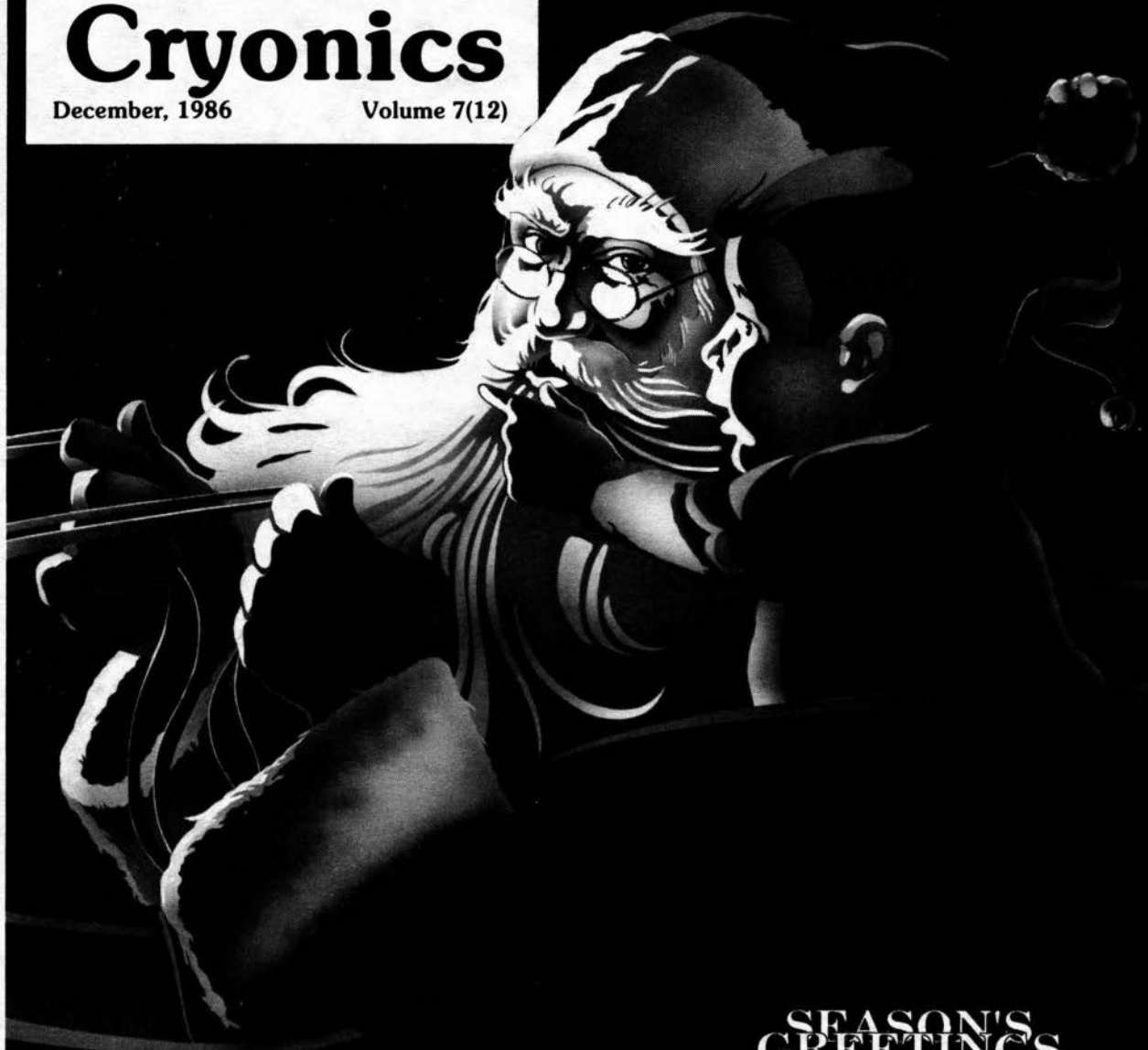


# Cryonics

December, 1986

Volume 7(12)



SEASON'S  
GREETINGS  
FROM  
ALCOR

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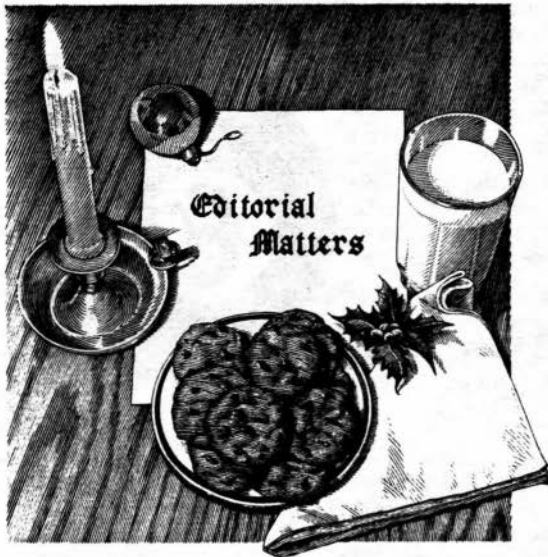
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## TURKEY ROAST -- FINAL CALL

The Annual ALCOR Turkey Roast will be held December 7, at Saul Kent's home in Riverside, CA, and you're **all** invited. The meal will be pot-luck, so please call Hugh or Mike at ALCOR ((714) 738-5569) if you are bringing a dish. Instructions to Saul's place are in the ALCOR Meeting Schedule on the last page of this issue. The Turkey Roast is less than 10 minutes from the new facility, and we will be giving tours.



## APOLOGY

We apologize for our as yet incomplete coverage of the Society for Cryobiology Meeting. We sincerely hope to be able to wrap this coverage up in the next issue or so.

## THOMAS DONALDSON IN ANALOG

As many of our regular readers will have no doubt noticed, ALCOR member Thomas Donaldson is a regular contributor to the pages of CRYONICS (and a very insightful one, we might add). He is also a contributor to **Analog** science fiction magazine and has a fascinating speculative article in the December issue. Thomas' article does not deal with cryonics, but rather with the likely nature of industrial and materials technology in the future. If you thought nanotechnology was the last word on how the future will be shaped, think again. Thomas' article is real eye opener, and we highly recommend it. When you think on the cryonics time scale (and size scale) all kinds of things become possible. In some ways, Thomas' article is as amazing as the ideas of molecular technology (in which, Thomas antedates even Eric Drexler in foreseeing its broad outlines). The title of Thomas' article is **New Matters**. We recommend it!

## ID TAG AND WALLET CARD UPDATE

In the November issue of CRYONICS we announced the availability of new ID tags and wallet cards. They **are** available, but there will be a **delay** before they are issued.

We received some incorrect information from the phone company regarding being able to retain our existing emergency response number after we move to our new quarters in Riverside, California. When we first inquired about moving our

phone service we were told that the expense would be modest and that the number could be transferred. This turns out not to be the case. In fact, what we are going to have to do is get a completely new phone number — and that means we are going to have to issue new ID tags and wallet cards. A corollary of having to do that is going to be about \$600 of unexpected expense, and that's just for the tags alone. In the meantime, we'll be paying nearly \$60 a month just to keep both phone lines up and running (we'll have remote call forwarding on the old number for several months)!



It isn't fair for us to make you buy new tags just because we are moving. So, what we've decided to do is to offer you an updated tag free, and offer you some other options as well.

The new-style tags which have just become available are very costly for us to obtain. We cannot offer them free, but we can discount them by the amount we would have to pay to replace your old-style tags, and that's what we plan to do. This means that you can choose from a number of options:

1) You can get an old-style bracelet **or** necktag free of charge with the new number on it.

2) You may order an additional old-style bracelet or necktag (in addition to the one we will provide free of charge) for a cost of \$5.00.

3) You may order a new-style bracelet and/or necktag at \$5.00 below our cost: \$15.00 each. NOTE: If you order one of the new-style tags, you do not get one of the old-style tags free. (The new-style tags **cost us** \$20 apiece, so we have in effect paid "our share" of issuing you an updated tag.)

You will not have to make any decisions now. We provide this information here to prepare you for what's coming and to give you some time to think about what you will want to do when the time comes. You will receive an order form in the mail before the switchover. If we don't hear from you at all, we'll simply issue you another old-style tag.

We will not be making **any** changes until we are moved into the new headquarters, have confidence in the new answering service, and have the new phone up and running and (hopefully) free of glitches.

## LIFE EXTENSION FOUNDATION GRANT

We are pleased and proud to announce that ALCOR recently received a \$20,000 research grant from the Life Extension Foundation (LEF) of Hollywood, Florida.

The LEF grant will be used to further a number of existing projects such as our basic histological and ultrastructural studies, as well as to start work on research to help resolve the cracking problem. LEF has been instrumental in the past in supporting ALCOR research work. Much of the existing histological and ultrastructural work which has helped to map out the extent of tissue preservation and injury using existing biostasis techniques has been supported by LEF, and the pioneering ALCOR canine total body washout studies were almost exclusively funded by LEF money.



We wish to thank the Life Extension Foundation and Project 2000 for their past and present support. We also want to note that the Life Extension Foundation has spent more money on interdisciplinary support of life extension research than any other private organization in the history of the world!

If you are buying vitamins or nutrients at the local grocery or health food store, we urge you to consider buying them from LEF instead. It's a relatively painless way to help support basic research in life extension, with the added benefit that what you buy may be doing you some good right now!

## CRYOLINK UPDATE

On the weekend of October 25-26, Mike Darwin and Jerry Leaf journeyed to Northern California. While it was not the sole purpose of their trip (more on that in a future issue of CRYONICS), one of the reasons they headed north was to drop off a Toshiba T-300 computer with a hard disk to Thomas Donaldson. Now that Thomas has the equipment he will be able to start serious work on getting the cryonics bulletin board up and running. made.



We'll keep you posted as progress is

## NANOTECHNOLOGY UPDATE

We would like to direct your attention to the November 1986 issue of **OMNI** magazine and its cover article this month: **Nanotechnology**. The magazine contains a well written and basically accurate article describing nanotechnology and molecular engineering. This is the kind of article which you might want to get copies of to pass along to friends or others who've expressed interest in "How are you going to bring those frozen people back to life?" This article, in sharp contrast to the recent OMNI cryonics article, is **good**. It doesn't cover

the more exotic medical and biological implications of nanotechnology (such as cryonics), but it does provide a pretty good overview of the broad outlines of what the technology will be able to do — and what the social and economic implications of that are. (What will life be like when everyone has the complete resources of the industrial world (and more) at his or her disposal?)

We were puzzled about *why* this article was so good, until we found that Eric Drexler was given "editorial" privileges on it, and spent "many, many hours" with the article's author, Fred Hapgood, pounding it into shape.

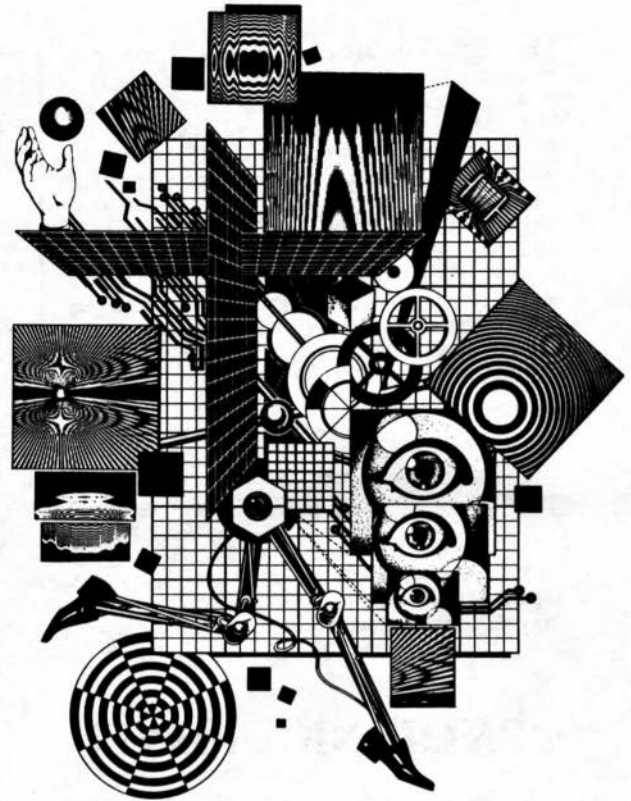
We understand that **Engines of Creation** has already sold out its first printing of 5,000 copies and that a second printing (presumably for a larger number) is underway. This would seem to assure that a trade paperback, or (if we get really lucky) a mass market paperback, will be available in the next year or so. Hopefully the **OMNI** article will vastly boost the book's sales and assure a wider audience for the nanotechnology message, and thus the cryonics message which rides on its coattails.

Meanwhile, we understand from a recent conversation with Eric Drexler that he is being kept busy on the lecture circuit, speaking to computer engineering groups, universities, and anyone else who'll listen, about the promise and the perils of the coming revolution.

## BUILDING PROGRESS

Progress on the construction of ALCOR's new home has been slow but steady. However, the pace has been quickening and we expect that the superstructure will be completed by the end of November or the first part of December. What's been done so far? Well, the walls are up, the ceiling and the roof are on, the front offices are up and the drywall work is done, the electrical work is completed, the roll-up steel doors are installed, glazing of the front windows is underway, and insulation installation is scheduled for November 6th or 7th.

What remains to be done? A lot, but we're over the "hump". The "T-bar" ceiling and the doors in the offices have to be hung. Both the interior and exterior of the building have yet to be painted, and final utility hook-ups are





**Office construction at the new facility**

underway as we write this. And of course the paving, landscaping, fencing and final outdoor concrete work (steps and entrance patio) need to be put in place. Much of this is going on concurrently, and it seems reasonable to expect a completion date of early December.

Of course, once we take possession of the building, our work is just beginning. We have to subdivide the building, creating additional office space, animal ICU, human operating room, and crew sleeping quarters (for long, overnight experiments). Being wildly optimistic we anticipate that this will take at least another month or so.

If anyone out there knows how to swing a hammer, move boxes, or pull wiring, call Mike Darwin! We're going to need all the help we can get.

## **COMMUNICATING WITH THE FUTURE**

On September 23, 1986 a long, narrow trench was dug in the still exposed earth between the wall and the floor slab of the new ALCOR building. A sleek, glistening black plastic cylinder a little over 4 feet long was lowered into the trench, and 6 inches of earth was shoveled over it. Several days later, 7 inches of concrete was poured into place over the top of the closed trench. A message was on the way...to tomorrow.

The black cylinder was a length of 4", heavy duty ABS plastic pipe, the kind they use for sewer service these days. Not a very romantic vehicle! Outside, engraved in the plastic was the following message:

**Time Capsule  
Prepared And Sealed On September 23, 1986  
By The  
ALCOR LIFE EXTENSION FOUNDATION  
Please do not open until September 23, 2086.**

Inside, well inside was history -- our history. It would be nice to say this was a well thought out project with hours and hours of careful deliberation about items to include. (Or maybe it wouldn't be nice to say that, because some people didn't like the idea of the time capsule. But more on that in a minute.) Mike Darwin got the idea for a "time capsule" on Thursday evening and it was completed and sealed by Sunday afternoon.

What ended up inside and what was the purpose of the whole exercise? First, the contents: Since this was a cryonics time capsule, a copy of Ettinger's **The Prospect of Immortality** was included. Since it was an ALCOR time capsule, a copy of almost every issue of CRYONICS magazine was included as well. If you've ever written for CRYONICS, then you're already a participant in this experiment in one-way cross-time communication. But there was a whole lot more. Snapshots, slides, bits and pieces, technical reprints, and personal letters were also included. It is these last that are the most interesting.



Mike Darwin burying the time capsule

We found it fascinating to see how people reacted to the idea of the time capsule. Amazingly, it told us a great deal about what people are like. In some ways, just seeing the reactions of people to the idea was like administering a personality inventory test -- except you got the results in seconds instead of hours. That alone made it all worthwhile.

Some folks didn't want anything at all to do with the idea. It made them **uncomfortable**. "Why are you doing this?", they wanted to know. "Don't you think we'll make it?" they asked suspiciously. Some people didn't care about it if they weren't around to open the capsule, and if they were, what did they need a time capsule for? Some people were just indifferent or mildly critical, offering comments like, "Why waste your time on efforts like that when there are so many other, **productive** life-or-death important things to do?"

Other people were very enthusiastic, and rocketed off packets to go in the capsule via Federal Express. They thought it was a good thing that the "cryonics central dogma" was going into a watertight tube under 15 inches of dirt and steel reinforced concrete. After all, they said, if we do blow ourselves to kingdom come, maybe 100 or 200 years from now somebody will pop open that capsule and say "Hmmm, what an interesting idea. I wonder...." Still other people were enthused for different, more personal reasons. One older ALCOR member decided to use the capsule as a unique and interesting way to check on something. His letter, addressed to himself was a simple one, expressed in a page or so of prose which can be boiled down to the following:



"If you remember having written this when this capsule is opened in 2086, then you will have succeeded, you will have survived."

A nice idea: an "identity test".

In the face of criticism and enthusiasm, the capsule is on its way. Was it a good idea or a bad one? A waste of time or fine opportunity? That's a question which could fill pages of debate. Why did we do it? For a lot of reasons: Because it was easy to do and relatively inexpensive (not including time the cost was about \$50). It offers us a chance to preserve a little of what we are, an important little bit: some of our values. It helps repay a "debt" we "owe". That debt is the debt of gratitude we all should feel to the others of the past who've sent us time capsules: the folks who hid the Dead Sea scrolls, or walled up copies of Aristotle, or carefully buried clay tablets at Tel el Amarna. It's not an obligatory act, but neither is helping up a stranger who trips and falls in the street. It was, in short, a "romantic" thing to do. And what is life without a little romance? Lastly, and perhaps best of all, we did it because it told us something of who we are right now. It will also be a point of reference to ourselves in the future about just how far we will have come — if we're there to open it.

As some of us have learned the hard way, the best way to keep an appointment is to make it in the first place: date, time, and place. Some of us just penciled one in. For me, it's 7 months before my 132nd birthday. It's an appointment I intend to keep.

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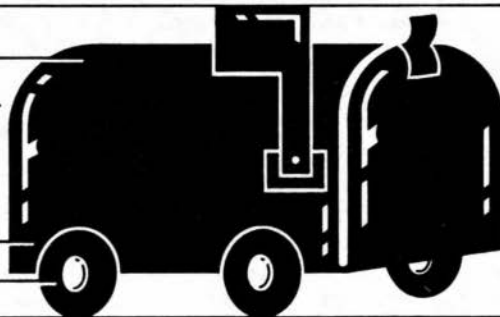
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*Letters to The  
Editors*

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Dear Eds.,

Following your recent issue of CRYONICS, I would like to thank everyone (too numerous to name individually) who were so friendly and helpful during my trip to L.A. in the summer.

Whilst observing a TBW I had a strong feeling I was watching history being made. Looking back on it, history can be defined as anything that has happened before living memory, and living memory is just what ALCOR is trying to preserve. Perhaps history's death was taking place and I was in at the end. These people weren't making history, but killing it!

This may sound like a lot of hype, but none of what goes on at ALCOR seemed

real to me during my day-to-day (and rather mundane) life in London. I am so pleased to have gone to California to see what goes on, since it's now all reality to me. I would urge anyone who sometimes has any doubts, or people who live a long way away and feel that there's nothing they can do, go visit ALCOR. Don't lie on a beach for your holidays, don't visit the relatives (if they're like mine they won't understand cryonics anyway), visit ALCOR. Phone now!

Yours sincerely,  
Garret Smyth  
London



Garret Smyth taking a late night nap at ALCOR during a recent washout experiment. Photo by Luigi Warren.

## BIG BUCKS IN CRYOBIOLOGY

By Mike Darwin

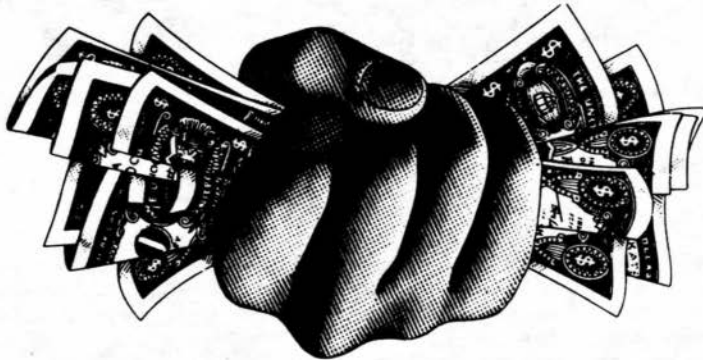
Recently, a very unique and unusual meeting was held in Houston, Texas. The event, entitled **Cryopreservation Sciences — The Decade Ahead** was a small but powerful get-together of cryobiologists and capitalists hosted by Dr. John Baust. Baust is head of the University of Houston's Institute of Low Temperature Biology and the occasion for the get-together was the formal opening of the Basil J. Luyet Memorial Library (which is housed in the University's M.D. Anderson Library). Father Luyet was a Catholic priest who was also the father of cryobiology (with Britain's Audrey Smith being credited as cryobiology's mother). The University of Houston in cooperation with the American Foundation for Biological Research (which was founded by Luyet) has collected together most of Luyet's books, papers, and experimental artifacts and housed them in about an 800 square foot section in the Anderson Library.

The industrialists and cryobiologists were brought together at the Luyet Library dedication for more than sentimental reasons, however. Cryobiology is turning into BIG bucks, and cryobiologists like Baust are anxious to get a slice of the pie. Historically, they haven't been doing so well at that, and that's what the meeting was all about. In a few more sentences you'll soon understand why all the wine, cheese, and quiet dinners. Nothing, but nothing, will send academics scampering down the spiral staircases of their Ivory Towers as quickly as MONEY. Especially in these post Gramm-Rudman days.

What money, you say? Remember cryobiology, the starving discipline with a few sperm freezing and blood freezing companies eking out a meager living. Well

folks, them days is gone!

Consider the history of a company named Cryolife. Long-time cryonicists will get a chuckle out of that name since it was once used by a bunch of fleece artists in Kansas City, Kansas who called their **cryonics** company "Cryolife". The latter day Cryolife has had a considerably different outcome. It was started in 1983 by a group of Atlanta, Georgia businessmen to market the frozen heart valves and aortas of children. Judging from our contact with them several years ago, the initial group of people who started Cryolife knew almost nothing about cryobiology. They were using a very simple protocol which appeared to have been plucked from the literature, and even today, the cellular viability rate of the frozen-thawed valve endothelium (the cell layer in contact with blood) is reportedly not high. Nevertheless, Cryolife was and is the only company marketing fresh frozen human heart valves (strictly speaking they don't "sell" the valves, that would be illegal and "unethical", they simply charge "processing and distributing" fees) and the demand has been enormous. How enormous? In 1984, Cryolife's revenues were zero, in 1986 they were \$3.3 million and in 1987 they project gross revenues greater than **\$7 million!** That's 7 million dollars of business with basically three products in the marketplace (recently they've added frozen human saphenous veins for bypass grafting)! Profits, while confidential, are reported to be strong.



But Cryolife isn't stopping there. They are currently spending 12% of revenues on research work and predict a \$600 million market for one of the products they're working on now: microencapsulated frozen human pancreatic islets for diabetics. Microencapsulated islets can be injected into the liver's portal vein, causing them to lodge in the liver. Once in the liver they begin producing insulin and regulating blood sugar -- reversing and truly "curing" diabetes. The islets are coated or encapsulated with a permeable membrane which allows insulin and islet cell waste products to get out and nutrients and oxygen to get in. But the membrane is selective: what it doesn't allow inside is white blood cells. Thus there is no rejection of the foreign islet tissue. Of course, the encapsulated islets don't last forever, but they may last for several years -- and that would be a huge advantage over daily insulin injections which only poorly control blood sugar. While diabetics do live much longer with insulin, the erratic regulation resulting from one injection a day produces many horrible complications (blindness, limb loss, and impotence to name a few) and early death for most diabetics.

Another area Cryolife is preparing to enter is the connective tissue

market. Cryolife anticipates a \$300 million market for their living connective tissue grafts -- such things as tendons, ligaments, and the dura mater: the tough connective tissue membrane which covers the brain. These kinds of tissues are anticipated to be of use in treating trauma, brain injuries, arthritis, and other degenerative diseases; not to mention more mundane applications like plastic surgery and hernia repair.

However, hold onto your hats, because Cryolife is already only a very small part of the story. Already embryo freezing has grown tremendously popular among cattle breeders. It has grown from an estimated 20,000 frozen embryo implants a few years ago, to nearly 100,000 in the last year or two. Keep in mind that the cost of this procedure is around \$1,000. That adds up to a multi-million dollar industry **right now**. Rio Vista, one such embryo freezing firm from San Antonio, Texas was one of the participants at the meeting. Rio Vista is quickly branching out. They are now **vitrifying** embryos. They have as their president Dr. Stanley Liebo (who is also the current President of the Society for Cryobiology) and they are engaged in research in cloning cattle embryos, with some early success supposedly under their belt.

Cloning cattle embryos consists of teasing the embryo apart early in its development (say at the 16-cell stage) to produce multiple calves from the same embryo. This is important economically. Consider that sperm from a prize bull may cost many thousands of dollars, and embryos from prize cows even more! Imagine being able to take



**Drs. David Pegg and Stanley Liebo (right) at Cryo '85.**

a \$30,000 embryo and turn it into 10 \$30,000 embryos, all of which can be incubated in the wombs of inferior "average" cows. Consider also that at this time 70% of Britain's bovine embryos are frozen for export overseas.

Rio Vista is also involved in an unusual dolphin sperm freezing project. It seems that dolphins can be trained (persuaded, enticed?) to ejaculate into cups (imagine that on an episode of FLIPPER) and their semen can be successfully frozen. Sea World and other marine aquariums are willing to pay dearly for this technology, since dolphins, unlike most humans, can be persnickety breeders.

Dr. Allen McDaniels from the Skin Bank of Southern California was also there. McDaniels' business has reportedly been expanding rapidly and the Skin Bank is also looking to branch out into other kinds of tissue preservation.

Perhaps most impressive was the presence of big time venture capitalists such as Martin Sutter of Woodlands Venture Capital Co. Woodlands is a 1.9 billion dollar company which has only recently entered the cryobiology marketplace. They've done so by bankrolling a start-up company called Lifecell. Lifecell claims to be able to flash-freeze cells **without the use of cryoprotectant**, dry them out by subjecting them to a vacuum at around the glass transition point of water (-130°C or so), package them in nitrogen gas and store them on the shelf -- **in viable condition!** They also claim to have succeeded in doing the same thing to the endothelial cell layer of the cornea.



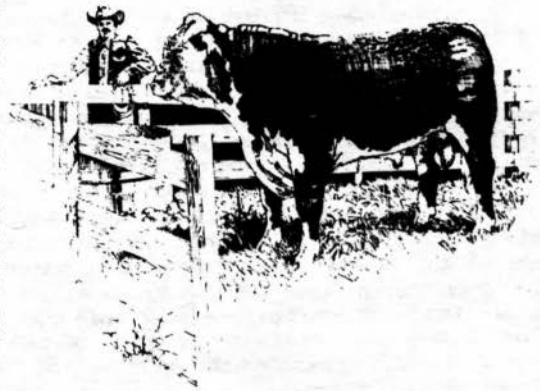
There are some caveats on this one: First, LifeCell isn't saying **how** they pull this little trick off, and most of the cryobiologists I talked to were more than a little skeptical. Just looking at the physics of the problem would seem to indicate that even with single cell layer preparations complete vitrification ought not to be achievable. However, ice formation **might** be held in check enough to allow survival. Skepticism was high about Lifecell's claims. They do not appear to have any known cryobiologists associated with them ( is that a plus or a minus?), and Lifecell CEO Paul Frison had no answers to any of the (good) skeptical questions asked him. If Lifecell is for real, we're in for a real shocker of an advance in cryobiology. The value of the ability to store cell preparations (and presumably things like blood, sperm, ova, and other tissues which can be ultra thinfilmed in a bottle) on the shelf at room temperature is hard to overestimate. Frison, incidentally, was reported to have previously been the entrepreneur of a computer equipment business which failed amid rumors of mismanagement.

By the criterion of raw numbers the meeting was small, with about 30 people in attendance. However, it was not Baust's intention for it to be anything other than an intimate encounter with cryobiologists and capitalists snuggling up under the silk sheets of potential prosperity. Everyone seemed to come away from the meeting feeling very excited and/or challenged. After all, these selfsame cryobiologists have been developing tissue, embryo, and organ freezing techniques, and, at least in the past, they haven't been making a nickel from

the multimillion dollar commercial applications which are starting to spin off. The purpose of the meeting was not just to put money in the cryobiologist's pockets, but to give the capitalists and entrepreneurs a chance to interact with scientists and wheel and deal for new technology.

Beyond the obvious implications for cryonics of a burgeoning, billion dollar plus cryobiological industry, there are other, more subtle reasons for paying attention to this meeting. First there was the issue raised by Sutter of Woodlands in his presentations to the participants. Sutter, in a very unemotional way, pointed out that the public perception of cryobiology and cryonics is that they are the same and that it would be important to both commercial and academic cryobiology to separate the two in the public's mind by clearing defining cryobiology's goals as early in the "game" as possible.

Second, there is the issue of the increasing economic and political clout the cryobiologists will have as a result of the rapid growth of commercial cryobiology. Stanley Leibo, as I've already noted, is not only President of the Society for Cryobiology, he is President of a growing, money making concern: Rio Vista. Rio Vista and other cryobiology firms are spending large amounts of money on cryobiological research and are getting **patents** on their discoveries. For example, one scientist at Rio Vista, William Rall, is doing interesting vitrification work. Rall, like many other cryobiologists, is intensely opposed to cryonics and has stated in my presence that he will do everything in his power to see it destroyed. (My impression of Rall from my conversations with him are of a born again Christian who seems deeply troubled by the ethical questions both cryonics and his own work raise for his faith.)



Keep in mind that it is in research laboratories, both government and private, that most of the sophisticated work in organ preservation is going on. While it seems likely that such work, if successful, will ultimately be extended to the brain, it will probably not happen quickly. After all, genetic engineering in humans is possible **right now** and has been so for several years, but it is a political hot potato. In other words, we could end up having to wait for a **long** time for workable brain preservation techniques and we could find ourselves prohibited from applying other cryobiological advances to our biostasis procedures in the meantime. The Red Cross, under Dr. Meryman's guidance, has already patented Dr. Fahy's basic vitrification technique. Dr. Meryman, both publicly and privately has already spoken out and acted to try and put cryonicists "out of business" on numerous occasions in the past.

Baust is also a figure to be wary of. Baust is President-elect of the Society for Cryobiology (he takes office in January of '87) and is, to put it mildly, a rabid anticryonicist. He has been a darling of industry for some time, and is acting as the principal liaison between the Society and business. Baust occupies a spacious and incredibly well equipped laboratory at the University of Houston (I know, I was personally conducted on a tour of his

facilities by Baust himself). One of the ways Baust has gotten the array of staggeringly expensive and sophisticated equipment he possesses is by cutting deals with industry. For instance, he has High Pressure Liquid Chromatography (HPLC for short) equipment which was **given** to him reportedly on the condition that he make this equipment available for examination to potential customers who might be interested in buying it -- in effect acting as a salesman for the manufacturer! And of course the implied condition is that he train his graduate students on it -- and what will they buy when they need an HPLC? Why the brand they were trained on, of course! (Mind you, I'm not knocking this -- I'm just pointing out that this kind of coziness, and the leverage it implies, gives one pause for thought.)



Through these and other clever maneuvers, Baust **Dr. John Baust at Cryo'85** has carved out quite a territory for himself, and is fast becoming a powerful figure in cryobiology. In our opinion, what he is not is a decent human being. He has repeatedly proposed extremely restrictive and punitive measures against cryonicists in the Society for Cryobiology (so extreme in fact that most have been voted down by the Society's Board of Governors -- a body not noted for its friendliness to cryonics) and has a bad reputation for "dirty politics" among most of the cryobiologists we've talked to.

Would the cryobiologists use this kind of influence to thwart cryonicists? Would they really **do something**? Our only answer to this is to point up an incident which occurred a few years ago. A major cryogenics firm that made dewars for cryonics organizations suddenly stopped doing so. Why? Because they had been threatened with blacklisting by the cryobiological establishment: being stripped of institutional membership in the Society, having their advertising for products refused. They can easily afford to lose a small account in the face of that kind of pressure. Yes, we ultimately did find a solution to that problem but it costs us dearly. It costs us time, it costs us money, it costs us a lot. It's important to understand that no **one** of these kind of things is likely to put us out of operation. But a lot of them are almost certain to. It's a little like dropping a goldfish into water that's as thick as molasses. You not only can't swim, you can't even breathe.

Clearly, the growing power and affluence of cryobiologists is not going to help matters for us any. Cryonicists to them are nothing more than annoying frauds who cloud their image and cost them grant money by raising the spectre of troubling ethical problems. And God forbid cryonics were to catch on to any extent. The thought of anything that would cut into the spare parts market they see glimmering brightly in the distance is probably more than they can bear.

In any event, one thing seems clear: cryobiology is already a multimillion dollar industry and is soon going to get a lot bigger. Just the emerging area of plant cryobiology alone will be an immense commercial market the size and implications of which cannot even be discussed here!

A corollary of this is that cryonicists shouldn't expect life to get any easier for themselves. People like Meryman and Baust already privately discuss

ways to get rid of the "body freezers". True, wider application of cryobiological techniques will heighten public awareness of our goals and improve our credibility — but that may only make the situation worse. And the most immediate and direct beneficiaries of the boom are likely to be people like Baust and Meryman. The next few years may be analogous to finding ourselves in Germany in 1932, listening to the news that Adolf Hitler just got elected to the Reichstag. Perhaps we'll find a way to grow faster as well and get the resources we'll need to defend ourselves — or at least get a hell of a lot meaner. At the very least, we can't say we didn't see it coming. And oftentimes knowing a problem is coming is half the battle.

## Original Sin And Liberal Guilt

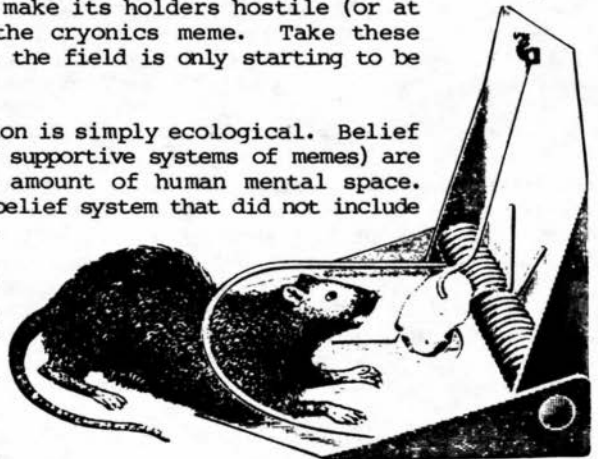
by H. Keith Henson

Peter Christensen's letter in the August CRYONICS on the perils of being a Unitarian minister with immortalist tendencies prompts me to discuss my own experience. He isn't the only one to be disappointed by the failure of Unitarians to respond favorably to cryonics. One of the first steps I took after being infected with the cryonics meme was to join the Unitarian Church in Tucson thinking (like Peter) that of all people, folks without a "going to heaven" component in their belief system should be ready receptors for cryonics concepts. Like the cryonicists, Unitarians have made unusual adjustments to mortality. While I have not polled a large group of cryonicists, I suspect that the majority of both groups have consigned belief in a spiritual "afterlife" to a holdover from prescientific or even preliterate cultures.

I had no better luck than Peter — the meme system that infects Unitarians makes most of them actively hostile to the cryonics meme, and incidentally to the "meme about memes" as well. I was politely, but quite effectively shut out of opportunities to even present these concepts.

Having the new mental tools of memetics available, and being of an analytical turn of mind, I have tried to generate a plausible model for why the Unitarian belief system would make its holders hostile (or at least **very** unresponsive) to the cryonics meme. Take these attempts with a grain of salt — the field is only starting to be developed.

At one level, my explanation is simply ecological. Belief systems (i.e., memes or mutually supportive systems of memes) are in competition for a limited amount of human mental space. Consider what would happen to a belief system that did not include a component inducing a "hostile-attitude-toward-possibly-competitive-memes". Other memes would poach on its mental territory until a meme "tolerant-toward-competitive-memes" was displaced by intolerant memes.



From this general princi-



ple, it should be expected that inducing hostility to possibly competitive memes should be expected of **all** memes engaged in strong competition. Strong competition will occur when distinct memes or meme sets occupy similar niches. The cryonics meme might be considered (for some purposes) to be three closely related but distinct and highly competitive memes, at present. I think even an outsider would see significant differences in the replicating information patterns that distinguish the three cryonics organizations, and see considerable induced hostility among them.

Are the Cryonics and Unitarian memes in competition for the same minds? I think so; the social, educational, and economic backgrounds of both groups are similar. Though there are exceptions, they both draw adherents from the relatively literate and not conventionally religious segment of the population. So from the memes' viewpoint it is important that each induce hostility toward the other. Memes, not being conscious, don't really **have** viewpoints, but the effect of Darwinian selection is to make it seem as if they were striving entities. The ones which we can observe have survived long enough for us to notice them, and must have induced a certain amount of resistance in their hosts to being displaced by competitive memes.

While this accounts for the hostility that Peter and I found, we still might find it useful to analyze the features that make a meme (or meme complex) such as the Unitarians' attractive to people, and compare these features with those of the cryonics meme, or at least provide some clues as to why (even relative to Unitarians) cryonics appeals to such a small number of people.

**"From my close-range observation of Unitarians, the most distinguishing feature in their meme set must be called "liberal guilt".**

From my close-range observation of Unitarians, the most distinguishing feature in their meme set must be called "liberal guilt". At first, this seems like a very unlikely "attractive" element for any belief system. Arel Lucas (my wife and fellow student of memetics) pointed out to me that the attractiveness of the liberal guilt belief system could stem from the incessant activity of a mental module that Michael Gazzaniga discovered and describes in **The Social Brain**. He called this module "the interpreter". I think of it as the "inference engine". It is closely connected to our verbal abilities, but we are not normally aware of its activities, even in other people. Gazzaniga demonstrated the activity of this module with some very clever experiments on split-brain patients. By the module failing, we can clearly see how it is doing the best it can with insufficient data.



What Gazzaniga did is to present each side of the brain with a simple conceptual problem. The left side saw a picture of a claw, and the right side saw a picture of a snow scene. A variety of cards were placed in front of the patient, who was asked to pick the card which went with what he saw. The correct answer for the left hemisphere was a picture of a chicken. For the right half-brain, it was a snow shovel.



"After the two pictures are flashed to each half-brain, the subjects are required to point to the answers. A typical response is that of P.S., who pointed to the chicken with his right hand, and the shovel with his left. After his response, I asked him, 'Paul, why did you do that?' Paul liked up and without a moment's hesitation said from his left hemisphere, 'Oh, that's easy. The chicken claw goes with the chicken, and you need a shovel to clean out the chicken shed.'"

"Here was the left half-brain having to explain why the left hand was pointing to a shovel when the only picture it saw was a claw. The left brain is not privy to what the right brain saw because of the brain's disconnection. Yet the patient's own body was doing something. Why was it doing that? Why was the left hand pointing to the shovel? The left brain's cognitive system needed a theory and instantly supplied one that made sense given the information it had on this particular task..."

I think the concept of original sin was constructed by the same human mental mechanism that provided Paul's chicken shit theory. The inference engine was a milestone in our evolution. It works far more often than it fails. But as you can see from the example, our inference engines will wring blood from a stone; you can count on them finding causal relations whether they exist or not. Worse yet, the inference engine probably can't detect it when it doesn't have enough data. Even if it could, it has no way to tell the verbal (conscious) self.

As a result, this piece of our mental hardware can get us into some awful tangles; liberal guilt and original sin, for example. A plausible origin for the concept of original sin comes from the engine being given two factors: the unavoidable observation of human suffering and death without just cause; and the logical unacceptability of an unjust or less than all-powerful God to our cultural forebears. The concept that the death of infants is a punishment for "wired in" original sin seems to have been the product of inference engine activity trying to find a cause for suffering and death. As an "explanation" it rates right up there with Paul's theory about the shovel.

To connect inference engines to memes, I think the memes to which we are exposed pass through our inference engines, as well as originating there. That may be one of the places where new information patterns are tested for acceptability. A meme which provides an "explanation" for previously conflicting information may have a better chance to become a member of the local society of memes.

In the Unitarians I knew, belief in God had been replaced in most cases by a belief in a kind of nebulous "natural order". Human activities that violate the current idea of what constitutes this "natural order" became the "cause" for human suffering and death. It puts human activities by some as the cause for suffering by many, in the process assigning far more power to people than they actually have.

I think the Unitarian's liberal guilt meme stems from the same kind of attempt to assign causality that generated the concept of original sin. Unitarians, even more than the rest of us, constantly expose themselves to news about poverty, starvation, wars, and other disruptions of the social fabric



around the world. It could be said fairly that they wallow in such news; announcements seldom miss a Sunday. Their inference engines insist that there must be some reason, some cause, for so much suffering and death to exist in the world. The split brain patient's engine came up with a plausible reason why he was pointing to a shovel. Their engines seize on the "elite" as holders of human power and assign to this (ill defined) group responsibility for all that is wrong with the world.

There are a number of self-directed forms this belief takes. For example, if we are wealthy, it must be our fault that others are poor. The inference engines insist that we must be getting wealth from somewhere — so it must have been taken away from the people who don't have it. Inference engines seem to work on the principle of the zero-sum game — a reasonable assumption for almost all the time they have been evolving. If we are happy and well fed, why are the other people unhappy, poorly fed, etc.? The inference engines will insist that it must be someone's (or some group's) fault. It should be noted that the inference engine outputs may not be verbalized.

How would you expect inference engines running a zero-sum game in these people to analyze the cryonics meme? Well, what we are aiming for is life. Lots of it. If we are to live, a zero-sum game approach will insist it must be at the cost of taking other peoples lives away, the ultimate bad-guy act. Even if these thoughts don't make it to the conscious level, they may strongly affect the way people feel about us.

Among Unitarians and related groups, liberal guilt — for all its burdens — fits more comfortably into their minds than the alternative: that we don't have a great deal of power over large-scale events. What is it in the makeup of minds that makes the belief in human power (at least for these people) so attractive? Frankly, I don't know, but psychological observers have found that the opposite belief, that we're not very powerful, and are at the whim of uncontrollable forces, often leads into fatal depressive states. Our normal state may be to believe we have much more control over reality than we actually do. It may be that this mental state, in spite of all the time-wasting ritual it has spawned, is effective in promoting survival.

Of course, the elite eventually die along with everybody else, sometimes with a great deal of "unjustified" suffering. But the inference engines of people with a liberal guilt meme have no problem accounting for this, because the elite are guilty (at least by association) of causing all that suffering and death in the world. The inference engine has a cause for death in either case: the poor suffer and die because of the elite, and the elite die because they deserve it for what they do to the poor!

I suspect (because of our evolutionary history) that unresolved inference engine problems are a major source of anxiety. People who experience the extreme form of liberal guilt just described usually consider themselves members of the elite. While it may cause them considerable discomfort due to guilt, this "scheme of memes" is preferable to an unresolved inference engine problem.

Theories created by inference engines have sometimes extended into the next generation through elaborate beliefs about reincarnation or into "the next world" through forms of "afterlife" in an attempt to balance the causal books.

In the current liberal guilt/ecoreligion beliefs, supported by perceived overpopulation, limits to growth, etc., death by itself, especially for the sinful elite, has been elevated to be an important part of the "natural order of things". It has become **desirable** that we die and get out of the way for the next generation, the environment, the poor, the mistreated, the third world, or even the next generation of science fiction writers! It is fairly easy to see how cryonics memes clash with these beliefs.

**"In the current do-it-yourself-or-it-won't-be-done cryonics world, you need a lot of self-worth to be a cryonicist."**

All this relates to cryonics in that guilt undermines your sense of personal worth. In the current do-it-yourself-or-it-won't-be-done cryonics world, you need a lot of self-worth to be a cryonicist. You have to believe in yourself to the point that you say, "I want to live beyond the present era". As Dr. Timothy Leary said in an interview about cryonics earlier this year, "It's the ultimate act of self-determination and self-confidence". It seems to me that it would be really hard to embrace liberal guilt and cryonics at the same time. The exception might be a combination of liberal guilt and freezing someone else "who deserves a second chance", or where the memory of the suspended might be important. I think that the liberals might support freezing several victims of the Holocaust so that (on the odd chance that cryonics works) future generations would have first-hand witnesses to keep the historians honest. (If any CRYONICS reader has contacts with the community of Holocaust victims, please let me know. H. Keith Henson; 1794 Cardel Way; San Jose, CA 95124; (408)978-7616).

This has rambled a long way from Peter's letter, which I am rather grateful for. I find it reassuring when others duplicate my failures: it makes me suspect I was trying the impossible.

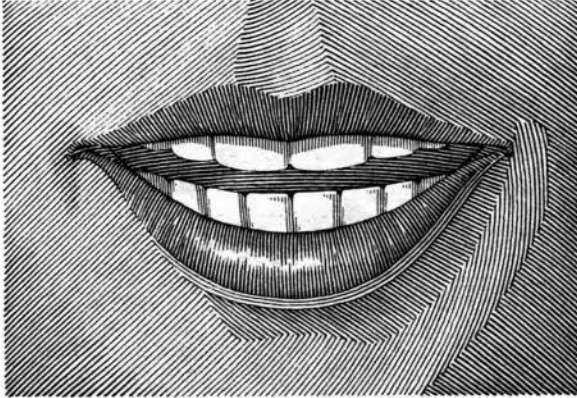
One other point comes to mind. I think we should encourage viewing ourselves as among the very powerful, as shakers and movers of the future. This attitude can soar and crash when it is based only on hype (does anyone remember **est?**), but we really **are** shaping the future.

## Life Extension And Language

by Richard Marsh, Ph.D.  
American Cryonics Society

Reprinted from Claustrophobia

Language and culture are shot through with assumptions about aging and death. Our attitudes towards aging and death are reflected in our languages and our culture even when we are not aware of this fact. The relationship is reciprocal. The attitudes shape the language and the culture; and the language and the culture shape the attitudes.



The relationship is that of a river and the river bed. The river shapes the river bed, and the river bed shapes the river and so on reciprocally ad infinitum. So with our attitudes towards aging and death on the one hand and language and culture on the other.

Some examples:

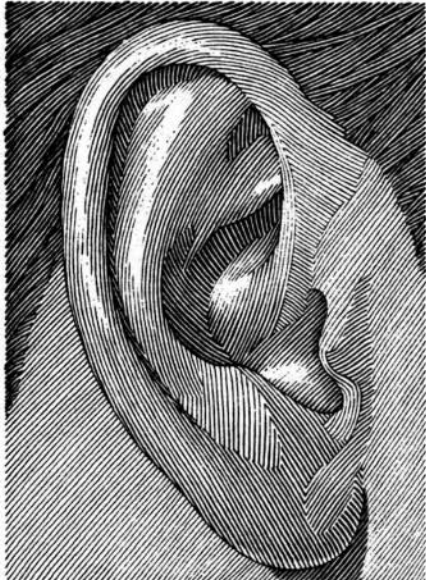
**"Nothing is certain except death and taxes."** Actually, neither one of these is certain. A world without either or both

can be imagined. But it seldom is, so we continue to be plagued by these twin curses. Knowing in advance that they are certain, we do nothing about them. So they continue to plague us. Well, we might fiddle with taxes a little. But death? Never. Our culture has taught us to feel wicked and sacrilegious about resisting the supreme pleasure of dying to fulfill God's inscrutable but lethal little plan of wiping us all out just as we're getting started.

**"We owe God a death."** This quotation from Shakespeare has probably done a lot of mischief. Where did I put my name to a contract promising my death to God? Yet our culture brainwashes us into feeling as though we have all done so. Consequently, we fall into a submissive attitude in the face of death, whimper "When my time comes, I'll go," and quietly and conveniently die right on schedule.

**"Come on you guys! Do you want to live forever?"** A rousing line in a classical war film, but it has nonsensical implications. It's fine as a starter but not very useful as a steering device. It might encourage a soldier to walk into the enemy fire, but it hardly presents a serious choice. The reasonable answer to this stirring but stupid question is "You're damn right I want to live forever. At least I'd like the option. I can always change my mind later."

**"You only live once."** This is a sensible comment really, since it reminds us that we'd better live it up in the here and now while we have the chance since we can't be sure that reincarnation, transmigration of the soul, life after death, etc., are anything but dreams. But it has a tone of desperation. It implies that life is fleeting and will all too soon vanish. It doesn't allow for the possibility that, although we only live once, that "once" may be forever.



**"Art is long and life is short."** Art is



long all right, but there is reason to hope that life can be lengthened. Especially if we cultivate the art of life extension. This would include particularly the technology of cryonic suspension.

**"We've all gotta go sometime."** To the bathroom, yes; to the Great Beyond, maybe — and maybe not. But the constant reminder of our mortality, the constant insistence that we are doomed to die, is practically guaranteed to shorten our lives. It certainly will not lengthen them. A much healthier attitude lies behind the little vow known to many cryonicists: "I'm going to live forever or die trying."

These are only a few common phrases which, in our culture, are often uncritically accepted as true and which probably tend to make us passively acceptant of aging and death. Stopping for a moment to consider that they may be nonsense or at best half truths may lessen their destructive power.

There are many others. If you think of some you would like to share, I would appreciate your sending them to me c/o American Cryonics Society, 870 Market St., Room 368, San Francisco, CA 94102.

In addition to common sayings and quotations in our culture, the structure of language itself (which is equivalent to culture) can contribute to a do-nothing attitude about aging and death. The discipline of General Semantics illustrates this point.

General Semantics emphasizes the role of abstraction in language. Abstraction is based on selection. Thus, the following all refer (or could refer) to the same thing: Bessie, cow, farm animal, animals in general, farm asset, assets in general, wealth, etc. But each abstracts or selects different characteristics of the "thing" represented: that large, smelly, four-legged "object" over there which goes Moo and gives milk. This object itself, although nonverbal, is also an abstraction because it is perceived and conceived differently — because selectively — by different people and by any one person at different times.

But when we talk, we keep changing levels of abstraction without realizing it. This gets us into serious trouble. General Semantics recommends various strategies for coping with this tendency. I'll name a few and illustrate them by reference to aging and death.

1. **Avoid the two-valued orientation of either-or thinking.** A person is not **either** "alive" or "dead." He is an event in process. But language, especially the Indo-European languages, of which English is an example, encourages the use of either-or, dualistic thinking, and we wind up feeling we must choose cleanly between "he's alive" and "he's dead" even if that leads to submitting him to a death-dealing dose of embalming or cremation.

2. **Avoid "all-ness".** **old** (ôld) *a.* advanced in age; having lived or existed long; belonging to an earlier period; not new or fresh; stale; out of date. **-en** *a.* old; ancient; pert. to the past. **-ish** *a.* somewhat old. **-ness** *n.* — **fashioned** *a.* out of date; not modern. **Old Harry**, the devil; Satan. — **maid**, a spinster; (*Cards*) a round game. — **master**, a painting by a famous artist, esp. of 15th and 16th cents. **Old Nick**, the devil. — **school**. *a.* old-fashioned. All-ness is the belief that words can say all there is to say about something. "She is dead" or "She is old" leaves out much more than it includes. Among other things at other levels of abstraction, "She is dead" translates into "At this moment in time and at this point in space, we don't have a doctor who can revive her."

"She is old" is a value statement masquerading as a statement of fact. It's an opinion. It tells something about the speaker but very little about the person being discussed.

"She is 21" (or "36," or "72," etc.) conveys verifiable information rather than opinion. Whether at any particular age she is "old" depends on a huge number of shifting, more or less subjective considerations: our prejudices about complexion, her doctor's rejuvenatory powers, the state of our glandular system, her fitness program, our own age, etc.

So with death. Between "she is dead" and "we are unable to detect a pulse" is a chasm. "Heartbeat" is a verifiable event. "Death" is an opinion.

3. **Use indexing as a reminder of differences.** **death** (deth) *n.* extinction of life; manner of dying; state of being dead; decrease; dissolution; (*Fig.*) termination. — **blow** *n.* a fatal stroke. **-less** *a.* immortal. **-lessness** *n.* **-like** *a.* **-ly** *adv.* *a.* like death. — **mask** *n.* a plaster cast of a person's face taken immediately after death. — **rate** *n.* the mortality rate per thousand of the population at a given time. — **threes** *n.pl.* last struggle before death. — **warrant** *n.* an official document authorizing execution of a criminal. **-watch** *n.* a vigil [O.E. *death*, *death*]. Cow(1) is not cow(2), cow(2) is not cow(3), cow(3) is not cow(4), etc., reminds us that all cows are different as well as similar. Ronald Reagan(1932) is not Ronald Reagan(1986), Ronald Reagan(1986) is not Ronald Reagan(1991), etc., reminds us that even Ronald Reagan (maybe especially Ronald Reagan!) changes with the passage of time.

Thus: Corpse(1) is not corpse(2), corpse(2) is not corpse(3), corpse(3) is not corpse(4), etc. Corpse(4) may differ from corpse(1) in being relatively easy to revive.

And: Death(1930) is not death(1974), death(1974) is not death(1986),

death(1986) is not death(2001), etc. If you don't like the way death is today, just wait. If you're too old to wait much longer, arrange to get frozen.

4. Use "etc." as a reminder that words cannot say "all" about anything. General semanticists say we should mentally place "etc." at the end of every sentence to remind ourselves that much remains to be said. Some English teachers have a tendency to lower your grade if you use "etc." very often. "Don't be so vague," they say. "Avoid 'etc.'" Make up your mind what you want to say, then say it."

This is good advice for people who want to get an "A" in English composition from teachers of this kind. It may not be good advice for people who want to live effectively.

Consider: If we say "He is dead" and punctuate with a period, then we have said "He is dead, that's that, and there's nothing we can do about it." But if we say "He is dead, etc." — even though the "etc." is only in our minds and not on the paper — then we are allowing other possibilities. We may be saying something like "He is dead in the sense that at this moment and in this place there is no one available who is capable of restoring heartbeat and respiration. Of course, there may be a superdoctor somewhere who can do it. Or such a superdoctor may come along in the future. Let's just freeze this chap and look around or wait. Perhaps all is not lost. It's always too soon for despair."

5. Avoid confusing reports, inferences, and judgments. A "report" is a statement that is verifiable. Consider the case of Eleanor: "She is just lying there and she has no pulse." That statement can be verified by observation. An "inference" is a statement about the unknown based on the known: "Eleanor is dead." Maybe. Or maybe she is in shock and will revive presently. A judgment is an expression of the writer's or speaker's approval or disapproval: "Sooner or later, all living things die. It is the will of God. Best we not interfere." Right. And I am the king of the cuckoos.

Note that judgments are also "directives." That is, they tell us how to behave. If death to all living things is indeed the will of God, then of course it is best we not interfere. Who are we to tell God how to run the world?

6. Avoid confusing the map with the territory it represents, or the word with the object or the event it stands for. Failure to do this causes a large proportion of the world's misery. The allegedly "nasty" word is not the substance it represents, your nation's flag (by the dawn's early light or at





any other time) is only colored cloth and not the nation itself, the "insult" to your mother's "honor" is only vibrations originating in someone's vocal cords (no need to challenge anyone to a duel), the pornographic film is not the real McCoy, the place of worship is a building and nothing more unless you decide to consider it something worth fighting and dying for, etc.

Thou shalt not take the name of the Lord thy God in vain partly because, in ancient times, if you spoke the word "Yahweh," that local, tribal God was liable to show up and be annoyed if you were just fooling around. Better not rub the magic lamp without having a mighty good reason for calling the genie out of the depths.

Careful how you use the words "old age," "dying," "death," etc., because if you believe strongly enough that they are what they represent, then what they represent may actualize. Give more of your creative, imaginative energy to words like "youth," "health," "immortality," and "joy." Although these words are also not what they represent, they at least focus your energy in a desirable direction.

**7. Avoid the "is-of-identity" and the "is-of-attribution."** The verb "to be" has been called the most dangerous word in the English language. The statement "my neighbor is a black" may be true enough, but it does violence to the truth if it sets up a cast-in-concrete identity between 'neighbor' and 'a black.' Is that **all** my neighbor is, monolithically, and nothing else twenty-four hours of the day? What else is she/he? A brain surgeon? A parent? A Republican? A Democrat? A water colorist? A philatelist? A jogger? Or perhaps a con artist? A dope fiend? A sado-masochist? Or maybe a Republican who smokes pot or a brain surgeon who collects comic books?

And what about those "attributions"? Is your neighbor anything but black-skinned? Perhaps energetic? Pious? Brilliant? Stupid? Happy-go-lucky? Driven and determined to succeed? And a thousand other things?

What about "death"? Is it the end? A curable disease? A dirty trick on the part of the cosmos against which we should marshal all our resources? An opinion? The judgment of God on Adam and Eve for their sin of thinking for themselves? A welcome end to our miseries? A purely biological event capable of being eliminated if we had the will? Necessary for our fulfillment? "An imposition on the human race, and no longer acceptable"?

One thing for sure, according to General Semantics, is that "whatever you say it is, it is not." Because what you say it is, is words. And that event called "death" is not a word. It is hideously nonverbal, a process in the natural world capable of alteration and probably elimination by the methods of science.

**8. Guard against trigger reactions.** Pull the trigger and the gun goes off. Speak certain words, introduce certain ideas, and some people go off. Between the stimulus and the response falls the snap judgment. Wham, bam, don't give a damn.

Typical trigger words are "abortion," "gay," "drug," "Soviet Union," "Ronald Reagan," "equal rights for women," "prayer in the schools," "labor

union," "God." There are many others.

Want a trigger reaction? Tell someone you intend to be frozen at "death" and watch the curtain of disapproval snap down over his face.

More trigger words? "Death," "physical immortality," "the elimination of aging," "agnostic," "cryonics."

What to do about trigger words? The other person's: Look for areas of agreement with that person. Your own: Use them genially and tentatively. When I catch myself using a trigger word I ask myself, "What the hell makes you think **you** know all the answers?"

The amount of General Semantics I have discussed here is a teaspoonful of water out of the ocean, but perhaps it is enough to help make the point that the very structure of language (which is equivalent to culture itself) helps determine how we think and feel about things -- including aging, death, and physical immortality . . . etc.

**im-mor-tal** (i-mawr'-tal) *a.* not mortal; having an eternal existence; undying; deathless; *n.* one exempt from death or decay; a divine being. **immortalize** *v.t.* to make famous for all time; to save from oblivion. **immortality** *n.* perpetual life. flower [Fr.].

## OMNI Dialogues: An Electronic Probe Of Non-Cryonicist Brains

by Brian Wowk

O wad some power the giftie  
gie us  
To see oursel's as ithers see  
us!

Robert Burns

One of the many interesting ideas outlined in **Engines of Creation** is the way in which "hypertext" information systems could revolutionize public understanding of important issues. Indeed, in contemplating this concept I became excited thinking about how effectively misconceptions could be eliminated if immediate public replies could be made to erroneous assertions. In the last few weeks I've had a taste of this idea, and it was disappointing. Enthusiasm over hypertext's potential for defending truth rests on the assumption of adherence to logic and reason in discussions. In retrospect this is perhaps a naive assumption, especially for issues of real importance. I'll attempt to relate the shocking (to me) developments responsible for my disillusionment.



Although I've basically been a **de facto** immortalist since my teens, the discovery of cryonics as something generally available is new to me. Consequently, I'm suffering from yet another bout of my typical tell-the-world syndrome that seems to strike whenever I discover something new and important. The simultaneous appearance of the OMNI cryonics article and my acquisition of a CompuServe account (which allows access to the OMNI electronic forum) led to predictable results. I couldn't resist the temptation to discuss cryonics and life extension with an educated and future-minded (so I thought) audience.

CompuServe forums are sophisticated computer bulletin board systems that, among other things, allow participants to use their home computers to compose and telecommunicate messages for public viewing on the system. Hypertext-like capabilities for replying to particular messages allow discussions to grow like branches on a tree — a very neat idea. Typical discussions involve composing and posting messages addressed to various topics. Other participants can then leave their replies for all to read at their leisure. This format allows for rapid, yet well considered, interchange.

I initiated discussion by sending detailed messages addressing three very important issues the OMNI cryonics article did not discuss. In particular,

these were the very real theoretical feasibility of revival via nanotechnological repairs, the unprecedented high quality of treatment and care ALCOR offers, and the affordability of financing suspension through life insurance. I was delighted to see my messages start drawing responses. I was ecstatic when I saw one with the name of Thomas Donaldson on it! I knew this was going to be good.

As could be expected, initial replies expressed extreme scepticism about the feasibility of revival. Less educated people began immediately and tenaciously flailing the idea that "dead" people CANNOT be revived. (Amazingly, the most active exponent of this idea was OMNI assistant editor, and cryonics article coauthor, Nancy Lucas. More on this character later.) More sophisticated participants began attacking the technical feasibility of successful damage repair. This was actually quite a spectacle given that the only fact used to support these attacks was ignorance of precise memory storage mechanisms. Those portions of the revival feasibility discussion that stayed within the bounds of the sensible actually did progress from technological, to social, and finally economic factors. One particularly cynical individual I pursued all the way down this road was at least honest -- once all relevant points had been addressed he ceased debating the issue.

Within a week three general topics emerged that would dominate the discussion for the next month. These were revival feasibility, the nature of death, and the idea of radical life span extension. The first topic is really not that significant because none of the participants were knowledgeable enough to properly discuss it on a technical level. The latter two are more interesting because they are of a more philosophical, and ultimately more important, nature.

The idea that a person wheeled down to a morgue is not necessarily "dead" in an irrevocable sense, really seemed to strike a nerve in people. This became apparent when in the middle of a discussion confined to primarily technical matters a participant interjected with the assertion, "So far, you haven't offered anything as proof that I couldn't explain with my beliefs." I was actually very surprised at how even more secular mentalities were desperate to hang on to the idea of death as something that occurs at some specific instant in time. After some VERY lengthy discussion about the issue, and some detailed messages from Thomas Donaldson about the religious overtones of the death concept, we finally were actually able to convince death-as-a-specific-event's most vocal proponent, Nancy Lucas, that most people declared "dead" today are not necessarily beyond the reach of more advanced medical aid. However, she still found it impossible to appreciate this idea in a cryonics context. I surmise this difficulty was partly due to her professed belief in a "soul".

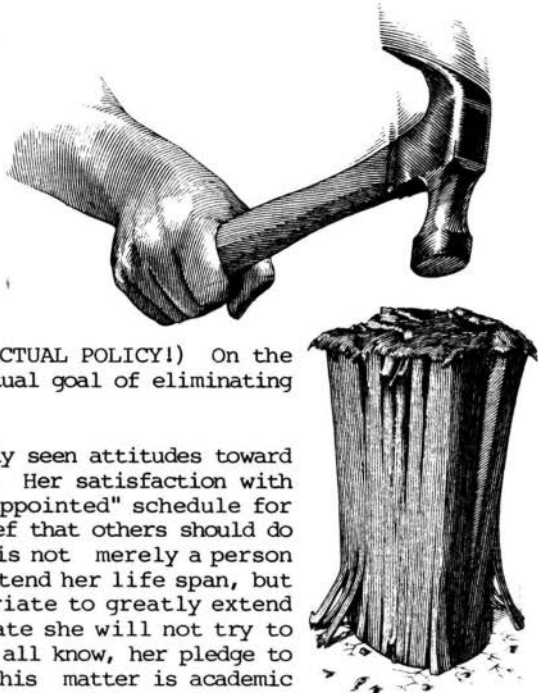


People who believe in immortal souls that require well-defined departure times seem to have trouble dealing with ideas like cryonics. Nancy finally could conceive of saving people who slipped beyond present standards of "death" on future operating tables, but not people who had been frozen for hundreds years. In particularly emphasizing the long time spans involved, perhaps she was not aware that at the temperatures we deal with, cryonics patients will necessarily be the same a hundred years from now as the day they were suspended. Or perhaps she thought that at some point during long suspensions the soul would get bored and wander off, making revival impossible. She didn't say.

One type of comment that kept coming up repeatedly was of the following sort: "It's just too speculative, even with the repair technology you all envision, that you all will be the same people when you're revived, because not only are the cells formerly frozen, they're also formerly DEAD." These kinds of criticisms are obviously a throw-back to 19th century vitalism — the belief that living things possess some intrinsic "energy" that departs when they cease normal function. This idea is very much tied in with that of a soul, and causes people to believe that special magic other than simple mechanical repair is necessary to restore "life" to non-functioning biological material. Judging from this debate, it looks like clearing up this particular bit of nonsense is going to be important to the future growth of cryonics.

The one development of the debate that took me completely by surprise, and that I still shudder thinking about, is the strong resistance to radical life span extension that reared its ugly medieval head. The last thing in the world I expected was for someone to challenge not just the feasibility, but the DESIRABILITY of life span extension. The foremost and most adamant voice of this vile nonsense was none other than 27-year-old OMNI staffer, Nancy Lucas. The highly uninformed pot-shots she took at the scientific feasibility of life span extension are not worth discussing here. It should suffice to say that her ignorance of the issue is of the sort one could expect based on OMNI's incredible policy of making sure their science journalists don't know anything about science. (I'm not kidding. This is apparently ACTUAL POLICY!) On the other hand, her opposition to the actual goal of eliminating aging IS worth discussing.

Quite frankly I've never personally seen attitudes toward life extension anything like Nancy's. Her satisfaction with aging and dying according to her "appointed" schedule for social and natural reasons, and belief that others should do the same, is truly revolting. This is not merely a person who's not particularly anxious to extend her life span, but a person who believes it's inappropriate to greatly extend anybody's. To be fair, she does state she will not try to stop such efforts. Of course, as we all know, her pledge to personally not use physical force in this matter is academic



since her philosophical errors serve to sanction those who will.

For the sake of those readers who've not already seen some of this stuff in one form or another, I'll present a few select excerpts from the debate. They are not recommended for the faint-hearted.

"I don't understand why people -- cryonicists and everyone else who sees some appeal in immortality -- would want to live forever. In order for the new to come about, the old has to die. It's just the way of the world, the way of nature, the way of everything. ...Instead of saving dead bodies, why don't cryonicists work to save LIVE ones? Remember: a nuclear war will destroy all those frozen cadavers too; no lead containers at ALCOR."

(I've noted from time to time that aging and death are somewhat unique among illnesses in that discussing their treatment has the peculiar effect of causing some people's brains to short-circuit and suddenly start rambling about nuclear war, the third world, the environment, and other various irrelevancies.)

"Nature IS beneficial in my life, and I AM nature's pawn; I'm not arrogant enough to believe that just because I'm a human being, I'm somehow above nature, or capable of ruling it. I am just another product of nature that shares this planet with tons of other products."

"It is not a GIVEN FACT that my aging and death is individually and socially detrimental -- and I've already told you many times WHY I don't think of death as detrimental at all, except when it comes at a (young age)... It would not mean a loss of everything I've come to value; it would mean a loss of material things, really, and contact with people I love. It would rather be a CULMINATION of everything I've come to value, an end point... Furthermore, I AM supposed to die, simply because I've never met anyone who hasn't or won't." (Not true, of course. In researching her article she DID meet cryonicists!)

Although perhaps I should have known better, I was determined to probe exactly how deeply rooted these ideas were. For four weeks, and a hundred pages, I pounded this philosophy from every angle -- personal value of life, social value of life, "human nature", "limits to growth" fallacies, feasibility of radical life span extension, man vs. nature, and probably just about every other subject related to this issue. To her credit, Nancy Lucas did participate all the way through. In fact, by the end of October I actually thought I was on the verge of winning some major concessions. This was not to be.

On the 3rd of November the bottom fell out of the debate. It was as if in a fit of desperation Nancy dredged up almost every nonsensical bit of anti-life propaganda that's ever been cast at the idea of life extension, and let it go at once. All of the garbage I had so meticulously swept up and bagged during the previous weeks suddenly spilled in a torrent onto the forum floor. Brace yourselves.

"Death is necessary because that is the way all species regulate themselves, keeping as much balance between environment and group,

between group and individual, as is required for the survival of the species."

"I shudder to think of this future world of yours, with wall to wall people, and not enough jobs, and not enough food, ad nauseum. And Brian, think of the people today who live empty existences; there are many more of those than there are the vital, contributing-to-society sort. Will they all be able to live forever too? Would we want them to? Is it really a boon to mankind to prolong the lives of selfish individuals who only want to further their own goals? Living longer lives could become the domain of the rich and elite only... And what about those people who don't want to live forever? Suicide rates would probably be staggering... Just because our lives are longer doesn't necessarily mean they'll be better... So what if we CAN do it; why should we WANT to? ...I like having a deadline... It's perfectly acceptable to me that I'm going to age and die."

So there you have it. To appreciate the true significance of this, remember that this message followed a hundred pages of discussion that already addressed almost every point raised. Absolutely astonishing.

The tangible results of the whole episode to date are rather disappointing. There was some talk about publishing portions of the cryonics debate in OMNI magazine itself. I don't know what became of this, but I hope if OMNI does decide to do something of the sort, that they solicit ALCOR for something more formal than the actual fragmented debate. The on-line audience of the proceedings numbered a few dozen at most. If the comments of the actual debate participants were any guide, I doubt anybody was extremely impressed with the goings-on. I cannot help but think, though, that cryonics must seem just a bit less flakey to these people than it used to.

Something important to realize about the debate was the style in which it was conducted. Neither I, nor Thomas, are of a sort who mince words. We did not pull any punches, or soft-pedal any issues. We said exactly what we thought, and sometimes it was downright merciless. In the broad context of truly fostering the growth of cryonics it must be acknowledged that there may be times when a certain degree of reservation and tact is in order. I doubt in this case, though, it would have made any difference if we would have gone in there as meek, tentative, and fashionably compromising characters. Indeed, I must admit to freely indulging myself in gleefully upsetting every poorly-supported belief in sight, and having GREAT FUN doing it!

I would like to thank CompuServe and



the OMNI forum for granting permission to publish excerpts of the debate. I would also like to thank those forum members who participated in the debate for their input, particularly Nancy Lucas for her steadfast participation. Finally, I especially want to thank Thomas Donaldson for his contributions and tactical support throughout the battle.

## SCIENCE UPDATES

by Thomas Donaldson

### NALOXONE AND ANGIOTENSIN

**Naloxone** is a drug which attaches to the same receptor molecules as the opiates. Naloxone in fact can stop the effects of heroin. **Angiotensin** is a hormone which forms in the blood from a precursor substance (angiotensinogen) made by the liver and the kidney hormone renin. It raises blood pressure and may have other effects. Both substances may help recovery from lack of blood flow to the brain (ischemia). Recently two different groups have published papers describing experiments on these drugs. I summarize them here.

Of the two drugs, **naloxone** has the longest history of work exploring its possible use in brain damage. Naloxone will help protect from damage to the spinal cord. Many reports describe protection by naloxone from the brain damage caused by cutting off blood (A.I. Faden et al, **NEUROLOGY**, 32, 1083 (1982); Y. Hosobuchi, D.S. Baskin, and S.K. Woo, **SCIENCE**, 215, 69-71 (1982) and others). Unfortunately attempts to use naloxone in treating stroke in human beings haven't worked out well (R.J. Fallis et al, **STROKE**, 15, 627-9 (1984)). One proponent of naloxone attributes this failure to the fact that doctors trying it used too small a dose.

Recently Christine Capdeville, R.G. Boulu, and others from several universities in France reported their own experiments with temporary ischemia in rats. They wanted to explore the discrepancy between the positive scientific experiments and the clinical failures. This time, they used rats which were NOT anesthetized. Their aim in avoiding anesthesia was specifically to allow continuous monitoring of the neurological state of their animals. One dose of drug, either 1 mg/kg given during the period of ischemia or 2 mg/kg/hr for 80 minutes after ischemia, did not improve the state of their animals at all. However the two doses of drug given together DID improve recovery, although only temporarily. Brain function of experimental rats improved early in the period of recovery. However, untreated rats later caught up with treated rats and survival in both groups was the same.

These experiments show that naloxone does tend to improve mental function after ischemia. Unfortunately the effect doesn't last. The authors give two possibilities for this failure of naloxone. Either naloxone did not last long enough, or else it works on brain processes which are themselves later destroyed by the injury of ischemia. The authors point out that experiments with long-lasting drugs which act like naloxone would help distinguish these two possibilities.

These results are disappointing. However they do suggest that the earlier



experimental effects were real. They may yet provide a clue to better treatment.

The second paper, again suggestive rather than decisive, reports studies of **angiotensin**. L.A. Fernandez and others at Yale University School of Medicine looked for some way to mitigate the effects of ischemia. In kidneys the hormone angiotensin will help recovery from ischemia by increasing the blood flow through **additional** blood vessels **after** ischemia has stopped. Angiotensin does also cause an increase in blood pressure. However its effect on blood flow depends not just on blood pressure but also on this other effect, increased blood flow through alternate blood vessels. Fernandez and his coworkers decided to test this phenomenon in BRAINS, not just in kidneys (L.A. Fernandez et al, **STROKE**, 17(1), 82-85 (1986)).

They cut off blood flow through **one** of the carotid arteries of gerbils. This will cause ischemia in half of the gerbils' brains. The carotid arteries are the arteries on the side of the neck, one on each side. You can easily feel your pulse through them. They gave three different doses of angiotensin continuously to these gerbils: 50 ng/kg/min, 250 ng/kg/min, and 500 ng/kg/min. It survived brain ischemia the best.

Could this effect come solely from the increase in blood pressure? No. When the authors gave a drug (metaraminol) which increased blood pressure alone, without any other effect, the drug did not help survival at all.

By now, after much work on the problem, it's clear that we have a long way to go to recover people from total loss of blood flow to the brain. But there are many steps along the way, each one beneficial. Furthermore, the fact that work continues on this problem shows that progress keeps on.

## IT LOOKS LIKE CANCER IS WINNING THE WAR!

Recently amid a lot of notice from the press two doctors from the Harvard School of Public Health and the University of Iowa Medical Center, John C. Bilar and Elaine M. Smith, published an analysis of cancer death rates in the **NEW ENGLAND JOURNAL OF MEDICINE (NEJM, 314, 1226-1232 (1986))**. Their conclusion, baldly stated, was that we were losing the war against cancer. They argued strongly on the basis of their figures for intensified efforts to prevent cancer rather than cure it.

There is another way to look at this data. This alternative interpretation won't be new to readers of cryonics. It is simply that research on cancer has come up against a fundamental barrier which we won't overcome until we work on it directly. That is the barrier of AGING. I don't feel that I need to argue this message for most cryonicists, but a summary and citation of the article may give everyone reading this **new ammunition** for use in debates with friends and relatives. That's why we report it here.

Bailar and Smith looked at statistics on death rates from cancer and how these have changed through the whole period from 1950 to 1982. During this time, of course, vast amounts of money, research, and time have poured down the rathole of cancer research.

Their article is somber and carefully argued. They looked at **death rates**

because other measures were biased and vague. For instance, the American Cancer Society has publicized the idea of 5 year survival as a sign of progress in the "fight against cancer". Bailar and Smith point out that much of this increase in survival seems to come from better methods of diagnosis. These tell someone they have cancer years before earlier technology would have revealed the fact. This produces a stunning increase in five year survival. Even worse, many conditions are diagnosed now which would never have even become fatal cancers in the past. Bailar and Smith discuss, for instance, prostate cancer in men. This cancer is often discovered on autopsy of old men who died of something quite unrelated. We can therefore inflate our figures for five year survival by including it.

These authors come down to proposing only one reasonable measure of cancer success. That is, the **age-adjusted death rate** from cancer. To obtain this figure, they compare the number of deaths from cancer among people of a given age in 1982 with the rates for those of the same age at another time. By this measure, they find that death rates have **increased**. They look at different causes of cancer. Lung cancers have continued to increase. If we remove them from the ledger, then other cancer deaths have decreased. But why should we remove lung cancers? They point out there are lots of ways to diddle our figures by arbitrarily removing this or that kind of cancer from consideration.

They are clearly not happy with the trend of these figures and call for a national debate on what to do. They propose **preventive** medicine.

I would point out here something that many immortalists will also think of immediately. That is, our real measure is **total death rate**. If total death rate does not increase, but cancer death rates do increase, this must mean that medicine has stopped increasing lifespans and is merely shuffling around the cause of death. Alex Comfort (among other crusaders for aging research) said this long ago. If we did not deal with aging we would soon find out that preventing death from one disease would merely mean that patients would die soon afterwards of another. We can easily interpret this increase in cancer death rates as a sign that we have hit the aging barrier.

In fact, one way to see contemporary medical research is as an elaborate attempt to **avoid facing the real issue**. After all, everyone knows that the old risk many diseases. Cancer scares abound. People fear atomic radiation, minute quantities of carcinogens in their food, toxic gases exuded from their houses. Well meaning people worry about nuclear destruction of all life on Earth. Congress passes the Delaney amendment declaring that food additives must not cause cancer in any animal, regardless of the dose.

What we have here is mass displacement of fear. The Congressmen and the researchers are really afraid of something else. They won't admit this fear to themselves or others. Somehow crusades against nuclear power do not cure the fear. Spending more money against cancer does not make the fear go away. They increase their efforts but their fear only gets worse. It comes on them like the thief in the night, to steal away their rest.

**DECEMBER 1986 - JANUARY 1987 MEETING CALENDAR**

ALCOR meetings are usually held on the first Sunday of the month. Guests are welcome. Unless otherwise noted, meetings start at 1:00 PM. For meeting directions, or if you get lost, call ALCOR at (714) 738-5569 and page the technician on call.

# ALCOR

**ALCOR LIFE EXTENSION FOUNDATION**

4030 NORTH PALM #304  
FULLERTON, CALIFORNIA 92635  
(714) 738-5569

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The DECEMBER meeting (**ANNUAL TURKEY ROAST**) will be at the home of:

(SUN, 7 DEC 1986)

Saul Kent  
16280 Whispering Spur  
Riverside, CA

**TURKEY  
ROAST  
TIME!**



**DIRECTIONS:** Take the Riverside Freeway (Hwy 91) east to Riverside and get off going south (right) on Van Buren Blvd. Whispering Spur is south of the freeway four miles, and 1.0 miles beyond Mockingbird Canyon Rd., on the left. 16280 is the second house on the right, at the end of the white fence.

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The JANUARY meeting will be at the home of:

(SUN, 4 JAN 1987)

Allen J. Lopp  
13354 Veracruz St.  
Cerritos, CA

**DIRECTIONS:** Take the Artesia Freeway (State 91) to Cerritos (Between the San Gabriel Freeway (I-605) and the Santa Ana Freeway (I-5)), and get off at Carmenita Road going north. Veracruz is the third street on the left after 183rd St. 13354 is on the southwest corner of Carmenita and Veracruz. You may park on Veracruz or in the lot of the Thrifty Drugstore on the opposite side of Carmenita.

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