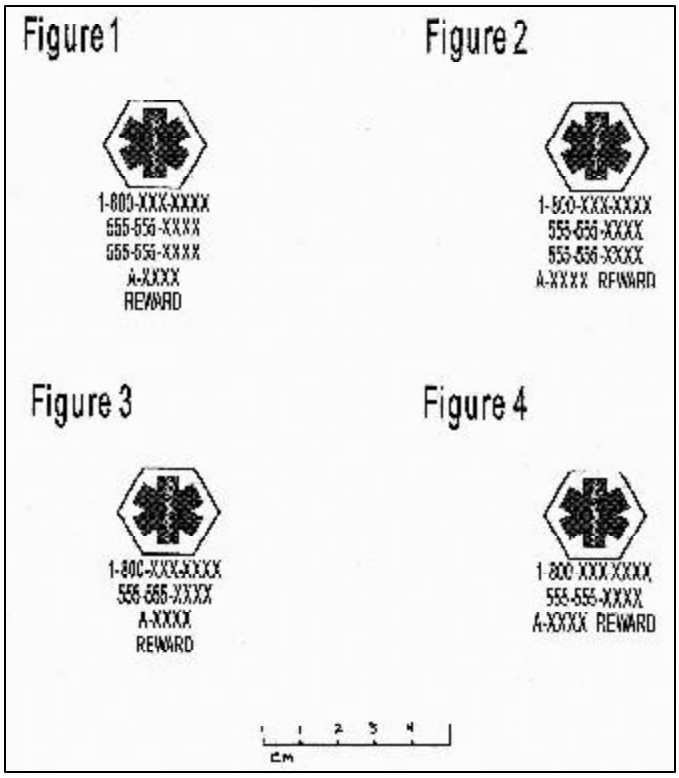
Over time, the colors of a tattoo will fade, with black ink fading to blue-gray and bright colors becoming dull. It is possible to refresh a dulled tattoo by the application of more ink. This process should only be done sparingly, as it is possible to get ink poisoning due to the reapplication of ink to a specific area.[6]

It is possible that during the course of your life, information contained on the tattoo will become invalid, either because the cryonics provider changed telephone numbers or you switched to a different provider.

Alternatives

It may be possible to use henna, which is derived from the *lawsonia inermis* shrub. Unlike tattooing, which deposits dye under the skin surface, henna is applied topically and dyes the skin surface. The henna stain will last until the skin exfoliates, which varies from one to twelve weeks. A stencil of the design could be used to simplify the reapplication of the henna. Allergic reactions to henna dye are possible, but rare.

There are "temporary tattoo" kits available that use special paper and medical adhesive for use in Inkjet printers. You could simply use a graphics program to print the image onto the paper. However, these tattoos are easily removed with soap and water so they are not the best choice for the application of a medical alert tattoo.



Who should consider a tattoo?

While a tattoo may be beneficial to all cryonicists, certain individuals may have more need of one, including elderly members who may suffer from Alzheimer's disease or general dementia, members who live alone or do not have anyone who could contact the cryonics provider in an emergency, members who have high risk jobs or partake in dangerous sports activities, and members who travel frequently.

Disclaimer

The art of tattooing is illegal in some areas of the United States and there is no government regulation of tattoo artists. Only a few states require that tattoo parlors to be inspected by the local State Health Department. Local municipalities may restrict tattooing to those of legal age.

A cryonics-related medical alert tattoo should not replace the wearing of the necklace and /or bracelet, as well as the carrying of appropriate emergency wallet cards.

The cryonics-related medical alert tattoo should not be confused with the MedicAlert ® company, or its products.

Each individual must weigh the benefits and risks of getting a tattoo. The writer of this article assumes no liability.

(continued on page 29)

The Futurists' QUIZ

Quick Ultramodern Ideation Zone

"The worst thing that could happen to you is not to be suspended.
The second worst thing would be to wake up in a world where
people have made a complete mess of the future." Max More

Planning for the long term, Extropy Institute (ExI) has developed "The Futurists' QUIZ" to help enable and encourage thinking about the future. QUIZ scenarios concern suitable issues that affect society and help us at ExI to be familiar with how to expose ideas to the public.

Is there a need for a quick ultramodern ideation zone?

"There is no terror in a bang, only in the anticipation of it."
Alfred Hitchcock

"I will show you fear in a handful of dust."
T. S. Eliot, poet, critic. From "The Burial of the Dead," in *The Waste Land*

Watching the development of the futurist/transhumanist culture is usually thrilling in spite of the fact that at times it is somber. I am thrilled that the culture has developed globally and saddened that fixed political, religious, and social encumbrances clash with progress.

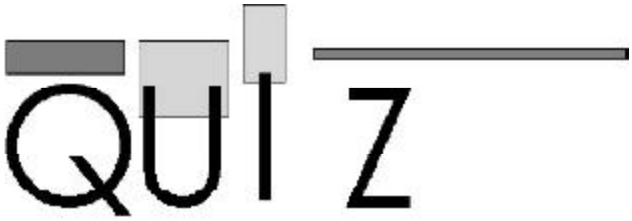
In dealing with this, I think it is pressing that transhumanist organizations work together. Diversity is welcomed but cooperation is essential. That transhumanist organizations must not push one presumptive view on their members or transhumanity as a culture is essential. In order to encourage sustainability, we must not get caught up in political jargon or positioning. A futuristic political plan must consider all of transhumanity, as well as humanity. We must cooperate to make sure that toes are not being stepped on. We must be aware of basic economics (supply and demand), make a conscientious effort to spread accurate information, and be resolute in our belief that no one organization is going to be on top. The culture of transhumanity must be networked and transparent.

Fiction is an apropos teacher of how society learns how to work together and how society does battle. Frothy Oscar Wilde took a scrutinizing look at society's vanity, from politics to bathroom grooming, and peevish Spike Lee sees a more current, yet often biased, social vanity—from Italian/Black co-minglings to the out-of-sight discomfiture of gangs. Some of the most revealing insights about how we think and what we think about are depicted in the televised reality programs —although a more obvious display of the id than we'd admit to. Media staple Oprah gets her teeth gritty and generously gives advice to the tangible insecurities of society, but who is addressing the urgent issues of social structures being pinned under radiating tech advances and potential peripeteia? How do we know, how does anyone know, what questions to ask and how do we know whether or not the answers we get are factual?

Society has a hard time visualizing the future out of context. This is where fiction can take a preeminent role. A sagas' plot and pivot point can be written like a Guy de Maupassant masterpiece or a Pokemon comic strip. Both have a warm and blunt plausibility—frank, skillful, and an immediate illustration of real life, regardless of the sketch. For my purposes, short scenario plots could draw on the blunt plausibility and frank illustration of real life by displaying plot consequences that the reader is challenged to resolve. Participatory fiction both encourages readers to think about social issues and reveals to the writers what people do think about.

Please take a look at the five sample QUIZ scenarios that follow, and if they inspire you to write a cryonics scenario, please send your short narratives to me for possible inclusion.

QUIZ questions are intended to elicit your choices in situations involving technologically enabled changes to the human condition. This is not a test with right or wrong answers. The goal is to better understand sources of resistance to major changes and to encourage innovative thinking about constructive choices.



1. Your futuristic colleagues are urging you to keep up with the times. Supercomputing power has grown exponentially to the point that the Internet and other information interfaces are limited only by the hardware of the human brain. The popular information service, Oogle, is offering brain-chip implants for Oogle's power user interface. This will augment your cognitive abilities well beyond what's possible for a purely biological human. What do you do?

a) I would not accept the brain-chip implant, even if certain that it's safe. I would be concerned that I would no longer be fully human or that some natural line had been crossed.

b) I would not accept the brain-chip implant, even if certain that it's safe. I would also discourage others from using it, perhaps through supporting legal prohibitions, on the grounds that it will widen inequalities between people.

c) I would accept the brain-chip implant reluctantly, not wanting to fall behind.

d) I would accept the brain-chip implant reluctantly, worried about losing some part of my natural humanness.

e) I would readily, eagerly accept the brain-chip implant.

f) I cannot choose any of the responses because I disagree with the implicit assumptions.

g) I would prefer to make a different decision as follows:

_____

2. NeuroChem Solutions, Inc., has beaten rivals to the market with its new superdrug Cogniply. You've been following the clinical development fairly closely and know that Cogniply went through extensive safety and effectiveness testing. You're pretty sure that, as in 98 percent of test subjects, if you take Cogniply your amygdala and other brain structures will develop more neurological connections over a few months of treatment. Benefits are improved concentration and memory retention. Although you can easily afford this treatment, you know that at least half the population cannot afford the current cost of Cogniply. What do you do?

a) Go ahead without hesitation and start taking Cogniply.

b) Go ahead and take Cogniply, with some unease or feeling of guilt, but consoled by the thought that the cost will probably come down over time—like television sets, personal computers, and other drugs.

c) Take Cogniply with some concern, since you want the benefits, but feel an obligation to do what you can to encourage the accelerated availability of generics perhaps even to push for subsidies to spread its affordability.

d) Refuse to take Cogniply and discourage others from taking it on the grounds that it's an unfair advantage or that it simply raises competition to another level.

e) I cannot choose any of the responses because I disagree with the implicit assumptions.

f) I would prefer to make a different decision as follows:

_____

3. Your daughter is reconsidering starting a family. In the past, she has had two miscarriages and one ectopic pregnancy. Now, she and her husband are opting for producing an exowomb baby—a baby grown from her fertilized egg but grown in an artificial, external womb. The Exowomb has been tested and guarantees healthy offspring. What do you do?

a) Agree with my daughter that the Exowomb is a better environment for the development of a fetus because its environment is carefully monitored and regulated by the medical staff. Any potential problems in the development of the fetus can be detected early on and corrected.

b) Attempt to dissuade my daughter, on the grounds that the Exowomb is an unnatural environment. I would feel the same way even if infusions of blood from the mother and other biochemical exchanges were done to replicate the natural womb state.

c) Congratulate my daughter on being resourceful in her awareness of latest reproductive technologies. I support her decision because equality between the sexes is essential, and reproduction in itself needs to be more balanced allowing women better reproduction choices.

d) I cannot choose any of the responses because I disagree with the implicit assumptions.

e) I would prefer to make a different decision as follows:

_____

4. While shopping, you pull two separate packages off the grocery store shelf. One label reads "Real Chicken" and the other label reads "100% SynthoMeat Chicken." You know that SynthoMeat is grown in vats from single cells, and made to taste and feel exactly like the real thing. SynthoMeat is made from simple chemicals, with no input from any living creatures. Being grown in vats, it is carefully tested, and Consumer Reports and the AMA have shown that SynthoMeat is much less likely to carry bacteria or viruses or other adulterants. The two packages cost the same. Which package do you choose?

a) I'm a vegetarian and wouldn't eat any meat, let alone synthetic chicken.

b) I'm a vegetarian primarily on moral grounds, but would

at least seriously consider the SynthoMeat (if I knew I'd like the taste) since no animals were involved in its production.

b) I'd definitely take the 100% SynthoMeat chicken.

c) If the "Real Chicken" is grown from an environmentally safe farm, has not been given any steroids, and is fresh, I'd choose it.

e) I cannot choose any of the responses because I disagree with the implicit assumptions.

f) I would prefer to make a different decision as follows:

_____

5. Imagine that a time machine could take you 20 years into the future. Would you see as much or more change in the life, culture, and technology of humans between 2003 and 2023 than humans have seen *since:*

1983 (Extrasolar planets suggested, Nuclear winter described; Jarvik hearts, Laser printers in 1982; DNA analysis used to clarify closeness of humans and chimps compared to gorillas and orangutans in 1984)

1963 (First woman placed in orbit; Valium introduced; Arecibo radio telescope; Electronic watches introduced; Gene regulators proposed in 1961; Communications satellite launched, and first practical LED produced in 1962; Background microwave radiation discovered in 1964)

1928 (Penicillin discovered; Game theory devised; Talking pictures invented in 1927; Particle accelerator developed in 1929; Nylon invented in 1931)

1903 (Wright Brothers flight; Electrocardiogram invented; First message sent around the world by wire and cable, taking 12 minutes; Sutures developed in 1902; First radio tube invented in 1904; IQ test devised in 1905)

1800 (Electric battery invented; Gas lighting invented; Nitrous oxide discovered; Study of tissues published; Jacquard loom invented in 1801; Steam locomotive on railroad demonstrated in 1804)

1500 (Concave lenses invented in 1451; Gutenberg prints 300 Bibles on his printing press in 1454; America recognized as new world in 1502; First watch made in 1504; Earth circumnavigated in 1523)

1000 AD (Science of optics founded in 1025; Greenland discovered by Erik the Red in 982; Crossbow invented in 1050)

1000 BC (Steel developed; Iron Age began)

8000 BC (Agriculture developed)

20,000 BC (Oil lamp invented; Bow and arrow used)

2,000,000 BC (Stone tools used)

5b) What if the time machine took you 50 years into the future, instead of 20? Which of the above answers would you pick then?

5c) What if the time machine took you 100 years into the future, instead of 20? Which of the above answers would you pick then?

20 years
40/50 years
75 years
100 years
200 years
500 years
1000 years
3000 years
10,000 years
22,000 years
2,000,000 BC (Stone tools used)

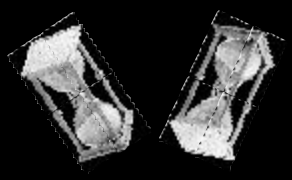
Psst ...
This is not a test with right or wrong answers.

The goal is to better understand sources of resistance to major changes and to encourage innovative thinking about constructive choices.

We see a lot of potential in "The Futurist's QUIZ," and have received a lot of feedback. If you want to keep track of how ExI plans to distribute the quiz, in publication and educational formats, please join us at http://www.extropy.org

ExI
EXTROPY INSTITUTE

l



You Only Go Around Twice

by Jerry B. Lemler, M.D.

Two Years Out—And a Lifetime to Go

The first time she entered my life I was (literally) flat on my back. Dressed in khaki shorts and a creamy-colored gathered blouse, with the unmistakable squeak of third set tennis shoes, she came bounding into my room, uninvited but not unwelcome, all 97 pounds of her on a petite frame, looking me suspiciously in the eye.

"I'm Missy, and I'm two years out," she proudly announced.

Two years out of what?... I couldn't fathom. Junior high school? Baton camp?

"They won't say I'm cured, of course," she informed me, "but now the cancer was so long ago I'm a volunteer helper. I'm here to cheer you up."

Dripping in my hospital bed with the chemotherapeutic ooze of Cytoxin on a steamy Scottsdale mid-May evening, with little to do but verify the patency of my IV lines, Missy was a welcome, if brief, interlude.

"What kind of cancer do you have?" she straightforwardly inquired of me.

"Medium to high grade Burkitt's Lymphoma," I replied, knowing the odds we shared the same rare tumor type to be next to nil.

"I've never heard of that one," she predictably stated. (Obviously the child had not read about the discoveries of Dr. Dennis Burkitt in African children back in the 1950s as part of volunteer orientation.)

"How 'bout you?" I asked, more to prolong the human contact than for any other discernable reason.

"Breast cancer," she said, unceremoniously patting her flattened left areolar area. "Two years out now, you know, means I'm almost cured. I got it when I was only 18."

"Only?" I muttered (in silence to myself). A mere child in some ways, yet her illness and subsequent long-term recovery had produced a well-earned bubbling quality to her already endemic cheery demeanor.

"Now I'm a volunteer. I go around cheering up the patients. If I can beat it, anyone can." And then, for the better part of ten minutes, Missy proceeded to relate to me her sad tale—what her disease had done to her life.

"You gotta have faith!" she proclaimed, unmistakably gazing upward. "There's a plan for all of us, you know."

I thought (briefly) about explaining to her the information theoretic death concept, but I rather doubted it would have penetrated her core belief system.

"You usually only get one chance at life," she admonished me. "So, you need to make the best of every single day. I got a second chance and look at me. I'm two years out. I gotta go now. You'll get there too," she informed me, "I'm sure you will."

By "there" I assumed she meant two years out. And, yes, that indeed would be a marker of accomplishment.

The prognosis of most forms of malignant tumors are discussed in terms of five-year survival rates. In my own case, for instance, the odds are 70 percent that I'll be alive five years after the tumor set up shop in my neck, prior to spreading to my abdomen, chest, and peri-renal areas. Most cancer victims who succumb and die do so by relapsing within the first two years. The prevailing odds on most forms of breast cancer are not nearly so optimistic. Missy had received good (perhaps even expert) medical care combined with her good natured idealistic view of the world, which certainly bode well for her.

"Well, I gotta go now and cheer up someone else," she announced, much like a therapy dog heeding its master's call. And, just like that, she was gone. I didn't see her again (or any other volunteers) during my second in-patient hospitalization, though I was on the lookout.

I've never been one much drawn to joining groups and organizations (Alcor, obviously excluded). But thanks to the ministrations of the effervescent Missy, I'm looking forward to becoming a member of the "two years out club." Heck, if I'm eligible, I might even come visit you!

l

The Immortalist Vision of J. D. Bernal

by R. Michael Perry, Ph.D.

John Desmond Bernal (1901–71), who used his middle name, was an Irish-born scientist and political philosopher. As a young man, he developed a powerful vision of the future in which humanity would progress to a more-than-human level. Options would open for a vast increase in the length and quality of life and possibly lead to a form of true immortality, along with travel to the stars. Scientific means were to be employed throughout.

J. D. Bernal

Bernal himself was a crystallographer, a pioneering molecular physicist, and also a social scientist. A determined atheism reinforced his respect for reason, science, and technology as the means to further human causes. Privately, "his sexual appetite was reputed to be extraordinary"; he had children by one legal wife and two mistresses and generally gained a reputation as a "great lover."[1] (I mention this because it forms a rather striking contrast to some of his ideas about the future of humanity, as will be seen.) Politically, Bernal was a dedicated Marxist and communist and gained some notoriety for his trusting defense of communism and its leaders, including Stalin. (The misplaced trust led, among other things, to a foolish support of the politicized, pseudoscientific geneticist Trofim Lysenko, whose scientific opponents in the Soviet Union were hauled off to prison camps where they died under the harsh conditions.[2]) Such a stance would find little sympathy among today's immortalists (and quite a few others), yet in other respects Bernal must still count as a kindred spirit.

Bernal's main thoughts on the transhuman future are expressed in a six-chapter pamphlet of about 40 pages that appeared in 1929.[3] *The World, the Flesh, and the Devil: An Enquiry into the Future of the Three Enemies of the Rational Soul* first lays groundwork for the difficult task of trying to forecast the future, then treats the three "enemies" in sequence. First is the inanimate environment or material habitat ("world"); then comes living organisms, including the human body ("flesh"); and finally, the world of one's hopes, fears, beliefs, confusions, and imagination ("devil"). Though presented as adversaries, the three great arenas also serve a positive purpose—to furnish opportunities and means for further advancement.

In his effort to forecast the future, Bernal settles on a twofold approach: first, to consider the three domains independently, as separate fields of endeavor; then, to try to judge how the separate efforts will mutually interact as progress is made. This approach has its hazards, as is duly noted, but also the desirability of proceeding—it is better to make a try than give up with nothing to show. In the art of forecasting itself Bernal notes two major hazards. One concerns the possible conflict between what is hoped for and what will actually occur ("desire" versus "fate"). A second is the sheer difficulty of trying to second-guess the future behavior of such a complex system as the world as we know it, human society in particular. A natural tendency, he observes, is just to assume there will be no great changes, nothing involving what today would be considered major technological progress. Until relatively recent times this assumption must have seemed quite reasonable, but now, of course, the picture is different. We humans have become the principal agents of change in our world, but, cautions Bernal, the change that often occurs is not what is desired.

Proceeding to the material world, where "prediction is on its surest ground, and is, in the first stages, almost a business of mathematics," Bernal lays out a remarkable near-anticipation of nanotechnology. "So far," he notes, "we have been living on the discoveries of the early and mid nineteenth century, a macro-mechanical age of power and metal." This has been "sufficient to revolutionize the whole of human life and to turn the balance definitely for man against the gross natural forces." Greater things are sure to come, however, using discoveries of the twentieth century, particularly those in quantum physics, which deals with matter at the fundamental level. "The first step will be the development of new materials and new processes in which physics, chemistry and mechanics will be inextricably fused." Soon we should be able to fabricate materials "which are not merely modifications of what nature has given us in the way of stones, met-

als, woods and fibers, but are made to specifications of a molecular architecture." The varieties of atoms were mostly known already, and a beginning had been made on the forces that bind them. Our understanding should soon have applications "to suit our own purposes."

Among the purposes on which Bernal specially lavishes attention is space colonization, where he offers some daring solutions to the expected problems, including that of finding a suitable habitat. His reasonable answer there is to build it ourselves as a big, solar-orbiting terrarium. Natural space debris would furnish most of the raw materials, which could be transformed as required by new technology, and the work would be greatly facilitated by zero-g. "Imagine a spherical shell ten miles or so in diameter, made of the lightest materials and mostly hollow; for this purpose the new molecular materials would be admirably suited." The globe would be a complete, self-contained life-support system trapping an interior atmosphere and obtaining its energy from sunlight striking its surface. Thus "it would be forced to resemble on the whole an enormously complicated single-celled plant."

Once successful, the space globes might be expected to proliferate, until a vast spacefaring population competing for available sunlight developed. Population pressure, "or perhaps the knowledge of the imminent failure of the sun," would then compel the more venturesome to seek new living quarters among the distant stars. Interstellar distances being so great, however, any voyage to another star would be very lengthy. People starting the journey, in a well-stocked craft designed for the purpose, could expect only to live out their lives on board and raise families that would take control as needed. In this manner, many generations must pass before the destination is finally reached and anyone starting out could have no hope of personally completing the voyage. This assumes, however, that humans remain the limited creatures they are today, which Bernal is quick to discount.

What humans might instead develop into, the future "flesh," would come about, as usual, through scientific and technological progress. First Bernal notes that, while the rewards of successful intervention in nature's basic human design should be great, the difficulties will be formidable too; our progress in this direction has hardly started. Still to be completed are such basics as eliminating diseases and other defects, so that humans could enjoy near-perfect health and vigor for most of a life span of about 120 years. This we can hope will be accomplished in due course. Yet the serious immortalist will recognize the shortcomings of such "perfect" but still mortal humans, and Bernal concurs. People must make the transition from the biological, naturally evolved species they now are to something else entirely, a change that would no doubt seem unsettling to many. But Bernal offers an interesting if rather simplistic smoothing of the path, in that the changeover would begin only after the end of the 120 years, when the only alternative is death. (It appears, then, that he overlooked the prospect of simply eradicating aging too, though this solution would also have drawbacks—as explained below.) Drawing on the insect world for analogy, people ("larvae" to that point) would enter a "chrysalis" stage, "a complicated and rather unpleasant process of transforming the already existing organs and grafting on all the new sensory and motor mechanisms." After this would come re-education, so the future traveler would finally "emerge as a completely effective, mentally directed mechanism, and set about the tasks appropriate to his new capacities." Along with increased mental ability would come an unprecedented adaptability. The transformed person would "be physically plastic in a way quite transcending the capacities of untransformed humanity. Should he need a new sense organ or have a new mechanism to operate, he will have undifferentiated nerve connections to attach to them, and will be able to extend indefinitely his possible sensations and actions by using successively different end-organs."

Where would it lead? This is impossible to second-guess, as Bernal notes, but he does make an attempt, assuming that "we confine ourselves to what might be called the first stage of mechanized humanity and to a person mechanized for scientific rather than æsthetic purposes." The result would be a sort of crustacean-like cyborg with artificially designed head and body, supporting and controlled by natural brain tissue nourished by a natural blood supply. Natural organs might also be adapted for the life-support system, but there would be additional fail-safe features including extra redundancy and easy replaceability of the various components.

Sensory organs would be more advanced than human. Eyes would peer alternately into different optical enhancements projecting from the head: periscopes, telescopes, microscopes, "and a whole range of televisual apparatus." The ear would likewise be augmented, in this case with "the corresponding microphone attachments"; it "would still be the chief organ for wireless reception." Smell and taste would achieve "a more conscious and less purely emotional role than they have at present." Detection "of touch, temperature, muscular position and visceral functioning" would be provided using connections "to the corresponding part of the exterior machinery or to the blood supplying organs."

The head ("brain cylinder") would be furnished with attachments "corresponding to but much more complex than, our mouth, tongue and hands. This system of appendages would probably be built up like that of a crustacean which uses the same general type for antenna, jaw and limb" but would also allow for certain, detachable components, including organs for slow or fast land travel, flight, and self-repair. "On the whole, however, the locomotor organs would not be much used because the extension of the sense organs would tend to take their place." Complementing the detachables would be remotely controlled devices for accomplishing various tasks at a distance. "These extended organs would only belong in a loose sense to any particular person, or rather, they would belong only temporarily to the person who was using them and could equivalently be operated by other people." The capacity for remote control might lead to a "relative fixity of the different brains," which would be "an advantage from the point of view of security and uniformity of conditions, only some of the more active considering it nec-

essary to be on the spot to observe and do things."

In all, notes Bernal, the transformation from humans as we know them to these quasi-crustaceans might seem monstrous, but is simply the logical outcome of present conditions and trends, evolution for practical purposes having reached a dead end. "It may be argued that this tampering with bodily mechanisms is as unnecessary as it is difficult, that all the increase of control needed may be obtained by extremely responsive mechanisms outside the unaltered human body." However, it must not be forgotten that the alterations would commence at what would otherwise be the end life. The initial advantage would be that at least the person would *stay alive*—but Bernal is confident other advantages would appear over time and predominate. (That in particular would remove the objection that simply eliminating aging would be a better way to extend one's life.)

Among the advantages would be that different minds would be in direct communication, either by physical wiring or wireless connection. This would only be a starting point for further advances, which themselves would lead, among other things, to near-immortality. Bernal imagines that the original brain tissue could only be maintained for a few centuries at most, but its information could be copied and stored ("downloaded" we would say) for retrieval ("uploading") after the original had perished. Connections between minds, though resulting in a "dual or multiple organism," would also conserve the individual, at least while the brain survived, for it is imagined that functions specialized to different minds will persist, demanding that different individuals endure as such. With the single individual still confined to the original brain, only the multiple individual would be truly immortal (barring cosmological catastrophe), but Bernal does note that memories would be held in common, to at least allow a kind of shadow-life for the departed. (It is here that present-day uploaders such as myself would go a step further and insist that the individual could indeed be reconstituted if enough personal information survived after biological death.) However, Bernal does not stop here but also argues that we can probably replace our very brain cells with more durable materials. Our brains, in addition, would become spread out in space over time, their various components communicating remotely. "Every part would not be accessible for replacing or repairing and this would in itself ensure a practical eternity of existence, for even the replacement of a previously organic brain-cell by a synthetic apparatus would not destroy the continuity of consciousness."

As a consequence, Bernal conjectures, a "new life which conserves none of the substance and all of the spirit of the old would take its place and continue its development." Full uploading is achieved, then, but slowly, while each subject is awake. "Such a change would be as important as that in which life first appeared on the earth's surface and might be as gradual and imperceptible." (Gradual, perhaps, but hardly *as* gradual, I would think!) "Finally, consciousness itself may end or vanish in a humanity that has become completely etherealized, losing the close-knit organism, becoming masses of atoms in space communicating by radiation, and ultimately perhaps resolving itself entirely into light." Well, I'd hope that consciousness *itself* would persist; otherwise, what was it all for? But its "resolving itself entirely into light" is not entirely off-base, but recalls the speculations of physicist Freeman Dyson half a century later about matter, and conscious former humans, ultimately resolving into clouds of positronium[4] (as opposed to light or photons, which are hard to form into information-bearing structure).

At any rate, we see definite prospects for life beyond the present limits, but how do we get there from here? Even getting started will not be easy, for "we can abandon the world and subdue the flesh only if we first expel the devil, and the devil, for all that he has lost individuality, is still as powerful as ever." This devil is no mythical demon but "is inside ourselves, we cannot see him. Our capacities, our desires, our inner confusions are almost impossible to understand or cope with in the present, still less can we predict what will be the future of them." Understanding and coping will be very important, nonetheless. "Whether an age or an individual will express itself in creative thinking or in repetitive pedantry is more a matter of desire than of intellectual power, and it is probably more the nature of their desires than of their capacities that will determine whether or not humanity will develop further."

Interestingly, Bernal finds an obstacle to human progress in the rational attempt to deal with human problems through psychology. The value this discipline places on a "normal" life tends to disparage, thus discourage, the progress of civilization with its increasing artificiality. "The intellectual life, both in its scientific and its æsthetic aspects, is seen no longer as the vocation of the rational mind, but as a compensation, as a perversion of more primitive, unsatisfied desires." Presumably the "perversion" label would apply regardless of the possible benefits, including, eventually, immortality. Three main outcomes are foreseen. In the first, technological progress is successfully abandoned in favor of the good life, "an idyllic, Melanesian existence of eating, drinking, friendliness, love-making, dancing and singing." In the second, harmonization of the different elements of the human psyche is sought and achieved, so that we "find the capacity to live at the same time more fully human and fully intellectual lives." In the third a split in humanity occurs, "the one section developing a fully-balanced humanity, the other groping unsteadily beyond it."

Which will prevail in the end? Bernal gives a roundabout answer but clearly suggests, as a main possibility, "none of the above." Humans as we know them will simply be superseded though individuals may persist through the transition. First he notes that up to this point "world," "flesh," and "devil" have been considered, unrealistically, as self-contained, non-interacting domains. It is now imperative to address the possible interactions as advances in the three are pursued. In part this seems straightforward. Physiology must adapt to the changing physical conditions that define its surroundings. Space habitats in particular could be expected to favor anatomical changes along the lines suggested. Psychology as before is more difficult to approach. There, for example, we must consider the possibility of a "complex" mind made up of formerly human, now "mechanized" minds that are also now in intimate, interactive commu-

nication and together form a personality though not losing their individual selves. "The psychology of a complex mind must differ almost as much from that of a simple, mechanized mind as its psychology would from ours; because something that must underlie and perhaps be even greater than sex is involved." The once-human minds will meanwhile have undergone great changes to conform to their new setting. "The sexual instincts in particular ... would be unrecognizably changed." Bernal foresees a redirection of the sex drive into such areas as research and (much more still) "æsthetic creation." Indeed, "[t]he art of the future will, because of the very opportunities and materials it will have at its command, need an infinitely stronger formative impulse than it does now."

"What is to be the future of feeling?" This is difficult to judge since "we are not certain whether the comparative coldness of modern intellectualism is the effect of considerable development or of dangerous perversion." Feelings, at any rate, should come under much more personal control, and Bernal speculates that many would choose a state of ecstatic happiness, but only then realize that "happiness is not an end of life." In the end he confesses bafflement. "The psychology of the completely mechanized organism must remain a mystery."

Still there are questions to be approached about the overall purpose of life, from both the individual and the global perspective. Bernal considers some models from existing biology. Social insects form societies that seem designed simply for reproducing their kind, but he is reluctant to draw the same conclusion about humans, which instead he sees as forming "co-operative food-producing societies—or perhaps, to include comfort, ... body-satisfying societies." In a more advanced future, with food and comfort superabundant and attention focused elsewhere, we may "come to live to think instead of thinking to live." Once again it is possible a bifurcation will occur, some advancing to more-than-human status and others remaining at the present level. Bernal speculates that the more-than-humans will be the ones to colonize space as well as to exert certain, subtle controls over the humans-only. These in turn may remain on earth in a sort of zoo "so intelligently managed that its inhabitants are not aware that they are there merely for the purposes of observation and experiment." In any case, "we hold the future still timidly, but perceive it for the first time, as a function of our own action."

1. Maurice Goldsmith, *Sage: A Life of J. D. Bernal* (London: Hutchinson, 1980), pp. 223, 238.

2. Ibid, pp. 190–97.

3. J. D. Bernal, *The World, the Flesh, and the Devil: An Enquiry into the Future of the Three Enemies of the Rational Soul*, 2d ed. (1929; reprint, Bloomington: University of Indiana Press, 1969); available online at http://cscs.umich.edu/~crshalizi/Bernal/.

4. T. A. Heppenheimer, "When the Sun Dies," *Omni* 37, no. 40 (August 1986).

l

(continued from page 21)

1. Laura Reybold, *Everything You Need to Know About the Dangers of Tattooing and Body Piercing* (New York: Rosen Publishing Group, Inc., 1996).

2. Ananova, "'Do Not Resuscitate' Tattoo for Pensioner," March 5, 2003. http://www.ananova.com/news/story/sm_757268.html?menu=news.quirkies

**Editor and Author's note: The "DNR" tattoo would not be considered legally binding by EMS or other medical personnel, unless accompanied by proper legal documents substantiating the request. We believe the purpose of the tattoo in this situation would be to alert medical staff to the fact that they would need to ask about or look for proper DNR paperwork.*

3. Christy Oglesby, "Unique, Enduring Traits Key in Identifying Remains," September 18, 2001. http://edition.cnn.com/2001/US/09/18/vic.remains.identification/

4. Centers for Disease Control and Prevention,. "Can I Get HIV from Getting a Tattoo or through Body Piercing?" November 30, 1998. http://www.cdc.gov/hiv/pubs/faq/faq27.htm

5. Reybold, p. 49.

6. Reybold, p. 43.

l

About the author:

Brent Fox has had an interest in cryonics since the mid-1970s, and he is a suspension member with the Cryonics Institute and a member of the Society for Venturism. He may be reached at bfox@worldnet.att.net.

Reading a book you're sure will interest other Alcor members?

Would you like to write a review for *Cryonics* but aren't sure if the book has already been reviewed in a previous issue?

Contact Lisa Lock, Editor, to discuss the possibilities:

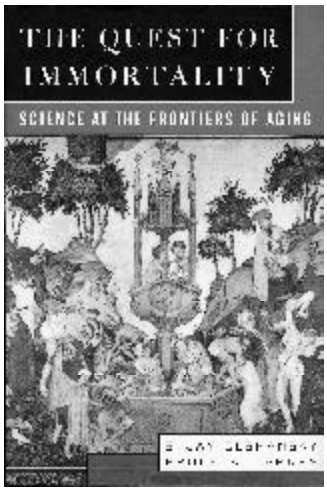
llock@winterthur.org

The Quest for Immortality
Science at the Frontiers of Aging

By S. Jay Olshansky and Bruce A. Carnes

W. W. Norton, 2001

Book Review by R. Michael Perry



Are we on the verge of conquering aging? Is a new, unprecedented era of biological immortality just about to begin? Probably not, say the authors, despite the claims of some who promote as treatments for aging everything from hormone and nutritional supplements to transcendental meditation. "The life extension industry begins with a grain of truth but quickly gets mixed up with a tablespoon of bad science, a cup of greed, a pint of exaggeration, and a gallon of human desire for a longer, healthier life—a recipe for false hope, broken promises, and unfulfilled dreams." The book takes a sobering look at the field of anti-aging medicine and concludes that, while hopes for a quick end to aging are misplaced, there are definitely things we can do to enjoy longer, healthier lives. Meanwhile, the authors note, work on understanding aging and other causes of death goes on. Medicine is gradually allowing us to live longer and in better health. More radical interventions that would greatly lengthen the healthy human life span are not ruled out. But these will not happen overnight; for now we must be content with less.

Though mainly focused on the present and future, the book actually says quite a bit about the past. The ancient Taoists in particular considered the problem of mortality and tried to deal with it rationally. Many of their "remedies" we would no longer take seriously, such as gold, ginseng, cinnamon, and cinnabar: all of these, when ingested, were thought to enhance longevity. But at least one of their practices, calorie restriction, may actually have value in prolonging life and slowing the aging process, as has been confirmed in such species as mice. Credit is given them as well for attempting to systematize the study of possible methods for lengthening life, transforming folklore and myth into protoscience, and furnishing a starting point for more serious investigations. In all, though, they had a hodgepodge of mostly ineffective strategies and treatments, if one demands the high standards of actually slowing or reversing aging. This, the authors point out, is still true of the life extension movement today, which borrows more from its early precursors than is usually acknowledged.

That aging is such a hard problem is attributed, quite reasonably, to natural selection, which in fact has already addressed this problem so well that, in the wild state, few creatures ever die of it. What kills them instead, mainly predators, diseases, and starvation, spares enough individuals long enough to complete the reproductive cycle and produce a new generation to replace the old as it dies. Much beyond that is not provided by insentient nature, and reasons are easy to see. There would be little survival advantage in a creature that might be very long lived, but only in a protected environment that is unlike its natural habitat. Moreover, genes that shorten life may confer a reproductive advantage that more than offsets the eventually lethal effects, especially if these are delayed beyond the usual length of life.

For the human species, the development of civilization provided such advantages as protection from predators and greater abundance of food. Average life spans began to lengthen. Much later, mainly over the last century, sanitary practices, control of infectious diseases, and increasing prosperity have led to further and far greater increases in life expectancy, particularly in more industrially advanced nations. Once, few people reached the age of 50. In many parts of the world the vast majority now do, a trend that shows every sign of becoming universal. One effect is a dramatic shift in causes of death, which increasingly are simply complications of the aging process.

More than ever, attention is focused on how aging itself might be slowed and reversed, an ancient dream that modern science may at last be able to realize. Don't expect it to be easy, the authors warn repeatedly. Nature has already done the preliminary work and done it well. To improve upon nature will take understanding we do not yet possess. In particular this understanding is not possessed by life extension hucksters who overpromote their products. A case in point is provided by the free

radical theory of aging, which the authors take seriously (though it is controversial enough that not everybody subscribes to it).

Free radicals are certain, short-lived molecular species produced in the cells during normal metabolism. They can attack the DNA and seem to play a major role in the gradually accumulating molecular damage that occurs as we age. But free radicals are also vital to life processes—take them away altogether and the immune system would break down, for instance. It seems that nature has already developed a near-perfect method of limiting the damage from free radicals while allowing the benefits; it is a combination of free radical scavengers and DNA repair capability. This finely tuned mechanism, say the authors, is not at all likely to be enhanced by substances such as the usual vitamins and minerals that are touted for the purpose, even if they do mop up free radicals. A more likely candidate is WR-2721, a drug originally developed at Walter Reed Hospital in Bethesda, Maryland, to reduce cellular injury from radiation. (Such injury is related to free radical damage.) Like the vitamin and mineral supplements, it also scavenges free radicals, but its real effectiveness seems to come from lengthening the cell's metabolic cycle to give more time for DNA repair. More generally, "[s]cientists within both academia and industry are actively searching for compounds that minimize the accumulation of genetic damage within the cells of the body. This is real science, science about the biochemistry of life that will eventually have important applications for aging and longevity."

One other possible aging mechanism, the shortening of telomeres or chromosome caps as the cells repeatedly divide, is noted but given rather short shrift, for reasons not fully explained. We can, however, accept the take-home message that aging is complex and, by a wide margin, we are not yet prepared to wipe it out of existence, despite the ongoing progress. In learning to live with the still-present aging process and make the most of our time here, the authors advocate simple, time-tested, and accessible approaches such as exercise, good diet, and low stress. These do not require expensive consultations or therapies, and are no less effective and probably more so in adding years to life and life to years.

Good advice—as far as it goes. As immortalists, though, we want something more. Being signed up for cryopreservation gives us an extra chance at a really extended life, when aging will indeed be a thing of the past. *Not* being signed up increases the likelihood that the big breakthroughs we hope for will be too late to do us any good. Without intending it, the authors are implying that we should take cryonics seriously.

l

ALCOR

LIFE EXTENSION FOUNDATION

SINCE 1972

OUT OF TOUCH WITH ALCOR?

If you'd like to know what's happening at Alcor, we've launched a new service to keep you instantly informed. Alcor News is an e-mail system that will send you short bulletins on a regular basis (typically about once a month). While in-depth articles about Alcor will still appear here in *Cryonics* magazine, news briefs will reach you via e-mail.
It's free, but, you have to subscribe!
Subscribing is easy. Just visit

⇨ http://www.AlcorNews.org

and follow the instructions. Or send a blank e-mail to alcornews-request@alcornews.org, with the single word subscribe
in the subject line. You will receive a message asking you to confirm that you are subscribing. Reply to the message, and you're all set!

To unsubscribe or change your e-mail address, visit www.AlcorNews.org and alter your preferences.
Send any comments, suggestions, or complaints to the new address that has been established to deal with human communications:
mail@alcornews.info

Note: Our server protects your e-mail address from being harvested by spambots. Your identity will be protected. We will not share your address with anyone else. The only e-mail we send you will be Alcor News.

Attention Alcor Members:

Be sure to check the inside back cover of the magazine for information on meetings taking place in your area. Guests are always welcome; please contact hosts for more information regarding directions, logistics, etc.

If you are interested in meeting other Alcor members in your area and organizing an informal gathering, please send information to Editor Lisa Lock at:
llock@winterthur.org
to have your post included ina future inssue of Cryonics *magazine.*

TechNews

by Gina Miller with R. Michael Perry, Ph.D.

NNI Budget Increase. The budget for fiscal year 2004 presented by President George W. Bush provides $847 million for the National Nanotechnology Initiative (NNI), a 9.5 percent increase over the 2003 budget. View the chart of the proposed budget here: (Nanotech Planet 2/5/03) http://www.nanoelectronicsplanet.com/nanochannels/funding/article/0,4028,10499_1579841,00.html Or view the PDF from the National Nanotechnology Initiative website: http://www.nano.gov/fy2004_budget_ostp03_0204.pdf [NGN 2/27/03]

Optical Trap Scopes Out Motor Molecules. When it comes to nanotechnology, many researchers turn to nature for inspiration. Of particular interest to nanoengineers is the naturally occurring protein kinesin, one of several "motor molecules" that facilitate movement in living cells. If kinesin-like nanodevices are to become reality, researchers first need to solve a fundamental mystery about how kinesin moves. A new laser microscope designed at Stanford University is providing new clues. (Stanford University news 2/25/03) http://www.stanford.edu/dept/news/pr/03/tweezers226.html [NGN 2/27/03]

New Crystals May Shape Better Nanotech. Taking a cue from a starfishlike marine creature, scientists at Bell Labs have created what they say are high-quality crystals that may one day help improve communications networks and nanodevices. (zdnet/cnet 2/21/03) http://zdnet.com.com/2100-1103-985534.html Or see StockHouse USA: http://www.stockhouse.com/news/news.asp?tick=LU&newsid=1533911 [NGN 2/27/03]

Molecular Self-Assemblers. Researchers from the University of Pennsylvania and the University of Sheffield report in the February 21 issue of *Science* that they have created tree-like molecules that assemble themselves into precisely structured building blocks of a quarter-million atoms. Such building blocks may be precursors to designing nanostructures for molecular electronics or photonics materials, which "steer" light in the same way computer chips steer electrons. (Newswise/Scinews 2/21/03) http://www.newswise.com/articles/2003/2/PERCEC.NSF.html [NGN 2/27/03]

"Natural" Bandages to Aid Healing. With the same compound the body uses to clot blood, scientists at Virginia Commonwealth University have created a nanofiber mat that could eventually become a "natural bandage." Spun from strands of fibrinogen 1,000 times thinner than a human hair, the fabric could be placed on a wound and never taken off—minimizing blood loss and encouraging the natural healing process. (ScienceDaily 2/11/03) http://www.sciencedaily.com/releases/2003/02/030211072313.htm [NGN 2/27/03]

Nanocircuits Could Bud from Brain's Bane. Rogue proteins blamed for mad cow disease could yet find a use—in tiny electrical wires, scientists revealed this week in Denver. The proteins, called prions, are also thought to cause the human brain disease variant Creutzfeld Jacob disease (vCJD) when they wad together into tough, messy clumps. (Nature Science Update 2/16/03) http://www.nature.com/nsu/030210/030210-21.html [NGN 2/27/03]

Tiny Battery May Power Next-Gen Gadgets. A radical new design that promises to revamp and rewire a decades-old staple of electronics—the battery—may also be the elusive blueprint for powering so-called "micro-electromechanical systems," or MEMS, futuristic devices no wider than a human hair. "No battery yet exists that will provide long-lasting power and still fit inside devices this small," said Bruce Dunn, a materials science professor from the UCLA Henry Samueli School of Engineering and Applied Science. "Our team of engineers and chemists are establishing the enabling science for a new battery that represents a real paradigm shift," he told NewsFactor. (Yahoo! News 2/21/03) http://story.news.yahoo.com/news?tmpl=story&u=/nf/20030221/tc_nf/20819 [NGN 2/27/03]

Triple Quantum Entanglement. The quantum entanglement of three electrons, using an ultrafast optical pulse and a quantum well of a magnetic semiconductor material, has been demonstrated in a laboratory at the University of Michigan, marking another step toward the realization of a practical quantum computer. While several experiments in recent years have succeeded in entangling pairs of particles, few researchers have managed to correlate three or more particles in a predictable fashion. (Science Daily 2/27/03) http://www.sciencedaily.com/releases/2003/02/030227071834.htm [NGN 2/27/03]

Long Nanotubes Promise New Materials. Oak Ridge National Laboratory's Dave Geohegan, Alex Puretzky and Ilia Ivanov are using laser ablation and vapor deposition techniques to grow nanotubes up to millimeters long. They also are developing ways to align them in polymers for new generations of materials. The challenge now is to gain a better understanding of the tubes' chemistry and how they grow so scientists can optimize the process. (Oak Ridge National Laboratory Feb.. 2003) http://www.ornl.gov/news/cco/storytip.htm [NGN 2/27/03]

NanoMuscle Eyes a Giant Market. What do cars and toys have in common? Very little, except for a device the size of a paper

clip that is wedging its way into both markets. The device comes from Antioch-based NanoMuscle, Inc.—a little company that is making a big name for itself. This week at the American International Toy Fair in NYC, the first consumer product using NanoMuscle's technology hit the market. Hong Kong-based Playmates Toys unveiled Baby Bright Eyes, a doll with eyes powered by NanoMuscle's tiny actuator that open and close and move slowly, as if gazing around her environs." What they don't realize is this Christmas, their children will be playing with it, and in 2005, cars will be driving with nanotechnology," MacGregor said. (East Bay bizjournals 2/21/03) http://www.bizjournals.com/eastbay/stories/2003/02/24/story6.html [NGN 2/27/03]

Nanowires Approach the Quantum Realm. Scientists at the City University of Hong Kong have fabricated the smallest silicon nanowires ever. Shuit-Tong Lee and colleagues believe that such wires—which have diameters approaching 1 nanometer—could be used to make UV light-emitting diodes, transistors, and lasers. (D. D. Ma et al., 2003 Sciencexpress, to be published) (PhysicsWeb 2/20/03) http://physicsweb.org/article/news/7/2/9 [NGN 2/27/03]

Portal for Nano Research. The so-called "nanoforum" consortium supported by the European Union has launched a pan-European Internet portal for nanotechnology research at http://www.nanoforum.org. By providing an exhaustive source of information, the site aims to help European nanotechnology experts work together and make faster progress. It is also designed to give less developed countries in Europe better access to cutting-edge innovations in the field and encourage young scientists to publish their results. (Newsfox 2/25/03) http://www.pressetext.com/pte.mc?pte=030225028 [NGN 2/27/03]

Diatom Nanotech Conference Scheduled. It's unlikely that many nanotechnologists are familiar with diatoms—a group of single-celled shelled algae—but that could change following a world-first conference on diatom nanotechnology that's set to take place in the U.S. in October. Liz Kalaugher spoke to conference organizer Richard Gordon of the University of Manitoba, Canada, to find out more. (nanotechweb.org 2/03) http://nanotechweb.org/articles/feature/2/2/2/1 [NGN 2/27/03]

Custom-Designed Nanotubes. Thousands of times thinner than a human hair but hundreds of times stronger than steel, carbon nanotubes could play an important role in the next wave of technological innovation...That's where Jun Jiao comes in. Jiao, co-director of Portland State University's Center for Nanoscience and Nanotechnology, leads a team that is devising ways to build custom-designed nanotubes. "We're trying to create new procedures to synthesize carbon nanotubes in controlled ways, to produce carbon nanotubes with controlled properties," said Jiao, whose 1997 Ph.D. thesis at the University of Arizona compared different ways of making nanotubes. (Oregon Live 2/26/03) http://www.oregonlive.com/science/oregonian/index.ssf?/base/science/104617848494540.xml [NGN 2/27/03]

DNA Strings Metal Atoms. Researchers from the University of Tokyo and the Institute for Molecular Science in Japan have used DNA to assemble strings of up to five copper ions. The technique could have applications in producing molecular magnets and wires. "One of the most important goals in the field of inorganic chemistry is to control metal arrays spatially and dynamically," Mitsuhiko Shionoya of the University of Tokyo told nanotechweb.org. "DNA shows promise as the provider of a structural basis for the bottom-up fabrication of inorganic and bio-organic molecular devices." (nanotechweb.org 2/21/03) http://nanotechweb.org/articles/news/2/2/10/1 [NGN 2/27/03]

DNA Fuels Tiny Biocomputer. About a year ago, Prof. Ehud Shapiro of the Weizmann Institute made international headlines for devising a programmable molecular computing machine composed of enzymes and DNA molecules. Now his team has made the device uniquely frugal: the single DNA molecule that provides the computer with the input data also provides all the necessary fuel. The device was recently awarded the Guinness World Record for "smallest biological computing device." (Science Daily 2/27/03) http://www.sciencedaily.com/releases/2003/02/030227074409.htm [NGN 2/27/03]

Batteries from Nanotubes. New measurements by an Indian physicist and his team support the idea that nanotubes—cylindrical carbon rolls no thicker than an atom—may make good batteries for tiny devices or even power pacemakers, dispensing with cumbersome power packs. Submersed in a slow-flowing liquid, a dense bundle of nanotubes develops a voltage that ranges up to 10 millivolts and increases with flow speed, according to Ajay Sood and his colleagues at the Indian Institute of Science in Bangalore. (Yahoo! News 2/27/03) http://story.news.yahoo.com/news?tmpl=story&u=/nf/20030227/tc_nf/20867 [NGN 2/27/03]

Canadian NanoBusiness Alliance News. The Canadian NanoBusiness Alliance and key partners have expanded their effort to build a National Nanotechnology Initiative (NNI) in Canada. As one of the world's only industrialized countries without an NNI, Canadian industry is increasingly likely to miss out on the vast technological and economic opportunities developing from nanotechnology. (Nanotechnology Now 2/26/03) http://nanotech-now.com/CNA-release-02262003.htm [NGN 2/27/03]

Optical Microscopy Sets New Records. Scientists in the U.S. have produced the highest resolution optical image to date—showing details of structures that are less than 30 nm across. Lukas Novotny from the University of Rochester and colleagues from Portland State University and the University of Harvard used a technique known as "near-field Raman microscopy" to look at carbon nanotubes. (PhysicsWeb 3/7/03) http://physicsweb.org/article/news/7/3/4 Or at BBC-Zooming in on the nanoscale: http://news.bbc.co.uk/2/hi/science/nature/2822251.stm [NGN 3/12/03]

Minimally Invasive Surgery. Scientists in the newly formed Minimally Invasive Surgical Technology Institute at Cedars-Sinai Medical Center are working to develop a new generation of advanced surgical tools and procedures. Minimally invasive technologies, robotic surgery, optical imaging, and gene and cellular "nano" therapy are major points of focus for the Institute, which is funded by a $1 million grant from the U.S. Navy. (EurekAlert 3/5/03) http://www.eurekalert.org/pub_releases/2003-03/cmc-ngl030503.php [NGN 3/12/03]

Fold-Your-Own Protein Kit. ProteinShop, a computer visualization tool for manipulating protein structures, is closing in on one of biology's cherished goals: completely determining an unknown protein's shape from its gene sequence. Silvia Crivelli of the Visualization Group in Berkeley Lab's Computational Research Division says a major step forward came when "we copied concepts from robotics. When you move a robot's arm, you move all the joints, like your real arm." After a year of work on ProteinShop, Crivelli says, "we were able to apply the same mathematical techniques to protein structures." The Critical Assessment of Structure Prediction is the Grand Prix of bioinformatics, where competitors start with gene sequences and try to determine the shape of unknown proteins. ProteinShop jump-starts the race with mathematical concepts that move chains of amino acids like a robot's very long arm. (Berkeley Lab 2/28/03) http://enews.lbl.gov/Science-Articles/Archive/CRD-proteinshop.html [NGN 3/12/03]

More Self-Assembly. The progression toward smaller and smaller electrical and mechanical components presents tremendous challenges to engineers and scientists as they strive to create devices on scales measured in microns and nanometers. One solution may be to develop materials that automatically arrange themselves in useful patterns. Now a collaboration of researchers at Argonne National Laboratory and Institute of Physics for Microstructures of the Russian Academy of Sciences has developed a new method for encouraging microscopic particles to self assemble into desired complex patterns. (Physics News Update 2/26/03) http://www.aip.org/enews/physnews/2003/split/626-3.html [NGN 3/12/03]

AFM Design Flaw Found. An Australian mathematician has thrown 15 years of accepted scientific practice out the window by discovering a design flaw in a key component of the Atomic Force Microscope. His finding will force a rethink into the design and use of an instrument that has become a cornerstone of scientific measurement and analysis. Dr. John Sader, at University of Melbourne's Department of Mathematics and Statistics, and Particulate Fluids Processing Centre, used established mechanical principles to prove that the popular V-shaped cantilever inadvertently degrades the performance of the instrument and delivers none of its intended benefits. (EurekAlert 3/6/03) http://www.eurekalert.org/pub_releases/2003-03/uom-ao1030603.php [NGN 3/12/03]

Atomic Collisions in 3-D. Physicists at the University of Missouri-Rolla have published the first-ever three-dimensional images of atomic collision processes. The images, which promise to further understanding of theoretical physics, accompany a paper by the physicists in the March 6 issue of the British journal *Nature*. The paper, "Three-dimensional imaging of atomic four-body processes," by three UMR physicists and colleagues at the Max Planck Institute for Nuclear Physics in Heidelberg, Germany, has enormous implications to theoretical physics, the authors say, because it offers scientists a new look at how ions react when they collide with atoms. Previous studies have shown only two-dimensional images of the collisions, says Dr. Michael Schulz, professor of physics at UMR, and one of the authors. (Newswise 3/6/03) http://www.newswise.com/articles/2003/3/ATOMIC3D.UMR.html [NGN 3/12/03]

Interview with Christine Peterson. Christine Peterson has been investigating and promoting the concept of molecular nanotechnology for the past two decades. She wrote, along with K. Eric Drexler and Gayle Pergamit, *Unbounding the Future* in 1991. She is currently the President of the Foresight Institute. (Interview at nanomagazine.com 3/2/03) http://www.nanomagazine.com/2003_03_02 [NGN 3/12/03]

Nanocomputing: Simple Optoelectronic Devices. Researchers at the Georgia Institute of Technology have demonstrated a new type of nanometer-scale optoelectronic device that performs addition and other complex logic operations, is simple to fabricate and produces optical output that can be read without electrical contacts. (Georgia Research News 3/7/03) http://www.gtresearchnews.gatech.edu/newsrelease/nanocomputing.htm [NGN 3/12/03]

Nanorelay Race Is On. Scientists at Chalmers University of Technology in Sweden have theoretically modeled the properties of a nanorelay device. The nanorelay consisted of a conducting carbon nanotube beam, a stepped silicon substrate and three electrodes. "These results describe a basic idea, a way of building a nanoelectromechanical switch using small conducting cantilevers such as metallic nanotubes," researcher Jari Kinaret told nanotechweb.org. "The main aim with this first publication was to get the idea out in order to stimulate experimental work on nanorelays." (nanotechweb.org 3/6/03) http://nanotechweb.org/articles/news/2/3/4/1 [NGN 3/12/03]

Nano-Imprint Lithography Progress. On February 25 Motorola, Inc., disclosed new details about its internal nano-imprint lithography program, claiming it has demonstrated the ability to print feature sizes down to 30 nm with a tool from a U.S. startup, Molecular Imprints Inc. (MII, Austin, Texas). Douglas Resnick, a manager at Motorola Labs in Tempe, Arizona, said the lab is trying to demonstrate the feasibility of nano-imprint lithography in future device production. (EETimes 2/25/03) http://www.eet.com/at/n/news/OEG20030225S0037 [NGN 3/12/03]

Amino Groups Link with Carbon Nanotubes. A team of scientists from Rice University have come up with a new technique for attaching amino groups to the side walls of single-walled carbon nanotubes. They produced the functionalized nanotubes by reacting fluoronanotubes with terminal diamines. (nanotechweb.org 3/3/03) http://nanotechweb.org/articles/news/2/3/1/1 [NGN 3/12/03]

Green Plans for Tiny Tech. Nanotechnologists take a responsible approach to the environment. A U.S. research center is working to develop tiny technology in an environmentally friendly way, its director told this week's meeting of the American Physical Society in Austin, Texas. Rice University's Center for Biological and Environmental Nanotechnology in Houston, Texas, is trying to identify the potential impacts of manipulating matter on the scale of atoms and molecules to make devices over a thousand times thinner than a human hair. (Nature 3/10/03) http://www.nature.com/nsu/030303/030303-12.html [NGN 3/12/03]

Smart Dust Senses Bioweapons. How can you protect yourself from biological and chemical weapons? Forget duct tape. The answer is blowing in the wind...To make the particles, which Sailor calls "smart dust," he first creates a filter for light in the surface of a silicon wafer about the size of a quarter. He places the wafer in a conductive solution, and then electrochemically corrodes it with an alternating current. Sailor says, "as [the corrosion] drills down into the silicon, it bottlenecks and opens up again, then bottlenecks and opens up again." The result is a delicately etched network of parallel pores about two nanometers in diameter. Using ultrasound vibrations, Sailor then crumbles the wafer into particles about the width of a hair. (Technology Review 3/12/03) http://www.technologyreview.com/articles/wo_harney031203.asp [NGN 3/12/03]

Zyvex Business Partner Program. Zyvex Corporation, the first molecular nanotechnology company, announced on March 7 the introduction of the Zyvex Business Partner Program. This unique program enables inventors, university professors, and large or small firms to capitalize on Zyvex's leadership position in the nanotechnology business arena. "Because of Zyvex's established brand equity, technical expertise, and healthy financial situation, we're able to create win/win business partnerships to commercialize products or license technologies for those that don't possess the required resources to position themselves in the burgeoning nanotechnology marketplace," said Dr. Thomas A. Cellucci, Chief Operating Officer at Zyvex. Zyvex offers much more than a simple distribution relationship for finished products. They're prepared to provide partners with a comprehensive package of financial assistance, support, marketing prowess, and business advice. (biz ink 3/7/03) http://www.prnewswire.com/cgi-bin/stories.pl?ACCT=SVBIZINK3.story&STORY=/www/story/03-07-2003/0001903891&EDATE=FRI+Mar+07+2003,+11:00+AM [NGN 3/12/03]

The Big Letdown. A thorough report on nanotechnology, The Big Down is required reading. But it completely misses the biggest threat to the future: Democratic rot. Nobody who calls themselves a Transhumanist, a futurist, a technophile or even an environmentalist could have missed the recent release of the The Big Down, the poetically named, stop-nanotechnology-now report from tiny, Monsanto-tormenting ETC Group. But how many of you actually read it? (Betterhumans 3/3/03) http://www.betterhumans.com/Features/Columns/Red_Hour_Orgy/column.aspx?articleID=2003-03-02-4 [NGN 3/12/03]

***Nanomedicine* Book Site.** Author Robert A. Freitas Jr. has a new Web site devoted to his books. Find out about*Nanomedicine* Volume I, and when you can get the upcoming Volume IIA and volumes to come. More than that, it's also a great site with lots of information. http://www.nanomedicine.com [NGN 3/12/03]

World's First Brain Prosthesis. The world's first brain prosthesis—an artificial hippocampus—is about to be tested in California. Unlike devices like cochlear implants, which merely stimulate brain activity, this silicon chip implant will perform the same processes as the damaged part of the brain it is replacing. The prosthesis will first be tested on tissue from rats' brains, and then on live animals. If all goes well, it will then be tested as a way to help people who have suffered brain damage due to stroke, epilepsy or Alzheimer's disease. The researchers developing the brain prosthesis see it as a test case. "If you can't do it with the hippocampus you can't do it with anything," says team leader Theodore Berger of the University of Southern California in Los Angeles. The job of the hippocampus appears to be to "encode" experiences so they can be stored as long-term memories elsewhere in the brain. (New Scientist 3/12/03) http://www.wireheading.com/misc/brain-prosthesis.html [MP]

Hard Silicon Nanospheres. University of Minnesota researchers have made the first-ever hardness measurements on individual silicon nanospheres and shown that the nanospheres' hardness falls between the conventional hardness of sapphire and diamond, which are among the hardest known materials. Being able to measure such nanoparticle properties may eventually help scientists design low-cost superhard materials from these nanoscale building blocks. (NSF 3/20/03) http://www.nsf.gov/od/lpa/news/03/pr0331.htm [NGN 3/25/03]

Nanotech Could Block Viruses. Researchers hope to stop viruses such as HIV from entering cells by using nanotechnology to create tiny particles that interfere with the proteins to which viruses attach. "The idea is to make decoys for the virus," says Jacquelyn Gervay Hague, professor of chemistry at University of California Davis School of Medicine. HIV attaches itself to host cells through a protein called gp120 on the virus's surface. (Better Humans 3/20/03) http://www.betterhumans.com/News/news.aspx?articleID=2003-03-20-1 [NGN 3/25/03]

Gold "Nanoplugs" Wire up Enzymes. Scientists at Hebrew University, Israel, in collaboration with researchers at the U.S. Department of Energy's Brookhaven National Laboratory, have devised a way to use gold nanoparticles as tiny electrical wires to plug enzymes into electrodes. The gold "nanoplugs" help align the molecules for optimal binding and provide a conductive pathway for the flow of electrons. The research, described in the March 21, 2003, issue of *Science*, may yield more sensitive, inexpensive, noninvasive detectors for measuring biological molecules, including, potentially, agents of bioterrorism. (3/20/03 Brookhaven) http://www.bnl.gov/bnlweb/pubaf/pr/2003/bnlpr032003.htm [NGN 3/25/03]

Porous Ceramic to Sort Proteins. In recent years chemists and materials scientists have enthusiastically searched for ways to make materials with nanoscale pores—channels comparable in size to organic molecules—that could be used, among other things, to separate proteins by size. Recently Cornell University researchers developed a method to "self-assemble" such structures by using organic polymers to guide the formation of ceramic structures. (EurekAlert 3/24/03) http://www.eurekalert.org/pub_releases/2003-03/cuns-pcc032103.php [NGN 3/25/03]

Superlattice Nanowire Pattern Transfer. Researchers participating in the California NanoSystems Institute (CNSI) at the University of California at Santa Barbara (UCSB) and at Los Angeles (UCLA) have invented a new technique for producing ultra high density nanowire lattices and circuits. The method, which was first published online March 13 at Science Express, is akin to intaglio printmaking processes in which printing is done from ink below the surface of the plate. (Intaglio processes emboss paper into the plate's incised lines.) The process is straightforward enough that the authors, James Heath, Pierre Petroff, and their postdoc and graduate students, named it "SNAP," for Superlattice NAnowire Pattern transfer. (Spacedaily.com 3/17/03) http://www.spacedaily.com/news/nanotech-03t.html [NGN 3/25/03]

Opals Foster Nanotube Growth. Although some people associate opals with bad luck, the gemstones have brought success to a group of researchers from the New Jersey Institute of Technology. The scientists grew carbon nanotubes into voids between the silica spheres making up a synthetic opal to produce a material with specific optical properties. (nanotechweb.org 3/17/03) http://nanotechweb.org/articles/news/2/3/9/1 [NGN 3/25/03]

Ink Changes Colour at Flick of Switch. A new ink based on iridescent nanospheres changes colour at the flick of a switch. It could give rise to newspapers that show shifting images, or chemical sensors that display different hues depending on what substance they detect. The substance is called P-Ink or "photonic ink," and is being developed by Geoffrey Ozin, Ian Manners, and their colleagues at the University of Toronto, Canada. (Nature Science Update 3/18/03) http://www.nature.com/nsu/030317/030317-1.html [NGN 3/25/03]

New Beijing Center for Nanoscience, Nanotech. With the joint efforts of the Chinese Academy of Sciences (CAS) and the Chinese Ministry of Education, the National Center for Nanoscience and Nanotechnology was set up in Beijing Saturday. Lu Yongxiang, president of CAS, said rapid development in nanometer science and technology will greatly promote sci-tech development and innovation and accelerate the development of information technology and biotechnology. (Xinhuanet.net 3/22/03) http://news.xinhuanet.com/english/2003-03/22/content_793485.htm [NGN 3/25/03]

Unique DNA Probe with Great Potential. A team of investigators at Carnegie-Mellon University has formed the first hybrid quadruplex of peptide nucleic acids, or PNAs, with DNA, the genetic code. This result opens new opportunities to study the activity of genetic regions occupied by recently described quadruplex DNA structures, as well as providing a new compound that could be used as a biosensor or to block gene activity associated with diseases such as cancer. "Michael Crichton might not use this in his next book, but the opportunities for building functional nanostructures based on the PNA2-DNA2 hybrid quadruplex are very interesting to us, and we hope to exploit this novel recognition mode," notes Armitage. (ScienceDaily 3/21/03) http://www.sciencedaily.com/releases/2003/03/030321075058.htm [NGN 3/25/03]

The Next Material World. Get ready to research, re-engineer, re-invent, and innovate new products and processes. The National Science Foundation has predicted a $1 trillion market by 2015 for nano products. http://nanodot.org/article.pl?sid=03/03/23/036215 [NGN 3/25/03]

Implantable Therapeutic DNA Chip. The Department of Science and Technology (DST) of the Pune, India-based National Chemical Laboratory (NCL) is funding a three-year project to develop a DNA chip that would help identify and treat specific genetic disorders such as thalassemia. "We are confident of completing the project by the middle or end of 2004," NCL scientist Murali Sastry said, pointing out that this cheaper alternative to DNA sequencing could be used to treat India-specific genetic disorders such as hypertension. Elaborating on the project, Sastry said the idea was to plant the DNA chip into the body to treat ailments. "This will not only reduce the cost of drugs production and enhance the level of automation, but also revolutionize medical science." (Times of India 3/23/03) http://timesofindia.indiatimes.com/cms.dll/xml/uncomp/articleshow?msid=41197322 [NGN 3/25/03]

Possible Molecular Filters. Imagine a mask that could allow a person to breathe the oxygen in the air without the risk of inhaling a toxic gas, bacterium, or even a virus. Effectively filtering different kinds of molecules has always been difficult, but a new process by researchers at the University of Rochester may have paved the way to creating a new kind of membrane with pores so fine they can separate a mixture of gases. Industries could use

these types of membranes for extracting hydrogen from other gases for fuel cells that could power the next generation of automobiles. (ScienceDaily 3/17/03) http://www.sciencedaily.com/releases/2003/03/030317074038.htm [NGN 3/25/03]

Spider Silk Delivers Finest Optical Fibres. Delicate threads of spider's silk are about to solve a major problem in photonics: how to make hollow optical fibres narrow enough to carry light beams around the fastest nanoscale optical circuits. To make the fibres, Yushan Yan and a team of engineers from the University of California at Riverside give the silk thread a glassy coating, and then remove the silk by baking. They soon expect to be able to make hollow fibres with cores just two nanometers wide—or 50,000 times thinner than a human hair. (New Scientist 3/19/03) http://www.newscientist.com/news/news.jsp?id=ns99993522 [NGN 3/25/03]

Fuel Cell Battery Nears Commercialization. Twelve years after Tokyo-based NEC Corp.'s Sumio Iijima discovered the carbon nanotube, the company's fuel cells—powered by a variant called the carbon nanohorn—are getting ready to power portable devices. Yoshimi Kubo, senior manager of NEC Fundamental Research Labs' Nanotube Technology Center, said the fuel cells will start shipping for laptops in 2004 and cell phones in 2005. (SmallTimes 3/25/03) http://www.smalltimes.com/document_display.cfm?document_id=5719 [NGN 3/25/03]

Grey Goo Anxieties. One of the more interesting concerns of nanotechnology is grey goo. The term was invented by K. Eric Drexler to describe one of the dangerous issues that must be faced as nanotechnology capabilities evolve. (eprairie 3/24/03) http://eprairie.com/news/viewnews.asp?newsletterID=4521 [NGN 3/25/03]

Nanotube Composite Forms Printable Conductor. Researchers at DuPont have developed a polyaniline/single-wall carbon nanotube composite. The material is designed for use in a laser ablation "dry printing" process to produce plastic transistors. "We developed these composites as printable conductors for organic electronics applications," researcher Graciela Blanchet told nanotechweb.org. "As they stand today, their conductivity and resolution make them adequate for use as the conductor in the source/drain and gate layers of electrophoretic display backplanes such as e-books, panels and posters." (nanotechweb 3/21/03) http://www.nanotechweb.org/articles/news/2/3/12/1 [NGN 3/25/03]

Versatile Nanoscale Brushes. Carnegie-Mellon University chemists are creating versatile polymer brushes with many potential applications. A revolutionary, in-house catalytic polymerization procedure is used. The nanoscale brushes have numerous potential applications in a number of fields, including medicine, computers, and environmental engineering, according to Krzysztof Matyjaszewski, professor of chemistry at Carnegie-Mellon and director of the Center for Macromolecular Engineering at the Mellon College of Science. (NanoApex 3/25/03) http://news.nanoapex.com/modules.php?name=News&file=article&sid=3250 [NGN 3/25/03]

ESnet Now Gigabits Per Second. The Energy Sciences Network (ESnet), the high-performance network funded by the U.S. Department of Energy's Office of Science, has just completed an upgrade to 2.5 gigabits per second (billions of bits per second, or Gbps), with 10 Gbps in the highest-speed portion of the network. Operated by Lawrence Berkeley National Laboratory (Berkeley Lab), ESnet is a nationwide, high-performance network supporting scientific research, connecting more than 35 major DOE institutions to one another and to the global internet. This upgrade will contribute to the acceleration of basic scientific research sponsored by the DOE Office of Science. (Berkeley Lab 3/25/03) http://www.lbl.gov/Science-Articles/Archive/ESnet-10-Gbps-backbone.html [MP]

Defense Department Expands Nanotech Research. Nanoscale materials and components, including some of the tiniest products ever manufactured, have already found their way into communications systems and weapons being used in the war with Iraq. But the role of nanotechnology is still so limited that the Iraq war will more likely be remembered as the last to be fought without its benefits than the first that fully deployed it. (SiliconValley 4/8/03) http://www.siliconvalley.com/mld/siliconvalley/news/5585217.htm [NGN 4/12/03]

DNA Not a Conductor. Can DNA conduct electricity? Some physicists claim it is a superconductor. Others believe it does not conduct electricity at all. And biologists have agonized about how conductivity might affect its function. A consensus is emerging. Although the much-hyped molecule can transport electrons over a length of a few base pairs, allowing it to deflect oxidative damage away from important sections *(New Scientist* print edition, March 15), it fails to conduct over longer distances. That will dash long-held hopes that the self-replicating molecule could be harnessed to make self-assembling nanowires. Researchers from the University of California, Los Angeles, have hammered the final nail in the coffin with an exhaustive paper submitted to Physical Review Letters. (NewScientist 3/30/03) http://www.newscientist.com/news/news.jsp?id=ns99993548 [NGN 4/12/03]

Nanoscale Heating and Cooling Device. Scientists have created the world's first working device that uses nanometer-scale materials to convert electric power into cooling or heating, or heat into electricity. (Eurekalert 3/24/03) http://www.eurekalert.org/pub_releases/2003-03/acs-mea031103.php [NGN 4/12/03]

Electrostatic Rotation Topples Old Theory. In a discovery that is likely to impact fields as diverse as atomic physics, chemistry, and nanotechnology, researchers at UC Riverside, California, have identified a new physical phenomenon, electrostatic rota-

tion, that, in the absence of friction, leads to spin. Because the electric force is one of the fundamental forces of nature, this leap forward in understanding may help reveal how the smallest building blocks in nature react to form solids, liquids and gases that constitute the material world around us. (ScienceDaily 4/2/03) http://www.sciencedaily.com/releases/2003/04/030403072949.htm [NGN 4/12/03]

Stress Measurement via Nanotech. With the advent of nanotechnology, miniature devices are increasingly becoming more popular and industries are continuously searching to improve techniques for achieving higher performance. Toward this aim, this EC funded project designed a new experimental method for determination of local strains with the aid of X-ray microdiffraction. The new method is expected to bring significant advances in crystalline structures that are used in a wide range of applications from microelectronics to bio- and engineering materials. (Cordis 3/31/03) http://dbs.cordis.lu/fep-cgi/srchidadb?ACTION=D&SESSION=30312003-4-1&DOC=3&TBL=EN_OFFR&RCN=EN_RCN:975&CALLER=OFFR_O_SCIE_EN [NGN 4/12/03]

Molecular Military Might. Nanotech "battle suits" could amplify soldiers' powers. As hollow-eyed troops laden with 75-pound packs slogged through a downpour before shipping out to Kuwait, nine MIT professors watching them in the rural Louisiana training field were asking questions like: How could those loads be made lighter? And what about making the soldiers impervious to infection? Invulnerable to bullets? Able to leap small buildings in a single bound? For these self-described "crazy MIT guys," those questions are not wild geek imaginings inspired by some superhero comic. It's their job. The professors who visited the Fort Polk training center in January are at the vanguard of a military initiative to harness the potential of the emerging field of nanotechnology. (SFGate 4/7/03) http://www.sfgate.com/cgi-bin/article.cgi?file=/chronicle/archive/2003/04/07/BU305865.DTL&type=tech [NGN 4/12/03]

Scientists "Cast" Single-Crystal Nanotubes. Researchers from the University of California, Berkeley, and Lawrence Berkeley National Laboratory in the U.S. have developed an "epitaxial casting" technique to grow single-crystal nanotubes of gallium nitride (GaN). The method employs zinc oxide (ZnO) nanowires as templates. (nanotechweb.org 4/10/03) http://nanotechweb.org/articles/news/2/4/6/1 [NGN 4/12/03]

Design for Nanotech Immune System. The SARS scare in Toronto shows how bad a looming epidemic would be. There's little we can do to prevent it, so bring on the nanobots. "Infectious agents will always be present in the natural environment and their evolution into new forms will continue for the foreseeable future," says Robert A. Freitas Jr., a nanotechnology researcher and the author of *Nanomedicine*, a massive compilation of nanotech solutions to health problems. "So microbes will continue to attempt to colonize human bodies." What we need is a better immune system. Fortunately, Freitas has designed one. (Betterhumans 4/7/03) http://www.betterhumans.com/Features/Columns/Forward_Thinking/column.aspx?articleID=2003-04-07-1 [NGN 4/12/03]

Hong Kong Nanotech Industrialization. Five of the 16 Hong Kong nanotechnology-related research projects funded by government and non-government sectors in the past five years have produced deliverables for transfer to local industry for further development. Secretary for Commerce, Industry, and Technology of Hong Kong Special Administrative Region government Henry Tang said in a written reply at the Legislative Council Wednesday that Hong Kong will continue with its effort in sustaining the momentum and further enhancing Hong Kong's capability in applied research and development in nanotechnology. (Xinhua News Agency 4/9/03) http://news.xinhuanet.com/english/2003-04/09/content_824124.htm [NGN 4/12/03]

Gallium Nitride Nanotubes Offer Optical Sensors. As scientists rush to exploit new nanostructures to build electronic circuits and submicroscopic sensors, they also are trying to make the building blocks more versatile. A University of California, Berkeley, chemist has now created nanotubes from gallium nitride, capturing the best attributes of both semiconductor nanowires and carbon nanotubes. (Berkeley 4/9/03) http://www.berkeley.edu/news/media/releases/2003/04/09_tubes.shtml [NGN 4/12/03]

Carbon Nanopipettes. First there was the buckyball, then came the nanotube, nanocone, nanohorn, and even the microtree. Now, researchers at the University of Louisville and Rensselaer Polytechnic Institute have added to the range of novel carbon nanostructures by growing carbon nanopipettes. (nanotechweb 4/8/03) http://nanotechweb.org/articles/news/2/4/5/1 [NGN 4/12/03]

Adieu Concorde. Air France and British Airways announced in April that they will retire the Concorde supersonic jetliner. Hopefully, both NASA and the "build it and they will come" rocket boys are paying close attention. Market realities have finally killed the Concorde. The fate of the Shuttle, even more insulated from financial accountability, remains open. Both programs had their genesis in national-prestige posturing. (SpaceDaily 4/17/03) http://www.spacedaily.com/news/oped-03zd.html [MP]

Editor's note:
NGN: Nanogirl News, by Gina Miller.
MP: items selected and lightly edited by Mike Perry.

Letters to the Editor

Letters to the editors are most welcome on all topics, including counterpoint on previously published materials and suggestions as to future content. We especially invite questions about cryotransport (cryonics) that are original and far-reaching. If you are seeking information about Alcor, please consult our web site, at www.alcor.org. If you have questions about developmental programs within Alcor, you may stir us into talking about them even sooner than we might have otherwise. If your letter is lengthy and involved, we may use it as a separate article and may ask you to expand it. We need your ideas, your personal visions. This is the place to start.

Please send letters and/or articles to: llock@winterthur.org.

Update your wardrobe today!

Alcor has merchandise available featuring the new Alcor logo!

Please visit the Alcor Gifts section of our web site at www.alcor.org or contact the Marketing Resource Center at 480.905.1906, ext. 129 to order.

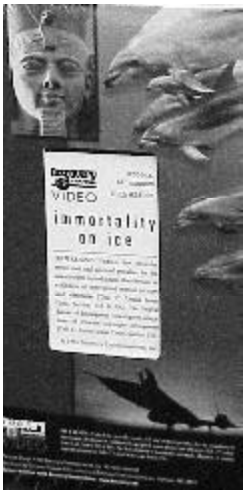
Baseball caps $12
Khaki with black embroidery
Black with white embroidery

T-shirts (short sleeve) $10
Small, medium, large, X-large, XX-large
White, black, or blue

T-shirts (long sleeve) $15
Small, medium, large, X-large, XX-large
White, black, or blue

Immortality on Ice (the video)

By the Discovery Channel.
About 60 minutes run time.
Popular introductory tape.
$25.00 plus S&H.




4th Qtr. 97


1st Qtr. 98


2nd Qtr. 98


3rd Qtr. 98


4th Qtr. 98


1st Qtr. 99

Cover Art by Tim Hubley !

Over the last several years, Tim Hubley has provided this magazine with some of the most beautiful and creative CGI art we've ever seen. Now Tim is selling a *limited run (only 20 copies each!)* of matted 8.5" x 11" color ink-jet prints of these images (without all the messy text added in layout) for only $15.00, plus shipping and handling.

To order your prints, contact Tim Hubley through e-mail at:

102647.446@compuserve.com.

MOVING?

Let us know about it!
Call 1-480-905-1906 and ask for Joe Hovey.

Don't miss even *one* issue of *Cryonics*

Do You Have Your Copy of *The First Immortal* Yet?

Alcor is selling a limited quantity of copies signed by the author, James Halperin.

Don't miss out—order yours ***today***! **Signed Hardback: $34.95**
Unsigned Hardback: $24.95 Paperback (unsigned): $6.99

Send check or money order to the Alcor Foundation, 7895 E. Acoma Dr., Suite 110, Scottsdale, AZ 85260. With Visa or Mastercard, call 1-480-905-1906.

Advertisements

Cryonics *reserves the right to accept or reject ads at our own discretion and assumes no responsibility for their content or the consequences of answering these advertisements. Please e-mail editor Lisa Lock at LLOCK@winterthur.org for ad rates and space availability.*

NanoTechnology Magazine

NanoTechnology Magazine is your window into the emerging technology whose awesome power mankind will acquire, for good or evil, very early in this new century. Everything will change radically...the industrial revolution was just a preview. Find out about the millions already spent by government and private labs on the atomic manipulation of matter. Follow monthly discoveries toward the evolution of the technology sure to dominate the 21st. century. Prepare yourself mentally with ***NanoTechnology Magazine***.

1-year subscription: $38.40
(check, M.O., or Credit Card).

NanoTechnology Magazine
4451 Sierra Dr.
Honolulu, HI 96816
(808) 737-0628 fax (808) 739-5145
http://planet-hawaii.com/nanozine

PERIASTRON

Publishing for immortalists since 1990
Now TWO books and a newsletter

***PERIASTRON, a bimonthly newsletter telling of scientific advances bearing on cryonics. $3.00 an issue. Buy one and try it!**

***A GUIDE TO ANTIAGING DRUGS, tells the good and bad of each one. Free brochure will tell you more.**

***TALES OF SKASTOWE, a fiction book telling of the technology and problems of one society of immortal people, Skastowe.**

PERIASTRON PUBLISHING
PO Box 208, O'Connor ACT 2602, Australia
E-mail:73647.1215@compuserve.com

Fund
CryoTransport
Affordably with Life Insurance

Rudi Hoffman
Certified Financial Planner

Alcor member since 1994

International Insurance, Investments, Financial Services, Mutual Funds, Insurance, Annuities, Living Trusts

$120,000	20 Year Level, Renewable Term
Age 35	$16.30 per month
Age 45	$29.26 per month
Age 55	$60.26 per month

Leave message on 800 voice mail for quote.

P.O. Box 290549, Port Orange, FL 32127
E-mail: rudihoffma@aol.com
1-800-749-3773

The Venturist promotes immortalist philosophy. For free sample write: The Venturists; 15111 N. Hayden Rd., Ste. 160-169, Scottsdale, AZ 85260. Also visit our web site at http://www.venturist.org

For more than 12 years, Mary Naples has underwritten more insurance policies for cryotransport funding than any other insurance agent. If you're looking for fast, dependable, informative service, call Mary today!

Mary E. Naples, CLU, ChFC
2400 Kehoe Avenue
San Mateo, CA 94403
800/645-3338

E-Mail:
mnaples@ft.newyorklife.com