

Cryonics

November, 1987

Volume 8(11)



**Alcor Research: Exploring The Limits
Of Bloodless Canine Cold Storage**

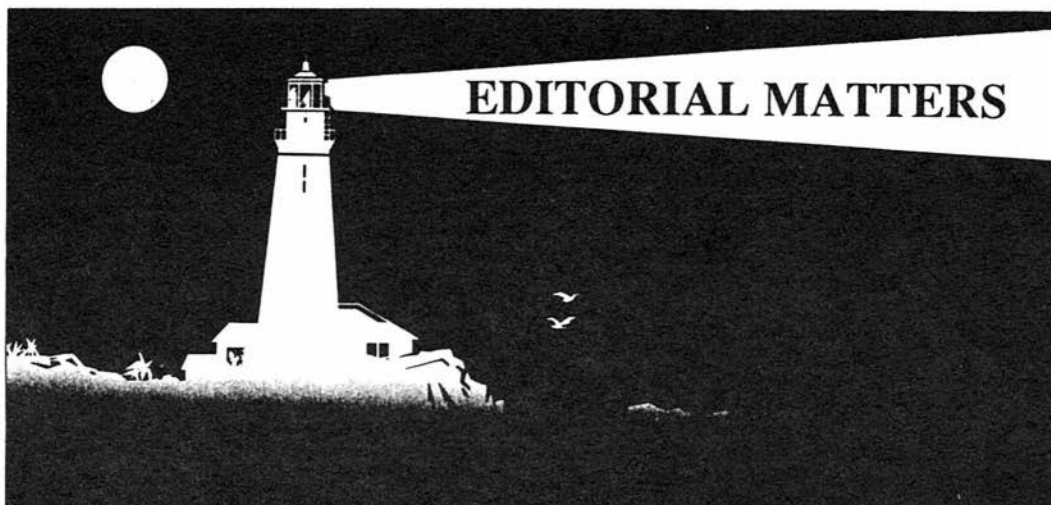
Volume 8(11) November, 1987 Issue #88

Editorial Matters.....	page 1
Turkey Roast: Act Now!.....	page 2
Editorial: Soft Options.....	page 3
We Have our Faults.....	page 9
Personal Emergency Response System Now Available.....	page 15
Florida On The Way Back Up.....	page 16
Tempest In The Teapot.....	page 16
Cryonics Society Of Canada?.....	page 20
A Gift Of Sight.....	page 23
Letters To The Editors.....	page 24
Comments On The Issue Of Identity.....	page 29
TV Review: Cryonics Meets Miami Vice.....	page 31
No Way: The Nature Of The Impossible. Book Review.....	page 33
TEW-16: Evaluating An Ametabolic Flush System For Patient Transport. A Preliminary Report.....	page 35
Thomas Donaldson, Ph.D., On Nerve Repair.....	page 48
ALCOR Meeting Calendar.....	page 53

ON THE COVER: Alcor researchers carry out an attempt to achieve reversible, 8 hour, blood-substituted cold storage in the dog. **BACKGROUND:** Dr. Michael Perry (left) takes notes as Carlos Mondragon (middle) relays data. Mike Darwin (rt) adjusts ventilation connections. **FOREGROUND:** Team Leader Jerry Leaf (left) and Bill Jameson (right) collect blood for later reinfusion as blood washout begins.

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A little before 8:00 AM on the morning of October 1, 1987 the staff in the Alcor facility in Riverside, California were awakened by Mother Nature's alarm clock -- a Richter Scale 6.2 earthquake centered in Whittier, Ca. The Alcor facility, located 45 miles from the epicenter, suffered no damage and experienced only a mild shaking.

A few days later two additional earthquakes in the 3.5 magnitude range struck considerably closer to home as the San Jacinto fault, a scant 20 miles away, groaned slightly.

Oddly enough, despite the fact that the earthquakes caused no "damage" they nevertheless cost Alcor thousands of dollars and brought work on a variety of important projects to a virtual halt. Getting out the magazine was one of them.

We apologize for the delays in regular publication we've been experiencing. But the workload here has been enormous, as you will see from several of the articles which appear in this issue. Heavy workload is liable to continue for the next few months, and we make no promises except that you will get 12 full issues of CRYONICS and that we will publish at least one issue each month. Please bear with us.

Reducing Your Risk Of Autopsy. (Cont'd)

The second part in the series of articles on "Reducing Your Risk of Autopsy" will hopefully appear in the next issue CRYONICS.

Gift Subscriptions

Once again we are offering gift subscriptions, at \$10.00 each, or 1/2 the regular subscription price. The recipient cannot previously have been on our

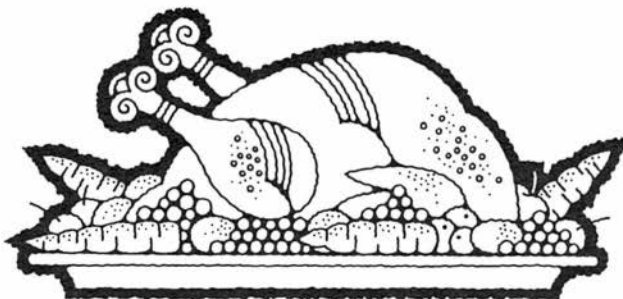
mailing list as a subscriber to CRYONICS or as a member of Alcor. This offer applies only to addresses in the U.S., due to the much higher price of non-domestic mailings. We are actually taking a loss on the gift subscriptions at this rate, but we consider that finding new cryonicists is well worth it. If you have a friend or acquaintance who has expressed interest in cryonics, a gift subscription is definitely in order.

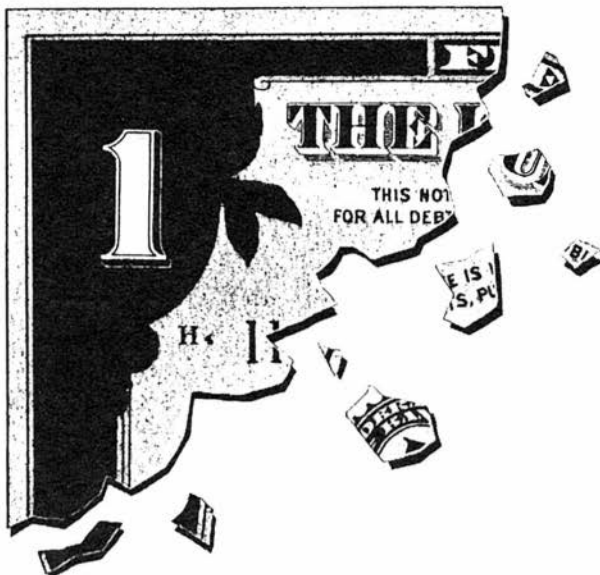


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TURKEY ROAST: ACT NOW!

The Annual Alcor Turkey Roast will be held at Marcelon Johnson's home in Huntington Beach on December 6, and you're all invited. The meal will be potluck, so please call Mike or Hugh at Alcor, (714) 736-1703, if you are coming and/or bringing a dish. Instructions to Marce's place are in the Alcor Meeting Schedule on the last page of this issue. See you there!





Soft Options

by Mike Darwin

A question I'm often asked when speaking about cryonics to an "educated audience" is, "What direction do you think human evolution should go in." That's a really complex question, and the audience of course is expecting answers like: "I think we'll be smarter, have needle-threading organs installed, be able to see in the infrared...." They are often surprized when I reply with something to the effect that I think one major change will be in terms of giving

people better long-term judgment. A better ability to extrapolate well and see the consequences of their actions and then **act on them**. In other words, to appreciate emotionally what they may already understand intellectually.

Few people have trouble understanding that they cannot pick up a red-hot skillet with their bare hands: they will get burned. It will hurt. They may be unable to work... Such understanding is simple, basic, and easy to grasp. Unfortunately, the further someone gets in time from getting burned as a consequence of their actions the more likely they are to pick up the skillet.

From an evolutionary perspective this kind of attitude makes sense. Most bad consequences happen pretty quick in the day-to-day business of living. Most decisions need to be accordingly quick and dirty. Unfortunately, things are changing...have been changing for some 10,000 years now. Human beings are engaging in far more complicated activities than they have in the past and they are dealing with far more powerful technologies than they have had to deal with in the past. Decisions we make now, today, can forever alter the course of civilization, or even of life itself on this planet. The problem is that while the time scale of our ability to act and influence events powerfully is rapidly expanding, our ability to appreciate the consequences of deferred feedback do not appear to be expanding nearly so fast. An awful lot of us will pick up a red-hot skillet providing we don't have to be concerned about being burned until 20 years later.

In a way that we need as an "evolutionary advancement" is an increase in intelligence. But it is not the kind of intelligence measured by IQ tests. It's something more. It's something more akin to good **judgment** and thoughtfulness rather than idiot savant ability to perform feats of calculation, information storage and retrieval, or puzzle-solving unrelated to the issue of not getting burned -- or staying alive.

This issue is on my mind because of a number of events going on both

inside and outside of cryonics: the recent decision by the Reagan Administration to withdraw medium range nuclear weapons from Europe, gun control, the crash of the stock market, and the founding of a cryonics society in Canada. On the surface, these events probably seem unrelated. But in reality they are all closely tied into one another by two common and disturbing things they share -- bad judgment followed by soft options.

Very few people I talk to these days seem to have any good, deep feeling for how the Soviet Union differs from the United States. These differences are fundamental. They shape the way individuals in each nation think and act. Such differences are often best understood and appreciated by being examined on a small scale rather a large one.

A common problem with many Soviets who come to the U.S. to live is that they find the very things we prize about our life here the most impossible to live with. Many expatriated Soviets quickly come to resent bitterly having to make choices: which brand of toothpaste to use, which car to buy. They hate making choices because they can make bad ones and then they have to take responsibility for them. That is something many of them have lost the ability to do. Most Americans would consider that a pathetic atrophy of a person's ability to cope with his or her environment intelligently and in a healthy way. To be afraid of choices, to be afraid of responsibility! What kind of life is that anyway?

Many people (maybe even most), including some I respect a great deal, like Alcor stalwart Steve Bridge, believe very strongly that we should ban or severely restrict ownership of firearms. Why? Because lots of people are abusing them and because they are often not effective at doing what they are so often purchased to be used for: home defense.

The motives of such people are always the very best. But the bottom line is that they want to attack the problem of an abuse from the wrong end: by reducing choices and curtailing freedom rather than generating growth and responsible behavior. They want to take away responsibility by taking away access.

Guns are a good case in point. Most people who own guns don't know how to use them. They have in many instances never even fired a gun. Most instances of abuse of firearms are terrible examples of total irresponsibility: leaving them lying about for small children to chance upon, using them on each other in fits of temper, or killing themselves or others in horseplay or while cleaning them. This is stupidity and lack of education.

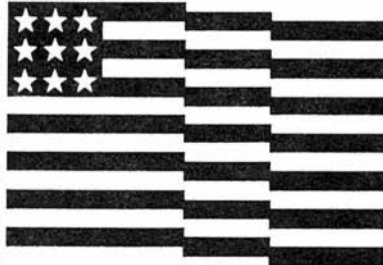


In the early days of this country,

misuse of firearms was hardly the problem it is now. There were systematic (albeit informal) programs of education in how to responsibly handle weapons. They were tools, essential tools. Since they were commonplace tools, there were extensive social mechanisms for conveying information about the consequences of their misuse. In some societies, such as is the case with the Swiss, firearms are still broadly owned and there is an active effort at every level of the society to insure their responsible use. The result is that misuse of firearms in Switzerland is an almost nonexistent problem, in spite of the fact that there is an automatic rifle and 60 rounds of ammunition in virtually every Swiss home. There are also other consequences to this: In spite of being in the middle of Europe, arguably the most warlike collection of nations in the world, the Swiss have not been successfully invaded since the 13th century. Indeed, the Swiss national practice of having personal weapons close at hand has been an active deterrent to potential invaders even **considering** an invasion. Further, the Swiss have retained democratic forms from that day to this.

As a counterexample to the Swiss, Japanese history is instructive. In the period of the establishment of the Tokugawa shogunate in the mid-16th century, Japanese firearms and military efficiency were probably the equal of those of any contemporary European nation. (The recent Japanese movie **Ran** is instructive in this respect) Following the establishment of the Shogunate, firearms were slowly and deliberately removed from the culture. By no particular coincidence, this period marks the establishment of a police state in Japan that must be considered the equal of any Fascist or Communist nation in this century. The Japanese secret police organization formed by the Shoguns endured until 1945. Its name was Tempei Kai, which translates, "Thought Police".

The problem with guns is that their advantages are not immediately obvious. The consequences of being disarmed in a well-ordered society are negligible in the short run. But in the long run they are not. A firearm, properly and responsibly owned, is a powerful tool. Even in this age of high technology it limits the power of the state. If it is responsibly owned, it means that there is a citizen out there who is in sufficient emotional control of himself to handle a weapon responsibly--an incredible asset.



But that is not what the gun control people really want. Their goal is not to educate or to change society so that firearm ownership implies proper training and responsibility. No, they want to take away the **choice**. They want to protect people not by making them strong and improving their education, judgment and control, but by reducing their options and giving in to the very root of the problem: lack of responsible living. Why? Because it is an easier course of action to take. It's a **soft option**.

Guns also raise another issue. The issue of the **reality** of occasionally having to settle your differences with someone by killing them. We live in an age where that has simply become an unmentionable thing to think about, let alone talk about. We live in an age of negotiation and compromise at all costs. Why? Because those are soft options. No one gets killed, there are no tough questions. Everyone gives a little...

But there are some things there is no compromising on: Freedom. Personal or professional integrity. Scientific truth. Ethics. Every compromise in these areas is like picking up the skillet with a deferred pain option. It seems so easy at the time. But the handle is hot and will burn -- later if not sooner.

You cannot spend more money than you make without suffering the consequences. You cannot produce shoddy goods and charge exorbitant prices for your labor in the bargain and have a favorable balance of trade. You cannot solve your lack of economic viability and competitiveness by artificially playing with your currency and devaluing your dollar. Not in the long run. And yet, such strategies have been amazingly successful in the short run. It has been a long time since Roosevelt died in 1945. A whole generation of people have grown up believing that you can spend more than you earn -- and get away with it forever. The short-term consumer debt in this country, now at over 1 trillion dollars, is proof of that. The recent crash of the stock markets and the economic consequences that follow will be proof that sooner or later you must pay, that the laws of thermodynamics cannot be flaunted without consequence.

No doubt the government's response to the message from Wall Street will be a soft option: to print more money. It is unlikely that cleaning up the deficit, improving the basic quality and productivity of American industry and stopping the meddlesome and stifling interference by government in business will be options anyone in a responsible position will choose.

The situation in Europe with intermediate range nuclear weapons is much the same. People in the Western world don't like nuclear weapons. They don't for a minute understand that nuclear weapons are freeing them from dreary tours of duty in places whose names most of them can't even pronounce. I don't like nation-states. I am not wildly enthusiastic about political government. But neither am I stupid. Given a choice between the Soviet system and the American



one I have no trouble choosing. And I'm smart enough to know that a bunch of real nasties pointed at the Soviets which keep us out of having to match their conventional forces which are poised to steam-roller Europe is a deal! That's what technology should be used for.

In short, I'm smart enough to realize that there is a difference between the Soviet Union and the United States. Smart enough to realize that the intentions of the Soviets toward us aren't the best. Smart enough to realize

Fed Injects Funds Into Bank System

By TOM REDBURN
and ROBERT A. ROSENBLATT,
Times Staff Writers

WASHINGTON—The Federal Reserve, seeking to prevent Monday's stock market crash from causing a wave of bank failures similar to "at followed the 1929 col" "ed Tuesday to take v" "to
pre"

that the differences are significant enough that if the situation arises they would be worth fighting over and even worth the **risk** of dying over.

The only problem is, I find myself in a minority. People want to believe platitudes: "Everything is going to be all right. We'll work it out. The average Soviet citizen is just like you and me." Nobody wants to think about the unthinkable. But then someone else might be willing not only to think about the unthinkable but to **do it** as well as figure out a way to live through it. Then there's trouble. Big trouble.

Nuclear weapons can do ugly things. They remind us that all is not well with the world. Mostly they remind us powerfully that reality is not what we want it to be. We might have big, ugly differences with people who mean us harm and who want to take control of our lives and property. We might have to kill people. Innocent people might get hurt. That's unthinkable to people who've forgotten what it's like to grow their own food or hunt their own game or handle a firearm responsibly. Unthinkable because they've forgotten how to think.

I wish with all my heart and soul that I didn't face an inevitable death sentence. I wish people weren't starving to death or dying of old age or AIDS. I wish everyone were rational.... But wishing won't solve the problems. And neither will denying they exist. If most Americans and Europeans think they can get rid of the problem of the Soviet Union by getting rid of the defense against it, they are sadly mistaken. Sooner or later there will be a price to pay for that bad judgment. The trouble is that the price will be deferred. No single decision will lead to heartache, only many small ones based on a fundamental loss of good judgment and of nerve.

And so it is with cryonics. The leadership of Alcor passionately believes in this organization. Not just because it is Alcor or simply because it is something we created. We believe because of what the organization is. Because we believe its core components and the way it is structured are critical to our survival.

Alcor is the only cryonics organization with a commitment to maintain its members in suspension regardless of what it takes. The only organization that is not going to walk away no matter how rough the going gets. We are the only organization which has offered the high level of physical and financial safety and protection for our patients (vault protection, earthquake preparations, the 10% rule...).

The careful, responsible promotion of cryonics with attention to detail and lack of hype are key factors in our commitment to this organization. We know what we've got and we don't want to lose it. I for one am willing to fight to keep it.

In the past we have been too generous, perhaps even out of focus about what we have, what we are, and what that means. No more.

In the past Alcor has been content to offer tremen-



dous support in the creation and development of cryonics groups elsewhere. We have offered such support with few or no strings or restrictions -- with no formal expectations of responsible behavior. We now believe this was a mistake. The administrative, financial and management aspects of cryonics are as much a critical element to its success as are the technical ones. The good judgement, integrity, and intellectual quality of the leadership of an organization are as critical to its success as are the intentions of that leadership.

That has been a slow, hard lesson for us to learn. But I believe we have learned it. As my Mother was fond of saying to me during my childhood: "The road to hell is paved with good intentions." (I only wish I'd learned it sooner.)

It is Alcor's objective to spread and grow -- to transmit the approach to survival we think is best. We think that growth of Alcor, both in this country and in the world at large is a good thing for a number of reasons. Perhaps the most important is redundancy. The future of cryonics in this country or any other country is a highly uncertain thing. The most secure option for us and for others who think as we do is to create many groups with the capabilities that Alcor has and to unite them by a common administration and worldview. And to further unite them by a common thread of support and gratitude.

Almost from the first there have been discussions of relocation strategies for Alcor patients and members in the event of war, serious political, economic or other disaster. This planning needs to be formalized to provide support not only within the U.S. but around the world. Alcor is committed to doing this.

Providing the level of support to the newly announced Cryonics Society of Canada that we have traditionally provided other new cryonics groups in the past (i.e., the Cryonics Society of Australia and Mizar, Ltd.) was very tempting. Dispatching \$10,000 worth of rescue equipment and providing the kind of in-depth training we have traditionally offered in the past is a prospect we seriously considered in order to broaden our base of support.

But the time for that kind of irresponsible support is past. We know what we are about and we know what we want. We want growth, but we want it to be responsible growth. We want to see a nationwide and even worldwide system of mutual support that offers not just cryonics, but responsible cryonics. We want to see other groups in existence which we would be comfortable being suspended with -- whose judgement we trust.

That is not a soft option. It is in fact a very hard one. It means turning down the opportunity for fast growth in exchange for perhaps very slow, quality growth.

Nor is this an academic issue. In the past several months we have been approached by several individuals wanting to start cryonics groups under conditions which we felt would not meet commonsense standards of quality and integrity. In one instance an individual in New Zealand offered substantial amounts of money to facilitate establishing cryonics facilities there. We turned him down. The situation with Mr. Quinn's efforts in Canada is in the same vein.

Refusing to participate in spreading cryonics by "any available means" is

Most Stocks Fall; Volume at New High

By BILL SING,
Times Staff Writer

Buoyed by lower interest rates and a pledge that the Federal Reserve would help ease the crisis gripping world financial markets, the Dow Jones average of industrial stocks staged a volatile rally Tuesday on record trading volume, regaining 102.27 of the 508 points it lost Monday. It was the biggest one-day pr

not an easy position to take. But we firmly believe it is the right one. The history of Alcor is one of not taking the easy course.

Alcor was founded by Fred and Linda Chamberlain in 1972. It was founded because they walked away in utter disgust from another cryonics organization: the Cryonics Society of California.

At the time they took that action the Chamberlains stood completely alone. Not a single member of CSC went with them. Labels like extremist fanatics, megalomaniacs, power hungry opportunists and sociopathic monsters were applied to them. Their actions in founding Alcor were seen as profoundly disruptive to the cryonics community and anything but in the best long term interests of cryonics. Unity, cooperation and "getting along with each other" were the bywords then as now.

Now, 15 years later, CSC is no more. The legacy of Chatsworth is all the tragic vindication that is needed to confirm the quality of the judgment and leadership Fred and Linda exercised in walking away from Robert Nelson (CSC's president) who was, by all accounts a "really nice guy, with the best of intentions".

It wasn't easy then. It isn't easy now.

Such is life.

* * * * *

WE HAVE OUR FAULTS

by Mike Darwin

Introduction

A question we are frequently asked by people interested in cryonics is "Why are you located in a place like Southern California where they have earthquakes..." We can only answer with the same reply Willie Sutton, the infamous bank robber, used when asked why he robbed banks: "Because that's where the money is." Well, substitute "members" for "money" and you have our answer. This is where the largest concentration of people are located who are interested in cryonics. One reason for that is that Southern California offers a lot of other wonderful advantages as well: climate, leading edge technology, jobs...

Nevertheless, we are not completely happy to be here and seismic risk is at the head of the list as to why not. Now seems a good time to share with you some of our short term and long term strategy about what to do about this problem and what you can do to help us before, during and after a seismic emergency.

First of all, the long term strategy. It's very simple really: MOVE. It is well understood that there is going to be a major earthquake (8.0 or worse

-- in other words, roughly 900 times more energy released than the 6.2 which just rocked Whittier). While there is much that can be done to survive such a quake, we think in the long run it will not be cost-effective to undertake such maneuvers where patient storage is involved.

Thus it has been a stated objective of Alcor for several years to relocate patients in storage away from seismic and other "geographical risks" (such as floods, tornadoes and hurricanes) by 1997 (in other words, within 10 years). We also intend to move our administrative and financial nerve centers out of the Los Angeles basin. Some steps along this path are already being taken. It will be a slow process.

Relocation doesn't mean we'll give up on Southern California. Far from it. We intend to maintain a strong presence here in rescue, perfusion, and research. But storage and administration should ultimately be pursued elsewhere. Given the resources, that is exactly what we intend to do.



To this end, we have been working very hard to build Alcor into a national and even an international organization. And not just by announcing the formation of new groups -- but by trying to genuinely spread skills and establish working beachheads elsewhere. Such an undertaking is a slow, arduous business. We also need to broaden our base of support. By acquiring more members and more capital we can put ourselves in a position to acquire and support storage operations located in remote, secure areas, away from major population centers and environmental risks, yet still accessible.

In the meantime, we are constrained to store patients in Southern California and to use other strategies to minimize seismic risk. One of the reasons this issue of CRYONICS is late in reaching you is that we have been vigorously pursuing such strategies.

Complicated Planning

The problem of surviving a major earthquake can be broken down into a number of elements, each of which requires its own solution. The simplest level is protecting patients in suspension from the initial seismic event. This can be addressed in a number of ways starting with the obvious, which is to put them in a seismically resistant structure. We have done this. The next step is to more directly protect them by enclosing them in vaults or other protective structures to further minimize risk of injury from falling structural members or moving equipment or furnishings. We have done this also.

Beyond these basic considerations, many far more complicated ones come into play. How long will essential services be disrupted? Will staff have adequate food and water to remain on site and care for patients? Will there be enough reserve liquid nitrogen to weather out a 30 or 60 or 90 day disruption in supply? Will the storage facility (i.e., building structure) survive a really large earthquake of 8.0 magnitude, or greater?

Our analysis of these issues has led to a complex set of recommendations which need to be implemented. Since our move into this facility in February of this year we have been slowly preparing for "The Big One". The earthquake on October 1 greatly accelerated implementation of our seismic preparedness program.

It accelerated our activity on this front for several reasons: First, because it brought home emotionally how vulnerable we are (or rather, were). Second, examination of the damage in Whittier on a first-hand basis pointed up a number of relatively simple things that could be done which would greatly decrease our risk of injury and damage. Third, there is an increased risk that we will experience a 7.5 magnitude quake or worse within the next few months on the basis of the seismic activity we've been experiencing recently.

High Gear Effort

So what have we been doing to prepare? First and foremost we've been bolting and tying down equipment and fixtures to structural elements of the building (floor, walls, and ceilings). This has been an immense task and has taken a tremendous amount of time and money. Every cabinet, every table, every major tool or analytical instrument on the ground floor has been secured. Had we still been located in our old headquarters at 4030 N. Palm in Fullerton, a scant 10 miles from the epicenter of the Whittier quake, we would probably have sustained many thousands of dollars worth of damage to furniture and analytical equipment. Bolt-down in our new facility should avoid much if not all of that kind of loss.

Bolt-down has also meant an enormous expenditure of energy. For the past month several Alcor staffers have put in 10- and 12-hour days doing nothing but drilling holes in concrete and running around to hardware stores. We have become well acquainted with exotic expansion bolts and shackles which will take the 1 G or better accelerations of an 8.3 earthquake! We have acquired and installed an emergency lighting system, modified the operating room to keep its contents from being thrown around, and brought enough dry nitrogen packed food, water, and related equipment to support a staff of 10 people for 2 months! We have radio equipment for calling for help and we are in the process of establishing an emergency communications system for providing information to members in an emergency. Within a short period of time we will have a ham radio outfit in place (we currently have a 2-way military/civil defense communications center) and arrangements with other amateur operators to act in relaying urgent information to Alcor Coordinators and other key personnel outside the Southern California area.

We have also gone into high gear to increase the seismic survivability of the new Alcor facility. The current facility was built with seismic risks in mind. Nevertheless, there is much that we can do to increase the seismic resistance of the structure. To this end we are now tying the key structural

members of the roof together with seismic joiners and will be undertaking to further unite the concrete panels which compose the walls with heavy steel joiner channel and perhaps with steel cable as well.

As money becomes available we will add a 9.5 KW generator to our preparations as well as a reserve of fuel sufficient to power it at full load for a minimum of 16 days.

Already we have brought enough fuel into the facility (in the form of charcoal stored in 55 gallon steel drums) to provide for cooking and heating needs for a 30 day period, and we already have a 2.2 KW generator for operating radios and core emergency equipment.

Recently Alcor acquired a rugged trailer-mounted 150 gallon liquid nitrogen storage tank and we plan to go to a state of "ready reserve" whereby we will have several months worth of liquid nitrogen in reserve storage at any one time in a completely seismically secure tank (i.e., trailer-mounted and stored away from possible falling debris).

What You Can Do

Beyond what we are doing here, there are things that you can do to help us. First of all, please realize that until we have diversified our operations and have a larger reservoir of skilled staff we will probably be seriously handicapped in the event of a major Southern California earthquake for a period of several days to several weeks. We ask that you NOT call in to Alcor to find out how we are doing. Instead, call the Alcor Coordinator nearest to you for information on our wellbeing and on how to reach us in an emergency (i.e., if you think your own suspension is imminent and you don't live in the greater LA area). The list of Alcor Coordinators and their phone numbers is given in Table I in this article. If the Alcor Coordinators don't know how we're doing then nobody (other than us) knows. **Don't tie up phone lines trying to ask about our wellbeing. We'll let you know as soon as we can.**

Table I. Alcor Coordinators

Thomas Donaldson (Sunnyvale, CA).....	(408)	732-4234 (Home)
Fred & Linda Chamberlain (S. Lake Tahoe, CA).....	(916)	577-4746 (Home)
	(916)	542-1329 (Work)
Steve Bridge (Indianapolis, IN).....	(317)	359-7260 (Home)
Dave Pizer (Phoenix, AZ).....	(602)	944-9674 (Work)
Glen Tupler (Dania, FL).....	(305)	583-0801 (Work)

If you live in the area affected by the quake, you **should** try to call in directly (or if you can't, out to one of the listed coordinators, if possible) and let us know that you are safe and secure. Sometime in the next few months we will be distributing an emergency preparedness plan to members who live in the LA basin and will have a list of contact phone numbers for use in an emergency. We hope to eventually establish a network of several people scattered across the basin who have hand-held ham units and who can be used to check in with us.



Second, after a major earthquake if we are out of normal operation (i.e., phone lines down and so on) we recommend that you adopt an extremely low risk profile. Cancel recreational events or trips which expose you to extra risk, cancel all elective or nonemergency surgical and dental procedures, and basically proceed with caution. We will soon have an operating perfusion facility in Florida again and an effort will be made to provide some sort of service in that facility as a backup. Within the next six months we will be bringing a backup communications system on-line and you will be provided with an alternate number to the one that is on your bracelets, necktags, and wallet cards.

Earthquake Information Package Available

Alcor board member Brenda Combest has produced a detailed EMERGENCY SURVIVAL INFORMATION PACKAGE for members' personal use in surviving an earthquake. If you are an Alcor Suspension member and live in the state of California you can write to Brenda for a copy of this package (Brenda Combest; 8150 Rhea; Reseda, CA 91335. **Please include \$2.00 for postage and handling**). The package gives a list of essential emergency supplies for the home and car (ever thought about what would happen if the Big One hit and you were 30 miles from home on the freeway?) as well as detailed and colorful information on basic first aid and earthquake safety. We strongly recommend you obtain this package if you don't have it already (some have been distributed at Alcor monthly meetings).

If you do live in an area at risk for earthquake (or other natural disaster for that matter) we strongly urge you to make personal preparations to enhance your "survivability". Make sure you have food and water reserves sufficient for at least two weeks. If you live in a high risk structure or in an area prone to ground failure, MOVE (We have maps of major portions of the IA

area that have damage estimate scales). Make sure you have emergency lighting which comes on automatically when power fails (cheap and very effective units are often sold by **K-Mart**) so that you are not struggling to find a flashlight on a floor littered with plaster debris and broken glass...

It is especially important that you undertake such precautions because we will almost certainly be unable to act to suspend you if you deanimate under such circumstances. Indeed, we may not even know or be able to know (i.e., phone system down) you have deanimated!

Finally, we wish to ask for some help and offer some thanks. First the thanks: To Hugh Hixon who has worked incredible hours and suffered tremendous personal inconvenience (wielding a hammer drill for hours on end) in securing structure and furnishings in the Alcor facility. Hugh has worked for nearly a month nonstop doing some very unpleasant jobs.

Second, to Joe Allen, an Alcor Suspension Member who has recently relocated from Indiana to Las Vegas. Joe has made the wearying drive from Las Vegas several weekends thus far and has put in 12 hour days sawing, drilling, and bolting equipment down. And he did all this without even being asked!

Your Help

We would also like to ask for help in securing the facility and improving a earthquake posture. So far we have spent about \$3000 to secure furnishings and tie structural elements of the building together! We estimate that we will spend at least that much more before the job is complete. In **addition**, we need a number of other items to improve our degree of readiness:

- 1) Dayton 9.5 KW generator.....\$2,469.00
- 2) 16 day fuel reserve for above.....\$ 640.00
- 3) Emergency communications unit
(radio, antenna, power supply).....\$3,800.00
- 4) Additional structural upgrades to the Alcor
facility.....\$3,000.00 (estimated)

Please provide help for these items if you can.

* * * * *

Spare us, spare us, mercy sake
From a fat, faulty earthquake
If the ground should shiver and shake
Would our wits or patience break?

And just how much can our patients take
Before they start to chip and flake
And we all have to undertake
Being party to a massive mistake

We can all avoid a big heartache
We're well aware, we're wide awake
An emergency project we must partake
Our building much safer we'll quickly make

Our end involves both give and take
Achieving immortality is no clambake
So send your bread, live off your cake
Help us help you, mercy sake!

— David Pizer

* * * * *

PERSONAL EMERGENCY RESPONSE SYSTEM: NOW AVAILABLE TO ALCOR SUSPENSION MEMBERS

Due to the singlehanded efforts of Alcor Suspension Member Joe Cannon, a new service is available to Alcor Suspension Members which offers a level of protection against sudden "death" emergencies heretofore unavailable. The system consists of a state-of-the-art vital functions monitor and several supporting pieces of equipment: a radio pendant that allows for emergency calls for help at the push of a button and a belt-worn "man down" device which signals in the event of sudden collapse. For members who are ambulatory, the signal pendant and man down device are worn during the day and the vital functions monitor only at night, when sleeping. For bedfast or wheelchair-bound members the vital functions monitor can be worn round the clock.

The reliability and ease of use of this system have proved **very** satisfactory. The vital functions monitor evaluates the heartbeat and respiration and does so without the use of electrodes, sticky gels, or adhesives. The sensors attach across the chest simply and comfortably with a broad velcro band. Application requires no special expertise (even someone with mild to moderate motor impairment of the hands can do it) and the sensors are comfortable to wear.

In the event of respiratory or cardiac arrest, the unit signals locally in the home, immediately dials the paramedics, and calls Alcor. The unit is tied into a 24 hour nationwide answering service and Alcor now has a working track history with this company which has demonstrated them to be innovative, accommodating, and efficient.

The basic system (less vital functions monitor) sells for just under \$600 and this includes installation. Monthly monitoring fees are in the range of \$15 to \$20 per month (depending on your location). The vital functions monitor sells for about \$1200. This service is available to Alcor Suspension Members nationwide.

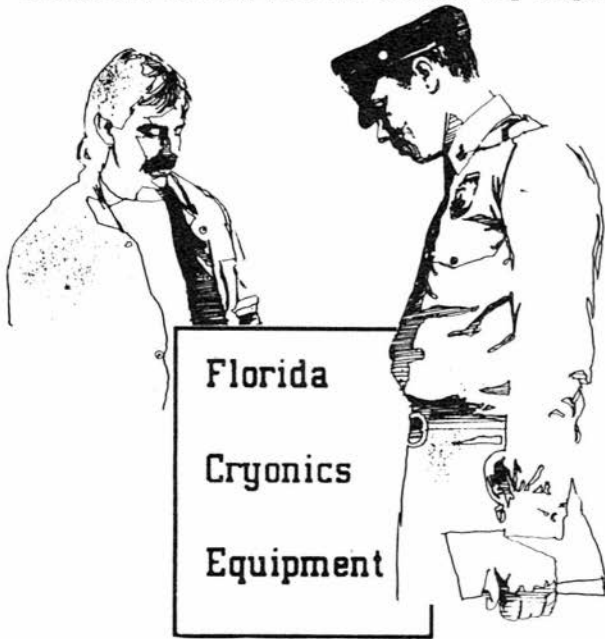
If you are at high risk of sudden deanimation (prior history of heart attack or stroke), are elderly, and live alone, please consider getting this system. If you are a Suspension Member and need financial assistance or extended payment Alcor may be able to help you.

For information on the system, contact Mike Darwin at Alcor, (714) 736-1703.

FLORIDA ON THE WAY BACK UP!

On September 17, the Federal Marshals released the equipment of Hollywood Health Services to Alcor Coordinator Glen Tupler. The equipment was transported out of the Life Extension Foundation building at 2835 Hollywood Blvd. to a rented miniwarehouse in the South Florida area. An industrial bay was rented by Florida Alcor member Austin Tupler and the equipment was relocated to the new facility. During November or December Mike Darwin will go to Florida to work with local members there in setting up and redeploying Alcor's South Florida perfusion capability.

It was due almost exclusively to the outstanding efforts of neophyte Florida lawyer and Alcor member David Tupler that the equipment was freed from the Federal Government. David's persistence and constant willingness to drop everything to help were in no small way responsible for the success of HHS's



verified claim for just return of its equipment. In fact, it was David's last minute phone calls to the District Attorney's office which resulted in Glen's being able to free most of the equipment. Due to an administrative error, the government had been provided with a grossly inadequate inventory of equipment and supplies and it appeared that only about half the equipment would be released. David's intervention resulted in complete release of all the HHS equipment.

Our thanks.

We'll keep you posted on the redeployment of perfusion facilities in South Florida as interior subdivision and set-up of the new facility proceeds.

* * * * *

TEMPEST IN THE TEAPOT

Over the past several months we've reported on efforts to establish a cryonics group in Britain, with the founding of Mizar, Ltd. Progress has been good, with four people signed up as Suspension Members of Alcor and a strong local contingent of interested, energetic, and articulate people. Prospects for long term success seem very reasonable.

But there have been problems as well, and some of them have been more than

a little nerve-wracking. In mid-July, **Mizar** formally announced its existence to the U.K. and sent out a press release. A wave of publicity followed which, if not exactly overwhelmingly favorable was at least no worse than what cryonics groups get here in the U.S.

During the first part of August, Alcor began to receive calls from a reporter from the British tabloid **Sunday Mirror**. At first these calls were very friendly and upbeat. But over the course of a number of days they began to get increasingly hostile and ominous. The questions began to focus on Alcor animal research and the tone of the reporter handling the inquiries became strident, demanding and accusatory. During a phone interview with Mike Darwin and Max O'Connor (Max having just arrived from Britain to complete his graduate work in the U.S.) it became very apparent that the **Sunday Mirror** had no intention of doing anything but a real hatchet job on both Alcor and cryonics. Little did we know!

On August 16th the front page of the **Sunday Mirror** carried the following headlines in bold black type 2-3/4" high: **CRUEL, CRAZY £6 A MONTH TO COME BACK FROM THE DEAD**. In 3/4" high type above the major headline was the statement "Pets Killed in Bizarre Test". The articles within were brutal and vicious distortions of both Alcor research and Alcor cryonics activities. At no time in the 20+ years history of cryonics in the U.S. have we seen press even approaching this in terms of viciousness and distortiveness.

Despite the fact that the reporter who authored the story had been carefully briefed on Alcor's canine TBW work, the article opens with the statement "Four healthy dogs have been killed in bizarre tests aimed at bringing humans back from the dead." No mention was made of the real research objectives of the work. Nor was there proper discussion of the nine animals who survived long term after TBW! It was sheer hack journalism at its worst.

Unfortunately, it was augmented by an error in judgment on the part of one of the **Mizar** directors. In an effort to be accommodating to reporters this director released internal photos of an Alcor research project -- photos which Alcor would never release to the press or even publish in CRYONICS. (Ironically, the dog in the photos survived, recovered fully, and now lives happily with a family here in Riverside!)

The photos do not chronicle any abuses, and indeed, in a properly educated society there should be no problem with release of such materials. But today, in the society in which we live, populated as it is with the irrational and the faint of heart who have all the advantages of a thing without having to pay for it in any way, such a course of action is not possible.

The **Sunday Mirror** story resulted in a mini-storm of reaction. The paper attempted to make news by going to members of Parliament, the Shadow Home Secretary, and the Royal Society for the Prevention of Cruelty to Animals (RSPCA). The RSPCA consulted with several "legitimate" cryobiologists such as David Pegg (long hostile to cryonics) of the Medical Research Council and came back with a statement saying: "We are not opposed to animals being used for research providing it is legitimate and of genuine value. But to use animals in this way is indefensible. Animals should not be made to suffer for such useless research." The RSPCA spokeswoman went on to add: "We shall be contacting animal protection groups in the U.S. to find out exactly what is happening at this laboratory."

EXCLUSIVE on the cranks who promise eternal life KILLED IN BIZARRE 'BACK FROM DEAD' TESTS



ABOVE: An unconscious dog has its blood drained before its flesh is frozen.

LEFT: Mizar chairman Garret Smyth (left) watches an operation in Los Angeles conducted by the firm's American backers. Mizar's president Max O'Connor says: "The experiments are essential."

BELOW: A dog is prepared for an operation.

been placed in packing cases when research funds dried up and the liquid nitrogen was turned off.

Dr David Price of Cambridge University, an expert on ultra low body temperatures, has rejected the Mizar vision. He said: "Alone, had simply frozen meat, not living cells."

But O'Connor says in a few centuries' time reversing the ageing process will be available, whole brains will be produced from cells and that will be cured from frozen -- of life.

Smyth, lives in trendy Clarendon Drive, Putney, South London.

The other director is John Ray's who studied with Price at Imperial College London.

SMYTH said yesterday as he left home for a holiday in Dublin: "It is not really our intention to make money out of this."

He added: "But we do want to have a full bank of life."



End this horror says RSPCA

THE TESTS on pets were described as "heinous and indefensible" by the RSPCA yesterday.

"If people want to find the secret to immortality they should volunteer to be experimented on themselves," said spokeswoman Diana Jones.

"I would be anti-

five MP for Edgbaston, said: "There are implications in this scheme that have to be thought about very carefully."

"We people are going to do it, but

opposed to the whole idea.

Prebendary John Gladwin, secretary to the Church's board for social responsibility, said: "From the Christian perspective, life is not to be taken away from a creature without a just cause."

Over the next few days several smaller articles in the **Sunday Mirror** followed up on the first one, to further milk the issue. All were negative. As would be expected, such lurid and inaccurate press resulted in some unpleasant problems for the UK group. There were death threats, bomb threats, and threats from employers. One group member was told he would be terminated from his job if he persisted in giving interviews to the press and bringing negative publicity to his employer.

What can be learned from all of this? First and foremost, the unauthorized and expressly prohibited release of sensitive, emotionally charged research photos must never again be allowed to happen. One valuable thing about this experience for the members of the U.K. group is that they now have a far more circumspect and realistic attitude about journalists. Journalists are very often professional sociopaths who move questioning from "kind" to "cruel" in order to gain confidence and get the person to roll over and expose his or her tender underside. Words like honesty, fairness, and integrity are beyond the comprehension of such "journalists". Hopefully everyone in the U.K. group has developed some survival instincts as a result of this fiasco.

Secondly, it has reinforced what we have come to believe are serious, basic problems with the way cryonics has been handled and promoted and marketed in the past. We here at Alcor think we have some revolutionary and potentially very effective ways to solve these problems. We are now devoting a significant amount of time and energy to implementing these solutions.

Finally, the whole affair points up the need for a highly controlled approach to handling the expansion and marketing of cryonics. We here at Alcor are basically through with the "hit or miss" approach to expanding cryonics which has been employed in the past. We are now going to focus our efforts exclusively on developing a complete package including finely tuned marketing tools and press kits which can then be customized to a given environment. We feel very confident that we have found a fundamental, across-the-board effective way to defuse many of the problems of marketing cryonics. We intend to take this approach, craft it into a tough yet flexible tool and begin building a consolidated network which will be both tough and resilient. (See the Editorial, **Soft Options**, in this issue.)

The unfortunate experience in the UK has helped to strengthen our resolve in this area. Growth is good, but only if it is growth based on solid roots, growth that will carry us over the distance and does not carry with it liabilities greater than the assets it brings. In a community of people as desperately hungry for growth as we cryonicists are, that is a hard principle to live with -- and by.

The situation in Britain has calmed considerably since the **Sunday Mirror** piece appeared. Prospects for the long term success of the British group remain uncertain, as they have from the start. But at least so far there have been no acts of Parliament or restrictive legislation -- even though the Church of England thinks cryonics is a terrible idea.

If that's the worst we get from this, then we'll be doing just fine.

CRYONICS SOCIETY OF CANADA?

We have received a press release from Douglas Quinn, "President of the Cryonics Society of Canada (CSC)." Mr. Quinn is a student who lives in Ontario, Canada and he has formed an "information" organization. That is, a "nonprofit organization established to promote cryonics in Canada, to fund cryonics and life extension research, and to assist interested individuals in making cryonic suspension arrangements." CSC reportedly has no immediate plans to offer suspension services itself.

From a functional standpoint CSC appears to be closely allied with the American Cryonics Society and Trans Time (Mr. Quinn has worked part-time for Trans Time in the recent past) and CSC announced a scientific advisory board upon its formation consisting of "Jim Yount, Rose Vasti, John Day, Jerry White, Paul Segall, Hal Sternberg, Harold Waitz, Jim Stevenson, Leland Short, Ralph Merkle, and Art Quaife"; mostly American Cryonics Society and Trans Time personnel.

Mr. Quinn has visited the Alcor facility and met with Alcor leadership. He has asked to include Alcor in his efforts to promote cryonics in Canada (along with CI and ACS/Trans Time). We include an excerpt from our response to Mr. Quinn's request. This response summarizes Alcor's basic position with respect to all other cryonics groups in existence at this time (including CSC):

"From what we have observed so far, there are at least several basic and, we believe, serious differences of opinion, philosophy, and operating procedure between Alcor and CSC. We will outline a few of these below:

"1) Alcor believes that at this time it has the best approach to furthering cryonics on all fronts: marketing, administrative, scientific, technical, and financial. If we believed otherwise, we would be members of another cryonics organization and not Alcor.

"As a consequence we choose to focus our efforts and resources on expanding our version and our vision of how cryonics should be pursued. To do otherwise would be hypocritical and unethical. If we are mistaken, then the competition will let us know about it in the marketplace. Since we engage in neither force nor fraud, competitive interaction will out.

"We feel very strongly that focusing our efforts on creating both a national and international network of organizations with operating policies and procedures the same as those of Alcor will be critical to the long term success of both Alcor and cryonics in general. In short we want to McDonalds-ize the Alcor system and spread it worldwide.

"2) We are not closely associated with or merged with other cryonics groups currently in existence because we have serious concerns about their scientific and personal integrity, business judgment, and/or general honesty. We are also separated from other groups by serious philosophical and technical differences such as the automatic conversion to neurosuspension, the 10% Rule (diversion of 10% of incoming revenue to the Patient Care Fund) and the general technical and scientific approach to research and suspension capability being pursued by other groups. These latter issues may be more "abstract" and less amenable of easy "proving"

one way or the other, but we are nevertheless fiercely committed to them.

"We do not deny that there are potential specific benefits to "formal cooperation" with other groups. Undoubtedly there are instances where exchange would be beneficial. What we do deny is that the overall result of close or even any formal cooperation would be beneficial. We feel very strongly that such benefits are to be had only in the short run, with long term association proving ruinous.

"Any close cooperation between groups such as emergency mutual aid would require as a minimum:

"a) An agreement on standards of care to be given in such an emergency, including training qualifications of personnel, basic elements of care, and level of emergency preparedness with respect to equipment and drugs. In short, a mutually agreed upon declaration of minimum technical, ethical, and financial standards (a virtual merger).

"b) An exchange of appropriate member legal documentation (including highly personal and confidential information) and member lists so that one organization could respond to another. This would require mutual trust — trust where none exists — on either side!

"3) Because of the sensitive nature of cryonics and its status as an undeveloped product, Alcor has always directly represented itself to members and potential members. Again, this is a matter of judgment. We are willing to seek and pay for marketing advice (and have in the past), but we have not and we will not surrender marketing **control**. ... At this point in time we consider representation of Alcor and of cryonics to be just that sensitive a matter. Neither CSC nor any other cryonics group can do that for Alcor.

"4) Our judgment about the scientific merit and intellectual integrity of Segall, Waitz, and some others on your "Scientific Advisory Board" differs radically from yours. You seem like a reasonably intelligent young man — at least smart enough to sort these issues out for yourself. If you aren't (particularly after the extensive discussion you've had with us here at Alcor), then that's reason enough not to deal with you or the organization you are creating. If you have arrived at a reasonable conclusion regarding these issues and have decided to proceed on the basis of expediency and



politics (as you indicated during our last phone call when you stated how useful the advisory team was from a PR standpoint) then that is even more reason not to deal with you.

"If you are satisfied with the integrity and scientific credibility of the ACS program then you should be signed up with ACS yourself and should be solidly behind them. Why aren't you? Why are you so interested in promoting Alcor to your members -- or at least the appealing, "easy" parts of Alcor? What you seem to want to do is to serve a smorgasboard, using elements from each organization, such as ACS' high press (and in our opinion hype-laden and inaccurate marketing) and our quality suspension services, to mix and match what you want.

"Alcor isn't interested in being used that way. Our program exists as it does and is the quality operation it is because of the very items you seem to want to delete from it: rigid, quality operating standards, good science, absence of bullshit PR or politics, and thoughtful, caring judgement -- not scheme of the month management and head in the sand problem solving. You will not get "consent of the victim" from Alcor. We do not intend to be used to promote or foster ideals or procedures we don't think just and good.

"Since we differ on so many core issues and our philosophies are so far apart (particularly as concerns your commitment to altruism), we do not see the possibility of a close working relationship at this time. We ask that you do the following:

"1) Engage in no official representation for Alcor or promotional public discussion of our operations or activities. Do not distribute our literature or take any action which could in any way be construed as CSC acting to market or educate the public or others about Alcor.

"2) What you do privately is beyond our control, but we would urge you to weigh carefully the consideration that it may be impossible to separate your personal self from your professional self in the discharge of your duties as CEO of CSC.

"3) Alcor has no objection to our name, address, and phone number being provided upon request. We do this for other cryonics organizations (i.e., provide contact information for ACS and CI) when a member or prospective member requests it. However, there is a vast difference between providing a number and address upon request and acting as an active clearinghouse source of information about that organization. That is the line we do not wish you to cross.

"Alcor is committed to a thoughtful, responsible approach to delivery and expansion of cryonics services. Too much is at stake for careless or stupid errors to be tolerated. Alcor's attitude toward cryonics is the same as yours probably is towards open heart surgery: We want to see it pursued responsibly, in a top quality manner. While there is no board of medical quality assurance to mandate this for cryonics, that does not mean that we cannot or should not have our own standards and behave responsibly. Indeed, it means that we have to take those standards seriously and work even harder to see that they spread and become the norm.

"You seem to have little concern for such matters. Your action in forming CSC in the way that you have in our judgment shows virtually no care or concern about critical issues such as integrity and ethics, let alone the many procedural and technical issues which are the backbone of any successful organization.

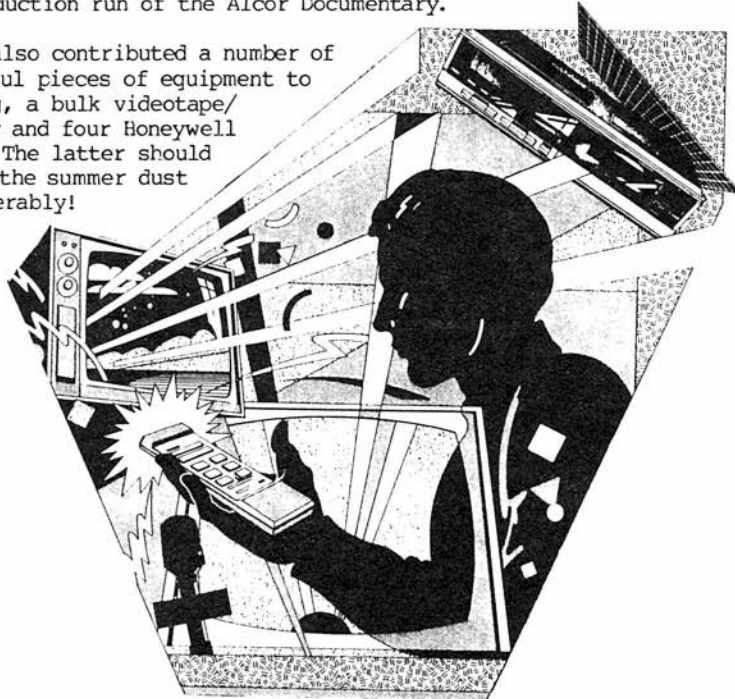
"We will carry an announcement of CSC's formation in CRYONICS, although it will not be the article you have submitted."

* * * * *

A GIFT OF SIGHT

As we have previously, noted, Alcor is now in the videotape business, in a limited fashion. This has been due to the generous contribution by Alcor Suspension Member Bill Seidel of a 3/4" U-Matic videotape recorder and professional 24" monitor. Combined with a video processor and two portable VHS video recorders belonging to Hugh Bixon, we now have the ability to make good-quality VHS videotapes from 3/4" masters, and to reproduce VHS tapes at a somewhat lower quality. Bill, along with his partner Candy Nash, have made an even more generous gift of their time and expertise to create the videotape about Alcor and its members and a silent "eye-catcher" videotape based on the June, 1987 suspension, which we used at our CactusCon booth. The Alcor videotape, **Alcor Life Extension Foundation, A Documentary**, has already influenced several people to proceed with suspension arrangements with Alcor. We would also like to thank Fred and Linda Chamberlain for donating the money for a mass production run of the Alcor Documentary.

Bill has also contributed a number of other very useful pieces of equipment to Alcor including, a bulk videotape/diskette eraser and four Honeywell air cleaners. The latter should help to reduce the summer dust problem considerably!



LETTERS TO THE EDITORS

To readers of CRYONICS,



I would like to add to Mike Darwin's and Keith Henson's commentaries on Alcor's participation at the science fiction convention in Phoenix. (October, 1987 issue of Cryonics.) First I want to offer a deeply-felt thank-you to each Alcor member who volunteered time and money to help at the convention: Bill Seidel, Candy Nash, David Pizer, Michael Perry, Brenda Combest, Hugh Hixon, Angalee Shepherd, Fred Chamberlain, Linda Chamberlain, and David Brandt-Erichsen, along with Mike and Keith, of course. (David Pizer and Michael Perry primarily worked at their Venturism exhibit, and David Brandt-Erichsen spent most of his day working for the National Space Society (formerly L-5 Society), but each also contributed to Alcor in many ways.)

It would be hard to say enough good things about the enthusiasm and teamwork of the Alcor people. It was great to have so many members there, enough that people could take breaks and look around the convention a bit, and enough that we could speak comfortably with many different kinds of people. It was exciting seeing how much more awareness of cryonics the public has gained in the past several years. We are a long way from massive acceptance, to be sure, but we found hundreds of people who were very much interested in what we had to say.

Other Alcor members may be interested in doing something like this at a science fiction convention or health fair or other gathering. But before you jump in over your head, let me give you some cautions and tips about selling the idea of cryonics in a convention setting.

1. Please DON'T do this on your own. Don't act like an official representative of Alcor unless you are, in fact, working on the conference in close cooperation with the people in Riverside. They must know and approve what you are doing. And don't even consider being a public Alcor representative on your own unless your knowledge of cryonics is extensive. I recommend at a minimum that you have helped with a previous public Alcor function or that you have sat in on a number of talk/work sessions with Mike and other Alcor leaders. People will ask you a great number of difficult questions which only knowledge will answer. Incorrect information or bad bluffs don't do well in a public situation.

If you think you have the energy to do the immense work required to set up a convention exhibit, and if you have a specific situation where such an exhibit might be fruitful, let Alcor know the details. It is possible that one or more experienced Alcor members might be available to attend the conference and provide the knowledge you lack. Do not expect Alcor to pay for the

conference fees or hotel rooms (significant amounts of public relations funds are still far in the future), and do not expect Mike, Hugh, or other Riverside personnel to do any actual planning for the conference. They simply do not have time.

2. For many reasons (and we don't understand them all yet), cryonics is an idea which is difficult to sell. For one thing, it requires a good grasp of biology and physiology; but remember, people in their fifties and older did not learn about DNA and normal cell operation in grade school. DNA wasn't discovered until the 1940's and the genetic revolution has gone completely over the heads of many of them. Many younger people do not understand these concepts well, either. You may find yourself conducting a basic biology class before you can begin to talk seriously about cryonics. Cryonics also challenges beliefs and traditions about personality, religion, and the nature of life, and it requires that a person think about death in a personal way. Most people have made their decisions in these areas and hate to reopen the process. Finally, cryonics has generally received very poor explanations in the press. Many people still see this as a lunatic fringe, instead of the high technology medical and scientific procedure it is.

So don't be put off or insulted when people walk away rapidly as if the Moonies or TV preachers were after them. To many people we are just another one of those groups. Keep your personal ego separate from cryonics. Don't let it be shattered or rubbed raw by people who don't want to listen or who are afraid to listen or who insult you as a defensive mechanism. Most of these people are not interested in attacking you (although you will find a few who will); they just want to get away from you. Let these people go. Don't chase after them in an effort to keep your ego intact. Just say, "Thanks for your time," and go on to the next person. A basic rule of selling anything is to look for the Yes's and forget the No's. Look at every No as getting you that much closer to the next Yes. Sure, this is hard to do, and it requires that you learn a little emotional detachment; but this is necessary for success and for your mental stability.



3. Don't be insulting to people who disagree with you or who say they are not interested. It might be funny or relieve tension at the time; but insults do not pay off in the long run. This was one of the worst mistakes of many 1960's radicals. A punch in the nose, verbal or physical, will never convince someone of your point of view. It will merely convince them that you are a dangerous person who is out to get them. Again, if they don't want to listen, just go on to the next one. It is no big deal if someone goes off and says, "Those crazy cryonicists are here." People will at least know you are there, and some folks like to talk to "crazy" people. It is much worse if people say, "Stay away from that cryonics group. Those Alcor people are nasty and impolite." No one wants to talk to an unpleasant crazy person.

4. While Alcor is a not-for-profit organization and we are all pretty much still amateurs at this, we are trying hard to project a professional attitude. A professional attitude in cryonics is like a professional attitude in law, medicine, chemistry, librarianship, or any other educated field. A professional knows the subject, listens carefully to people's questions, and treats people and their opinions with respect while providing those people with accurate information which may guide them in their decisions and, possibly, help to change their views. Treat people the way you would like professionals to treat you — the Golden Rule works in any area of life.

It is especially important to learn to listen. Make conversation, not speeches. Answer the question that is being asked; but be alert for the questions that are implied but not asked. If you don't have an answer for a serious question, tell the person you will try to find out. If there is no one else around to help you, get the person's name and address so you can write with an answer.

5. I cannot tell you how to answer every question here, of course. However, the most important thing to remember for almost any question about Alcor is that **WE ARE ALCOR**. Alcor is a **membership organization, not a company selling services**. The members of the Board of Directors, the suspension team, the paperwork supervisors -- all are fully signed up suspension members themselves. It is important for us to have an honest, competent organization because we will need to count on other members when our turn comes. This understanding affects every decision we make and is basic to the attitude necessary to adequately inform others about Alcor's brand of cryonics.

6. Finally, remember that our object is to get people to join us. We want to be seen as scientific, thoughtful, competent, and friendly. People would rather die than join an organization which they perceive as being filled with assholes. The paperwork, financial burden, confrontations with friends and family, and lifestyle changes are going to be hard enough for new members. We will be a lot more successful if we can show that we are friendly, caring people.

Steve Bridge
Midwest Coordinator for
Alcor

To the editors of CRYONICS:

Thomas Donaldson's nervous fidgeting in regards to the California Humane and Dignified Death Initiative ("Problems with CHADDI?", September) appears to be mostly a self-indulgence in paranoia. Donaldson frets to no end on subtle issues about the power of the medical profession and the attitude the public develops toward death and "giving up", but he never deals with two central questions: 1) Should a person have the political right to control the conditions of his or her own death?; and, 2) Given the fact that cryonicists do not expect to "die" in the real sense, many of us still must prepare for a slow biological decline that the public would call the "dying process". What is the best way for cryonicists to deal with this final decline of health in our first life segment?

I hope the answer to the first question is abundantly clear to most Alcor members, a group who each tend to view their own mind as the sovereign consciousness steering their destiny, and their life as no one's but their own, to use as they see fit. While we may plan never to exercise such a right, I expect most of us would say a person has a moral right and should have a political right to commit suicide for any reason. (Whether suicide is ever a wise choice is an entirely different matter, and I'd anticipate more controversy there.) If I cannot totally control my life, then it must not be entirely mine; and if it is not entirely mine, then I must be living it for someone's purpose other than my own. Who could that be? Family? Society? Government? God?

The second question is more personal, and different people will choose different options. Personally I agree with the more conventional supporters of CHADDI that a long, painful decline is pointless. Additionally, as a cryonicist I can see that the long decline might allow pre-death deterioration of essential parts of my personality (i.e., my brain). Even more, such a decline can drain me financially, possibly putting the funding for my suspension in jeopardy. All this risk for the purpose of forcing me to experience a process I might rather not go through anyway. Even those of you who intend to hang on to your very last breath (or to never have a last breath), don't you at least want the **option** to select to be suspended at a particular point in time?

Donaldson cites the nurse who objected to cryonics as an "unnatural prolongation of the dying process." I hope someone pointed out that suspension is more than a prolongation, it is an **interruption** of the dying process, and hopefully a **reversal** of the process; and furthermore, since suspended patients are unconscious the point is moot anyway. But the nurse's position is an example of the fuzzy thinking and slimy semantics we are doomed to be forced to deal with as cryonicists, with or without CHADDI. Such is the nature of controversy, and it is ridiculous to suggest we should select or reject laws based on such considerations.

Donaldson also shows great concern over the power of the medical profession and their "fixed menu of set meals". If you haven't noticed, Alcor has a small mountain of legal forms filled out for each and every suspension member, the sole purpose of which is to ensure that **come Hell or high water we're ordering a la carte!** That is the purpose of my medical surrogate and a host of lesser legal designees, to ensure that my treatment in the medical

profession follows a course consistent with my desire to be suspended, even if I personally am too incapacitated to ensure that on my own.

If I grasp Donaldson's misgivings correctly, he anticipates that ancillary regulations or conventions of medical practice will be added below the actual wording of the initiative that make the CHADDI mechanism disadvantageous to cryonics. But if this happens, CHADDI simply becomes irrelevant to us, and we are no worse off than we are today. I expect that such implementation of CHADDI is rather unlikely. Donaldson outlines no specific scenario in which CHADDI results in real damage to our current legal status -- which is essentially nonexistent by any honest appraisal.

This view by Donaldson also is possibly shortsighted. I hope that before my D-day (deanimation day) arrives, I will see a medical institution in which cryonicists write the menu and even run the cafeteria. I also hope to see legislation at state and federal levels codifying our right to select cryonic suspension and requiring medical cooperation. (Donaldson is absolutely wrong when he says "we have an interest in seeing that [the laws] remain confused" -- as long as we rely on laws that are confused, we are merely lucking out.) Laws like this may seem unrealistic today, but they are just like every other goal in life: Before it becomes reality you must work for it, and before you will work for it you must believe it is a possibility.

Despite my continued support of CHADDI, there is one stance about it I have changed. Originally I viewed CHADDI as an initiative we should support as "closet cryonicists", meaning that we should blend in with the conventional CHADDI supporters, get it passed, and then quietly use CHADDI for our own purposes. This approach was based on the conclusion that to express publicly why cryonicists would profit from this initiative would further confuse and discredit a public debate which is bound to be confused and taboo enough.

If I did not currently know several people with potentially terminal diseases, I would probably have retained that attitude. But I do know such individuals, and I am not willing to tell them or others like them that it is okay with me if they just give up. (Again, I believe they should have the legal right to give up, but I do not see giving up as a wise thing to do.) Thus I find myself in the difficult position of supporting the letter of this law, and its spirit from a legal standpoint, but not its popular spirit from a philosophical standpoint. I do believe in fighting for life, and my cryonics arrangements and my desire to be able to select suspension when it is appropriate are a part of this fight.

Despite this, I do not feel compromised in my support of CHADDI. My personal dichotomy lies in a person's selection or rejection of cryonics; and this is an initiative concerning euthanasia, not cryonics. A person should have the right to either choose cryonic suspension or reject it. For those who select cryonic suspension, I support CHADDI for the reasons given in my third paragraph above. For those who do not select suspension, I believe they have a right to choose a relatively peaceful and painless end.

Allen J. Lopp
Cerritos, California

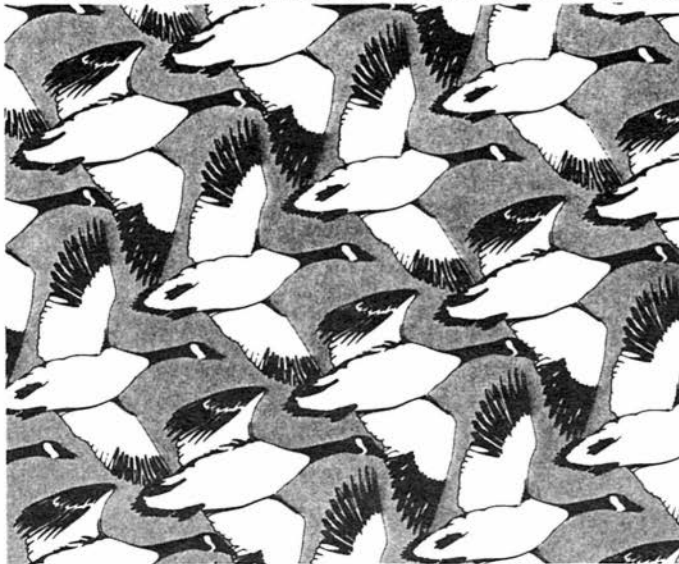
Comments On The Issue Of Identity

by Mike Perry

This is mainly a reply to Dave Pizer's letter in the October CRYONICS, where certain questions were raised about my theory of personal identity (CRYONICS, Sept, '87). The letter also considered Max O'Connor's duplication hypothesis (CRYONICS, July, '87). I make mention of the possibility of duplications of a personality, and though I agree in the main with Max's views, our thinking is not necessarily identical.

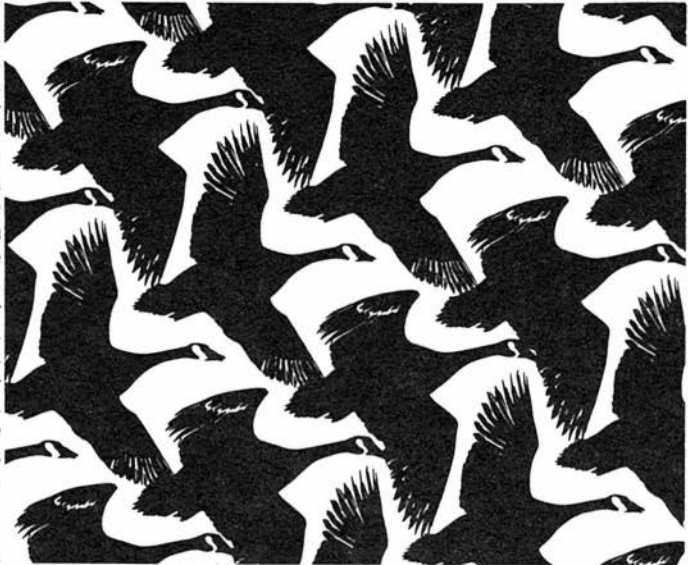
In fact I would be uneasy about the prospect that I would be killed while a "duplicate" would live on, unless that duplicate was created very recently. (From the time that duplicates are created and become conscious, they cease to be duplicates.) If it was only one millisecond ago that the duplication occurred -- no problem. "I" wouldn't have time to decide which one of us I was anyway! If it was 20 years ago, though, I would consider myself a separate identity, and would not be willing to be sacrificed. What about the intermediate situation? Say a duplicate was created two weeks ago, as Max assumes. Again, I would be very uneasy and probably not willing to be sacrificed, because I would have had time to realize my separate existence, and it would be clear to me, presumably, which of the two of us "I" was. In other words, the perceptions of the past two weeks would have become part of my identity, although I agree with Max that doing away with me and substituting the duplicate would not be fundamentally different from simply rewriting my memories of the last two weeks to agree with the duplicate's, and doing away with **him**. (Similarly, my memories could be rewritten in the absence of a duplicate but then they presumably wouldn't jibe with history.)

In spite of uneasiness over the prospect of my destruction, I would prefer



to have a dormant duplicate, even one from 20 years back, who could be activated in the event I was lost, rather than totally perish. I think I would prefer a duplicate who had been dormant from the time the duplication occurred, over one who had been conscious and living a separate life. A better solution still, though, would be just to store duplicates of my memories and personality information. The brain, after all, is largely a storage bin for just this sort of information, so I could

regard the place of storage of this extra data as, essentially, a part of my brain. It wouldn't bother me today to think I could lose part of my brain as long as the information in that part could be recovered easily from some other part, and the damage easily repaired. So, in the future, perhaps my whole biological brain could be lost but the loss made good easily and quickly from a backup file, with the help of nanotech. That would be of no great concern.



I don't feel that you can have two separate people, A and B, with B a "duplicate" of A, such that killing A "turns B into A". The confusion, I think, results from thinking of A as the "original" and B as the "duplicate". Certainly there are situations where this identification would seem natural, depending on how A and B came into existence. But according to the information paradigm there is no absolute distinction between "original" and "copy", and both must be considered on a more-or-less equal footing. So, when we say that A and B are duplicates, all we mean by that is that both are continuers of some past individual P, who might be said to live on through either A or B. If either A or B is lost then P still "lives" through the other.

Finally, a word about the "emotional" issue. I don't think either Max or I deal adequately with this, that is, how the personality can contain a component of feeling as well as intellect, but it doesn't necessarily mean our theories are "wrong" — they could simply be incomplete. For myself, I believe that the information paradigm, in which the brain is likened to a computer and the human personality to a program running on that computer, is able to describe and explain emotional experiences, though it may not be easy. Some interesting thoughts on the subject are offered in *The Hedonistic Neuron* by A. Harry Klopff (Hemisphere, 1982). There it is claimed that each neuron is a goal-seeking device, itself capable of a variety of emotion-like states ranging from polarization ("pain") to depolarization ("pleasure"). The brain is an interconnection of these relatively simple goal-seeking devices, which is organized so that it too becomes a goal-seeking device. The rewards, inhibitions, and other influences we experience are an aggregate of what our neurons experience, and comprise our emotions. A neuron, on the other hand, though complex enough, could probably be modeled by an existing computer, so in this way we could imagine modeling the whole brain as a very large computer consisting of an interconnection of smaller computers.

TV Review: Cryonics Meets Miami Vice

by Allen J. Lopp

Alcor Suspension Members who wish to see the Miami Vice episode may borrow a copy of the tape from Alcor. There is no charge for the tape but we do request a \$2.00 contribution to cover our postage cost in mailing it to you. Please return the tape to Alcor immediately after viewing so others can see it if they wish to do so.

Readers who weren't lucky enough to catch it (or maybe unlucky enough) might be interested to know that the October 23 installment of the hit TV show "Miami Vice" featured a plotline centered around cryonics. While the writer of the story (Joseph DeBlasi) didn't do us any favors as far as the public image of cryonics and cryonicists are concerned, he showed evidence of doing at least a modicum of research -- he got several little details surprisingly accurate, while totally distorting major concepts to fit the story he wanted to tell. This episode is the only TV treatment I'm aware of in which the protagonists were fighting to **keep** the suspended patient frozen against the vicious scheming of the estate-hungry widow.

The plot in a nutshell: Don Johnson and Phillip Michael Thomas have a search warrant to break into what they think is a drug lab, but they find the neglected building actually houses a frozen human being. They confiscate the patient from a group of cryonicists because they don't have proper paperwork for controlling the body. The patient is the leader of a famous Rastafarian recording group who disappeared mysteriously months ago, before being found in the suspended state. In no time flat, the rock star's estranged wife shows up with her lawyer, threatening to sue the cryonicists for control of her husband's body and the \$30 million estate he supposedly left the cryonicists. The cryonicists (who are obviously looney zealots) claim that their dopey elderly scientist can reanimate the rock star posthaste, and the greedy woman therefore won't have legal right to the money.

The conniving femme fatale manages to poison the old scientist and shoot the cryonics leader, and the one remaining cryonicist kidnaps the body and the old scientist's reanimation instructions and absconds to pull off a massive resurrection media event, complete with a busload of Japanese executives ready to cash in on cryonics. Just as the evil widow shows up to finish off the last cryonicist, Don and Phillip show up to precipitate a grand finale fight in which the widow gets



✓/~μs2-0

Temperature
-196°C

arrested and the rock star's cryocapsule gets dumped into the ocean.

Believe it or not, all this silliness is not totally hostile to cryonics, nor is it totally inaccurate. One very telling passage has the cryonics leader explaining to Johnson, (paraphrase) "The absence of heartbeats or alpha waves in the brain isn't the real issue determining death.... As long as the body is still organically intact and prevented from decaying, it can still be brought back to life." The scenes of the cryonics lab looked remarkably like every REAL cryonics lab I've seen -- mountains of electronic devices, medical equipment, and cryogenic dewars crammed into a tiny room in a not totally organized fashion.

Other accurate details: When they break into the cryonics lab, one of them reads off the drugs they find: DMSO, heparin, mannitol. Later, the cryonics leader brags about freezing his dog for 45 minutes and "the dog's personality is intact." (I am surprised the dog isn't a beagle named Miles -- he's called Lazarus instead.) And finally, what do you think might have inspired the notion that South Florida law officials could make a drug raid and find a cryonics lab instead? Sound familiar to anyone?

The most disappointing feature of the show was the cryonicists' come-on that they intended to reanimate the patient at any moment. This was clearly a requirement of the storyline, but it prevented the point being made that people are suspended NOW in anticipation of medical capability to be developed in the FUTURE. Phillip Michael Thomas does at least say this: "Why not get frozen? If you don't get frozen, you're dead. If you get frozen and it doesn't work, you're still dead!"

The writer of this "Miami Vice" episode clearly had seen genuine cryonics literature and had read of cryonics news events of the past year or two. It was very discomfoting for me to see cryonics portrayed so accurately and inaccurately at the same time. It was also discomfoting to recognize authenticities that I would prefer NOT to be portrayed, giving me a keen awareness that cryonics in its current state isn't what I want it to be.

* * * * *



No Way: The Nature of the Impossible

by Philip J. Davis and David Park

Book Review by Thomas Donaldson

Davis and Park are both professors, respectively of mathematics and physics. In this book they collaborated on what was an interesting and happy (intellectually) idea, by inviting a collection of other writers and scholars, not only in scientific disciplines (physics, mathematics, biology, medicine) but also in music, poetry, philosophy, mountainclimbing, and economics, to write about "the impossible" in their own fields. Their idea was not just to get authoritative statements about what WAS impossible in their different fields. Much deeper, they were interested in what impossibility MEANS to us.

But their own comments about the meaning of impossibility aren't really why this book is worth reading. They are scanty in what they say. The book is much more valuable reading as a way to spark off your own thinking about "impossibility". This is not a book which lays out its conclusions clearly and easily for you to agree or disagree with. It is a small sample of people thinking about what is impossible to them, and what that means. You get to draw your own conclusions.

Some of the best essays weren't by scientists at all. Scott Lankford talks about his own **failed** attempt to climb Mount Everest by a new route. It begins: "We did not stare the impossible in the face until the very end, when it became clear that, for our expedition, the summit of Mount Everest lay utterly out of reach. 'Summit no possible this time, sahib,' one of the Sherpas told me gently, offering me a hot cup of tea. 'But we still have life'". His essay isn't just about mountainclimbing, but about mountains as goals against which we test ourselves, and grow. He talks about the controversy in England about the first successful climb of Everest. Some people felt upset at the idea, at the "Death of the Impossible" which it would mean. That climb of Everest was the end of the last secret, unexplored place in the world. To climb Everest was to attempt the "impossible". Lankford also compares mountaineers to mystics: they are **opposite**. Mountaineers don't want to escape the world, their bodies, or their frail senses. They want to climb the mountain WITH all of these things, the physical, worldly mountain. But the aims of both mystics and mountaineers are a kind of connection, a close perception of something elsewhere.

Even the essays which are not so good are **revealing** in this way. Park discusses impossibilities in physics. He decides that space travel, as written about in science fiction novels, is "utter bilge". Don't just reject this, but listen to his arguments and how HIS notions of the impossible make his thoughts run along the lines they do. First, it is the human lifespan and the speed of light which bother him. Let's leave the speed of light to one side. So, if we are to deal with the problem (and **accepting** the **impossibility** of changing human lifespan, without even formally recognizing that he's done so) we must have very large mass ratios for our rockets. (Obviously, however, interstellar transport isn't necessarily by rocket). Gradually he slips from criticising the science fiction picture of interstellar flight (hardly difficult) into dismissing the whole idea out of hand. It's much more important to understand why: why must the stars, for HIM, be forever out of reach? Are the stars, for Park, secret unexplored places which must always remain so?

Or then again, take the discussion by James and Jean Goodwin about impossibility in medicine. This one is very interesting. They decide that living forever is impossible. But they aren't ignorant of McCay or gerontology: their problem is much more fundamental. They provide, in fact, a good capsule description of McCay's work and how it suggests that means will exist to prolong lifespan. They use it as an example of how in clinical medicine the impossible is always vague, not sharp. "What does all this have to do with impossibility in medicine," they say. They talk about how some things are impossible by social fiat: so far, it's been impossible to prove that Vitamin C will prolong life. Not because the proof couldn't be tried in the abstract, but because so many other treatments compete with that one for attention. Or then again, should artificial hearts be MADE impossible, impossible by social decision? Mixed up in their whole discussion are assumptions not just about logical possibility but the limits of what can be done practically, now. And circular, justifying and depending upon these assumptions, are their ideas about what it makes sense to try for (not immortality, surely...despite McCay).

Davis and Park finish their book with a short afterword giving their conclusions. They say that virtually everyone they spoke to somehow liked the idea of impossibility. They compare it to a seacoast, how most people in the United States live near the sea: and so in the same way, most people seem to like living near some kind of impossibility.

This impossibility is very important. What we think of as impossible underlies our whole personality and sense of our selves. It isn't meaningful to say of someone that he wants (or does NOT want) anything without stating the range of choices he believes is open to him. To want is to make a choice (out of what? from what?). That means that our notion of what is impossible for us (for me, for you, as concrete individual people) controls everything we think of ourselves and everything we do.

Many people resist immortalism. It is indeed a very wrenching change. They have formed their whole personalities, all their ambitions, hopes, fears, even their fantasies, around the notion that they will live for about 70 years. To tell them they could become immortal takes away their IDENTITY. Who would I be if I could be immortal? Would I be myself at all? These aren't easy fears to deal with. Practically, we might only be able to show by example.

This isn't even a change unique to immortalism. Any major change in underlying assumptions will meet the same response. In the 19th Century, Darwin didn't just have to convince the English establishment of a biological theory. He had to convince all the Churchmen and the members of Parliament that they were APES. That's not easy to do! Of course, after the transformation, people look back and can't see what all the trouble was. The new view has bound itself up into their identities. They can't imagine, any longer, what it would have been like NOT to have been apes.

Nor can we really expect that immortalism is the last transformation. It is only one of many. In Lankford's words: "Can we honestly believe that no one before us has doubted the existence of the gods? that no one overcame great obstacles at impossible odds? or set forth in miraculous machines, chariots of fire, to the unknown, undiscovered, even undreamed of places of the earth?...". And so, in the future also.

TBW-16: Evaluating An Ametabolic Flush System For Patient Transport: A Preliminary Report

by Michael G. Darwin, Jerry D. Leaf and Hugh L. Hixon

Photos by Karen Anderson

Layman's Abstract

This paper reports on an experiment by Alcor to evaluate a flush preservative solution useful for maintaining whole mammals at a temperature a few degrees above the freezing point of water. The perfusate (preservative solution) was closely modeled after a perfusate which has demonstrated effectiveness experimentally in allowing for successful 24-hour flush storage of organs such as the pancreas, liver and kidney.

This attempt by Alcor to apply this solution in a "flush and store mode" (wherein the animal's circulatory system is washed free of blood and filled with the preservative perfusate solution and the animal is then stored without circulation, packed in ice) to the dog failed primarily due to the development of ischemic injury (i.e., injury due to no availability of nutrients and oxygen) in the cardiac and skeletal muscles of the animal.

Attempts at whole organism preservation which do not address the need of skeletal and cardiac muscle for nutrient and/or oxygen, even in the deeply cooled state (4°C, 39.2°F), seem likely to fail.

Introduction

On August 2nd, 1986, Alcor conducted a pilot study to evaluate the feasibility of reversible ametabolic, asanguineous, hypothermic perfusion (RAAHP) in the dog (**CRYONICS**, 7(9) (September, 1986)). This experiment was successful in recovering the animal without neurological or other deficits from 2 hours of bloodless perfusion at 4°C, in the absence of glucose or oxygen (the recirculating perfusate was bubbled with 100% nitrogen). Several months later a subsequent experiment using a similar technique was performed attempting to extend the RAAHP model out to the four hour point -- the point at which we had been able to reliably and reversibly carry out asanguineous perfusion of dogs with oxygen and glucose present. This second experiment failed for technical reasons related to respirator malfunction (overpressure injury to the lungs with secondary gas embolism and pulmonary edema) but was suggestive of success in that recovery of all organ systems excluding the heart and lungs was judged good.

History and Background

In the intervening months between the time the pilot study was conceived and executed an exciting and potentially very important development occurred in ametabolic organ preservation technology: the announcement by Southard and Belzer of the University of Wisconsin Medical Center, at the 24th Annual Cryobiology meeting (1) that they had developed a preservative flush solution (christened UW-lactobionate solution, "UW" for University of Wisconsin) which could be used to hold a number of heretofore difficult-to-store organs such as the pancreas and liver in a viable condition for 24 to 48 hours at near 0°C. Previous limits for successful cold storage of these organs were in the range of 6 to 12 hours (2).

The utility of such a solution to Alcor for cryonics purposes is at least twofold. First, the ability to flush a patient's circulatory system free of blood and replace it with a preservative solution at a remote location would allow simple air shipment of patients packed in ice in a viable or near viable state. Second, in unfavorable cases where deanimation has occurred under uncontrolled conditions and there are long periods of ischemia (lack of blood flow) a solution which is free of metabolites and thus does not cause "reperfusion" injury during cryoprotective perfusion would be very advantageous -- particularly if such a vehicle solution was especially effective at minimizing cell swelling (a major limitation on the ability to continue perfusion long enough to deliver adequate concentrations of cryoprotective agents) -- which UW solution had previously been shown to do (3).

To this end a pilot study was undertaken by Alcor to extend the scope of our previous study by employing an asanguineous, ametabolic flush model in the dog using a slightly modified version of UW-lactobionate (see Table 1 for composition of the solution). The solution was modified from that employed clinically by Southard and Belzer by substituting the complex sugar raffinose (employed to minimize cell swelling) with sucrose. This was done to minimize the cost of preparing the solution (raffinose is 28 times as expensive as sucrose) and was not felt to be a significant change considering the projected 8 hour time course of the asanguineous flush period. Previous organ preservation (4) and TBW studies (5) had established the safety of sucrose in a whole animal model, as well its superiority over mannitol, which had previously been used as the impermeant osmotic agent.

UW-lactobionate solution is thought to be effective not only because low molecular weight cations (such as sodium) which contribute to cell edema have been replaced by large, impermeable, osmotically active molecules such as raffinose or sucrose, but also because of replacement of the anions, principally the chloride ion, by lactobionate; a maneuver which seems particularly effective in inhibiting cell swelling.

Table 1.
UW-Lactobionate perfusate

Lactobionic Acid	30 mM
Sucrose	30 mM
Adenosine	5 mM
Hydroxyethyl Starch	55 g/l
Glutathione	3 mM
Allopurinol	1 mM
Dexamethasone	8 mg/l
CaCl ₂	2 mM
MgCl ₂	3 mM
KH ₂ PO ₄	25 mM
pH	7.6
Osmolality	332 mOsm

Cell swelling in deep hypothermia is a major cause of tissue preservation injury (6)(7). Under conditions of normal metabolism cell volume and electrolyte content are regulated actively by pumps in the cell membrane. When cells are cooled or are deprived of energy due to ischemia, the pumps are inactivated and cell electrolyte content becomes disturbed, with resultant cell swelling (and further derangement of metabolic activity).

The approach of Southard and Belzer is to provide an extracellular milieu which stabilizes the cell, while at the same time removing substrates for unwanted cell metabolism during cold storage. Continued metabolic activity in deep hypothermia is implicated in degradation of the cell membrane due to lipid scavenging (8) and accumulation of toxic waste products. Work by Bennett *et al* (9) is suggestive that free radical generation during perfusion preservation may be a significant source of injury both during hypothermic perfusion and upon blood reperfusion. Oxygen was thus excluded from the perfusate not only to inhibit metabolic activity but to decrease oxygen-associated free radical damage in the hypothermic state.

Southard and Belzer's preliminary work with the pancreas, liver, and kidney had already established that this was a viable approach for storing at least these organs. In fact, in the case of the kidney it was possible to store at 0°C for 40 hours with simple flushing and for five days at 7°C to 8°C if continuous perfusion was carried out with oxygen and glucose present (10)!

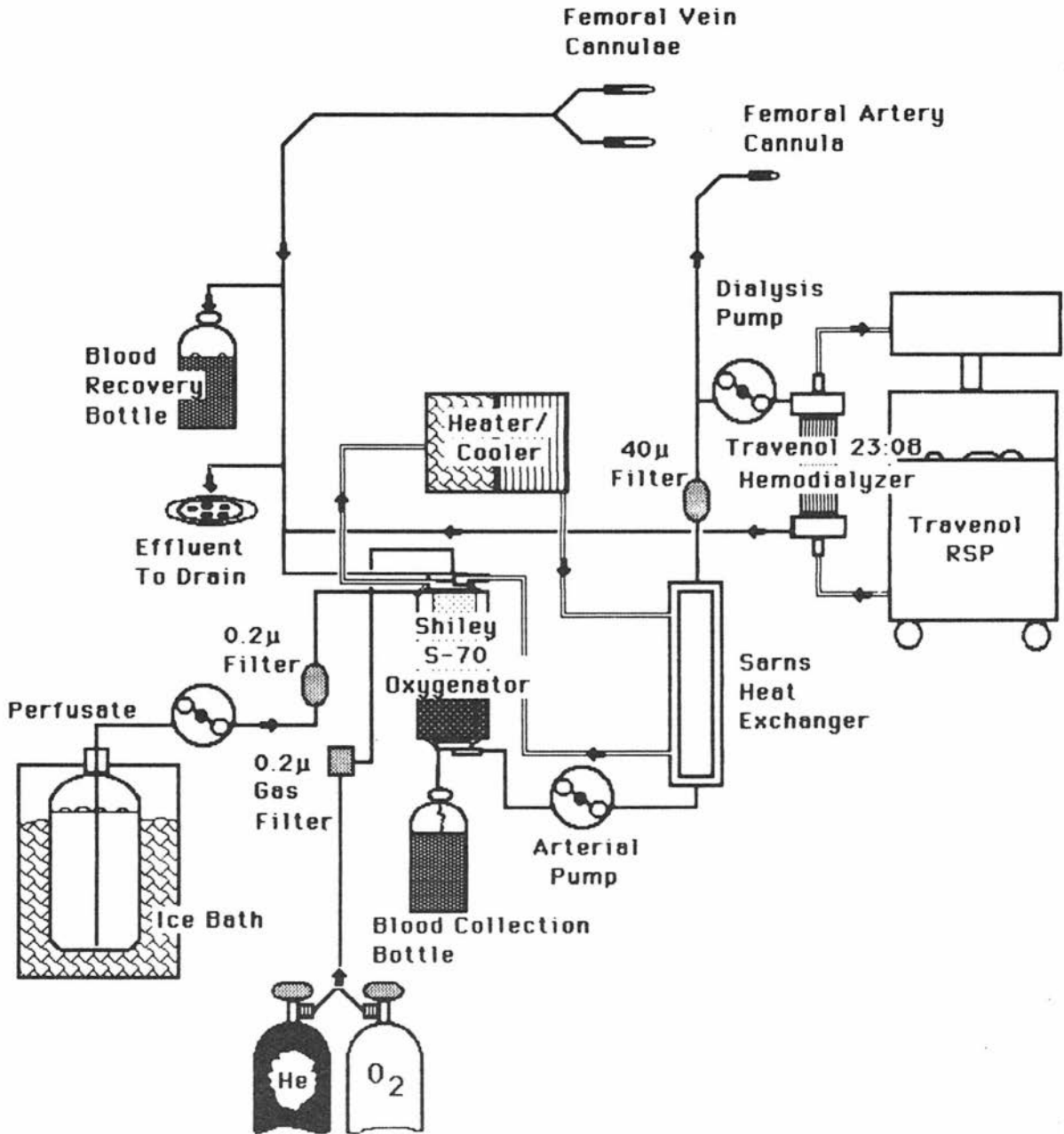
The purpose of the experiment conducted by Alcor on August 15, 1987 was to determine if this approach was applicable to intact animals. Oddly enough, it was clinical data obtained from human suspension patients which suggested that this mode of preservation might not work in the whole animal (11)(12). It had previously been noted that when continuous perfusion of suspension patients was discontinued after total body washout, rigor mortis began to develop after six to eight hours of ice-cold storage. This suggested a time limit for flush storage of muscle tissue -- perhaps due to metabolic needs which were not being met and which were either not present or not critical for other tissues. A related cause for concern was the observation that with extended asanguineous hypothermic perfusion (in excess of 1 hour) of dogs at 4°C with substrate and oxygen present, accumulation of lactate and serious acidosis occurred, requiring continuous buffering and indicating that anerobic metabolism was proceeding and suggesting that the muscles were actively metabolizing at this temperature. (Recent Alcor research has yielded some preliminary evidence which indicates that such metabolism may be going on in an inefficient or "uncoupled" fashion leading to production of large amounts of lactate).

The Procedure

The animal (a 27.4 kg German Short-Haired Pointer) was premedicated with cimetidine (4.2 mg/kg), sodium bicarbonate (prn up to a prebypass pH of 7.50), atropine (0.3 mg), metubine iodide (0.07 mg/kg), diltiazem (300 mcg), Maalox (50 cc via gastric tube) and heparin (420 IU/kg).

Following premedication, the animal was surface-cooled to an esophageal temperature of 27.6°C while being ventilated manually with a bag-valve respirator using room air. Femoral-femoral bypass was employed for extracorporeal support (the right femoral artery was raised and cannulated as were both femoral veins). The extracorporeal circuit consisted of a Shiley S-

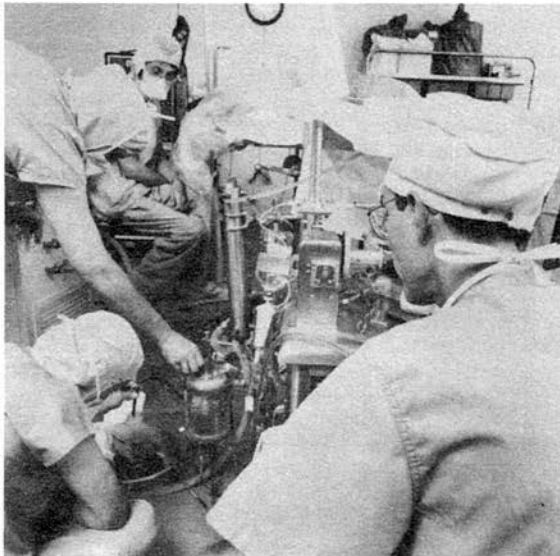
Diagram 1. TBW-15 Extracorporeal Circuit



70 pediatric bubble oxygenator and a pediatric Sarns Torpedo heat exchanger for additional cooling and rewarming capacity. The animal was monitored for rectal and esophageal temperature and arterial and central venous pressure (CVP) throughout perfusion, blood washout, and rewarming. The extracorporeal circuit is shown in Diagram 1. The animal was pump-cooled to an esophageal temperature of 4.7°C at which time total body washout (TBW) was begun.

The animal was flushed with with 15 liters of substrate and oxygen-free UW-lactobionate solution of the composition shown in Table 1. The animal was perfused in a single-pass mode: the oxygenator was repeatedly filled with 1500 cc batches of perfusate, the circuit was closed, and recirculation carried out for 4 minutes. The oxygenator was then drained and another 1,500 cc quantity of perfusate was loaded into the circuit and the procedure repeated. Hematocrit at the conclusion of blood washout/recirculation was less than 1%.

The final batch of 1500 cc of perfusate was retained in the oxygenator and recirculated for 12 minutes before shutting down the pump and disconnecting the arterial and venous lines from the cannulae. During the period of washout and asanguineous recirculation, 100% helium gas was bubbled through the oxygenator and used to ventilate the animal's lungs. Helium was selected over nitrogen for this study due to evidence in the pilot studies that nitrogen gas (which was previously used to maintain oxygenator frit patency) had the potential for coming out of solution during rewarming of the animal and forming gas emboli in the tissues (nitrogen is more soluble in water at lower temperatures and during rewarming can be



Blood is collected from venous line as perfusion begins. Left, top to bottom: Carlos Mondragon, Jerry Leaf, Bill Jameson. Right: Mike Darwin



Flush solution is readied for perfusion. Foreground: Mike Darwin. Background: Mike Perry, Carlos Mondragon.

Chart I

Sodium

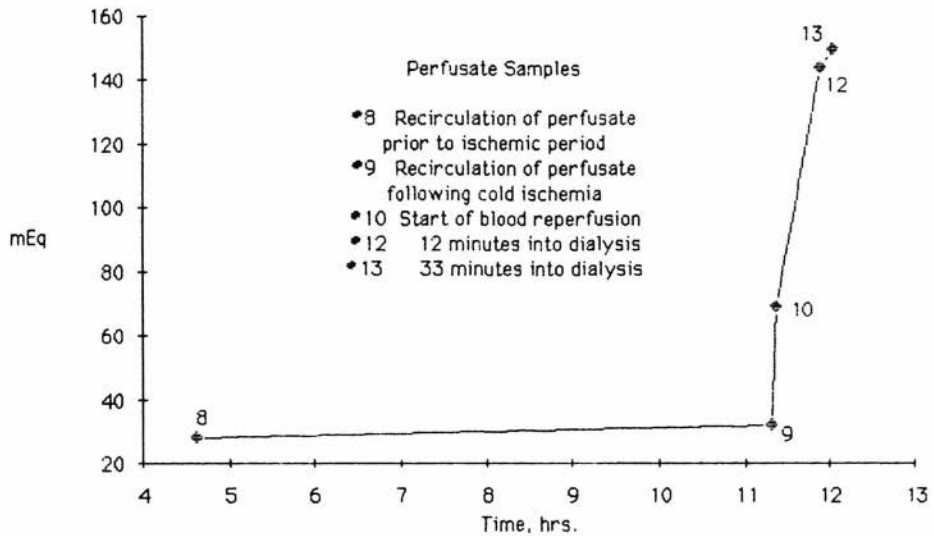
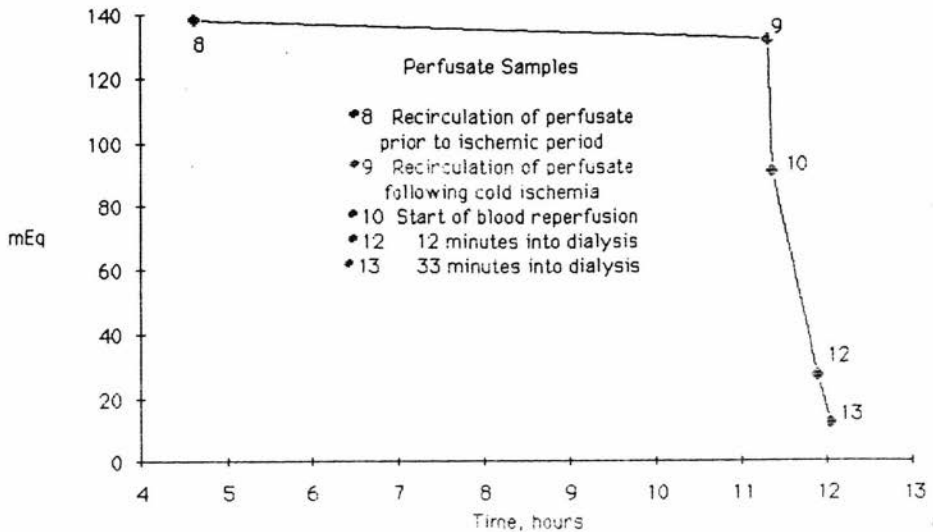


Chart II

Potassium



forced out of solution).

To maintain patency of the frit on the bubble oxygenator during the 7-hour nonperfused cold ischemic time, during which the animal was left in the unperfused "flushed" state, nitrogen gas was bubbled through the oxygenator. Prior to the start of reperfusion, after the cold ischemic period, nitrogen aeration of the frit was discontinued and bubbling of oxygen was begun at 4 liters per minute.

In order to prevent bacterial overgrowth in the perfusate during the 7 hours of cold ischemia the perfusate was continuously recirculated at a low flow rate through the arterio-venous (A-V) loop (the arterial and venous lines were disconnected from the femoral cannulae and joined to form an A-V loop through which perfusate was continuously circulated through the heat exchanger). This maneuver held the perfusate temperature at between 4°C and 5°C.

During blood washout the animal's lungs were ventilated with helium several times and the endotracheal tube was cross-clamped at the end of the last inspiration. Every 30 minutes thereafter during the 7 hour cold ischemia period the lungs were reinflated with helium and the endotracheal tube reclamped (the lungs were invariably deflated prior to each inspiration despite cross clamping of the endotracheal tube) to prevent pulmonary atelectasis (the walls of the small air sacks of the lungs sticking to each other). The esophageal temperature of the animal on the operating table was maintained between 4.5°C (at the end of the flush) and 3.3°C (at the start of reperfusion) with ice packs and a cooling blanket set to 0°C.

Seven hours after the end of asanguineous perfusion (and 8 hours after the start of TBW) the animal was reconnected to the extracorporeal circuit and rewarmed to an esophageal temperature of 6.1°C, at which time blood reperfusion was begun. Blood reinfusion was commenced with the most dilute blood/perfusate mixture and concluded with the most concentrated. The hematocrit was adjusted to 23 by the addition of 1 unit of ACD whole blood.

After blood recirculation was initiated, hemodialysis was begun to normalize serum electrolytes. A bicarbonate-acid dialysate was used (sodium, 138 mEq; potassium, 4.5 mEq; calcium, 5.5 mEq; magnesium, 1.5 mEq; acetate, 4.0 mEq; bicarbonate, 39 mEq; chloride, 106 mEq; and dextrose 3.0 g/l; pH=7.5; mOsm = 320). Hemodialysis was carried out at a blood flow rate of 250 cc/min, a dialysate flow rate of 500 cc/min. and a transmembrane pressure of 300 mmHg using a Travenol 15:11 dialyzer on a Travenol RSP Kidney Machine with single-pass convertor. Venous Na^+ , K^+ , Ca^{++} , and Cl^- at the end of washout, at the beginning of blood recirculation and near the end of dialysis are shown in Charts I, II, III and IV respectively. As can be seen from the data, 15 liters of perfusate perfused in a multiple pass mode was very effective at imposing perfusate electrolyte concentrations systemically.

Results

Upon gross examination of the animal 30 minutes prior to restart of asanguineous perfusion it was noted that the jaws and eyelids were in full rigor mortis (the temporo-mandibular joint was rigid, and it was impossible to open the mouth even slightly) as was the animal's lower right leg. The lower

Chart III

Calcium

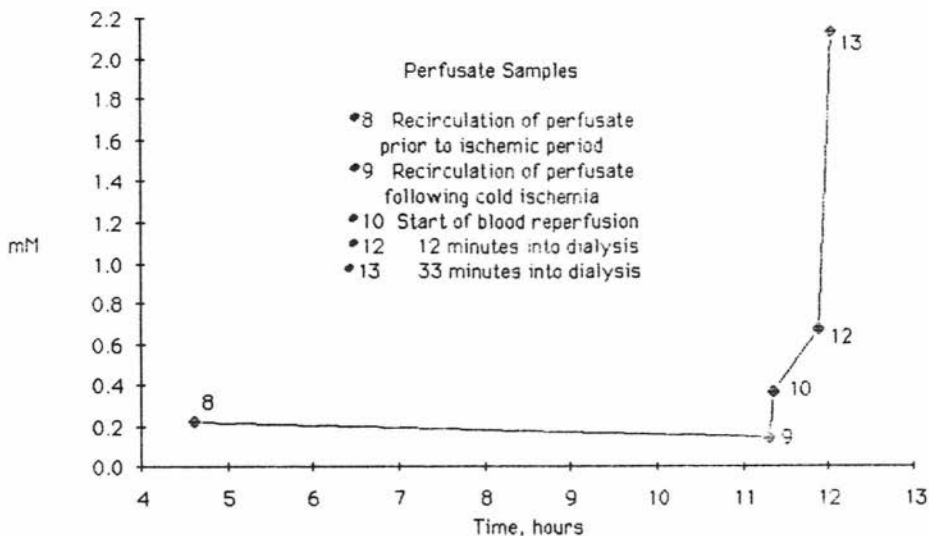


Chart IV

Chloride

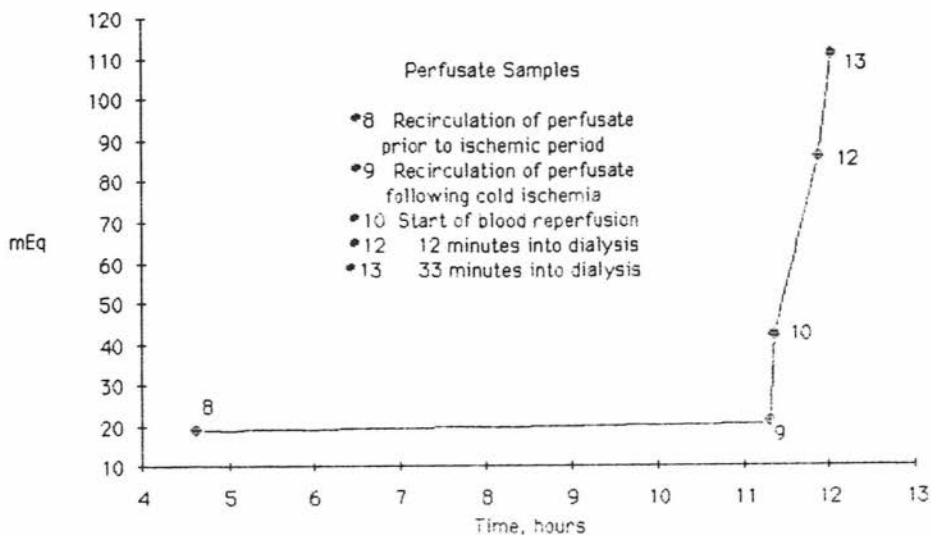
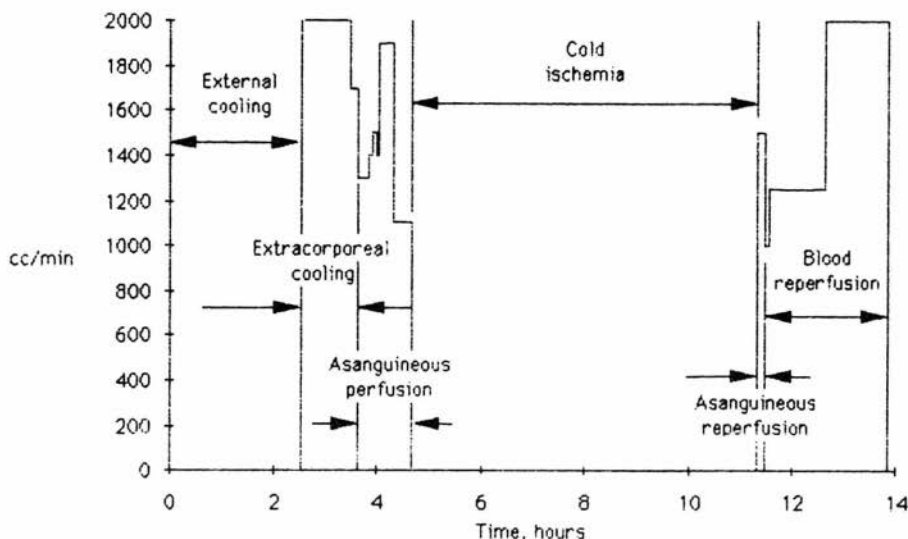


Chart V

Flow Rate



left leg was still flaccid and the forelimbs, while typically stiff from chilling, were still reasonably pliant.

Upon blood reperfusion and rewarming it was extremely difficult to maintain an adequate perfusion pressure despite a blood flow rate in excess of 1800 cc/minute (Chart V). Perfusion pressure in the range of 60 to 80 mmHg was maintained only with a continuous dopamine drip and administration of crystalloids (Plasmalyte) and whole blood.

There was a profound metabolic debt upon rewarming as is evidenced by profound acidosis (Chart VI) and the inability of the S-70 oxygenator to keep up with metabolic demands. Despite delivery of oxygen to the oxygenator at flow rates of 10 liters per minute, adequate pO_2 proved impossible to maintain (Chart VII). Arterial pCO_2 was greater than 90 mm Hg at the start of blood perfusion and remained in excess of 60 mm Hg throughout the blood reperfusion period (Chart VIII).

Repeated attempts at defibrillation were successful only in reestablishing weak ventricular and atrial contractions. Nevertheless, despite the presence of rigor and the poor vascular tone of the animal, spontaneous movement of forelimbs, spontaneous intercostal respiration (the diaphragm was akinetic throughout blood reperfusion), and response to painful stimuli were present after approximately 2 hours of blood reperfusion and extracorporeal support. Due to rigor of the head, neck, and eye muscles it was impossible to evaluate corneal reflex or pupillary responses; both pupils were unresponsive in midposition. Despite rigor of the jaw and large cervical muscles, the tongue was noted to be responsive to stimuli and both vesiculation of the tongue and frank swallowing movements were noted. Movement of the endotracheal tube was

Chart VI

Arterial pH

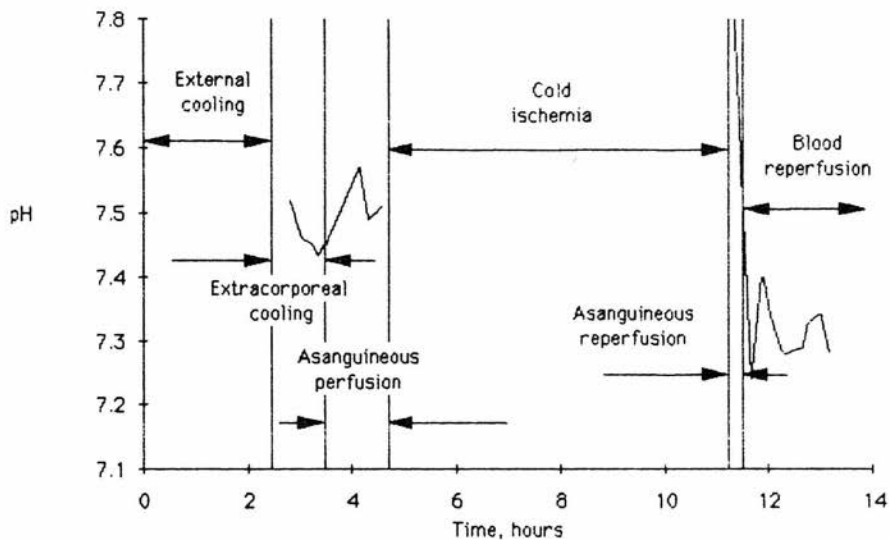


Chart VII

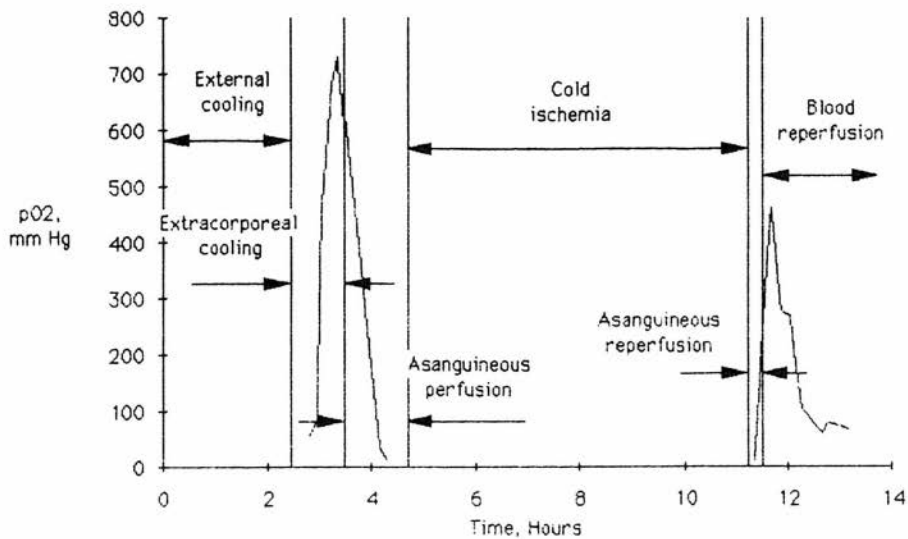
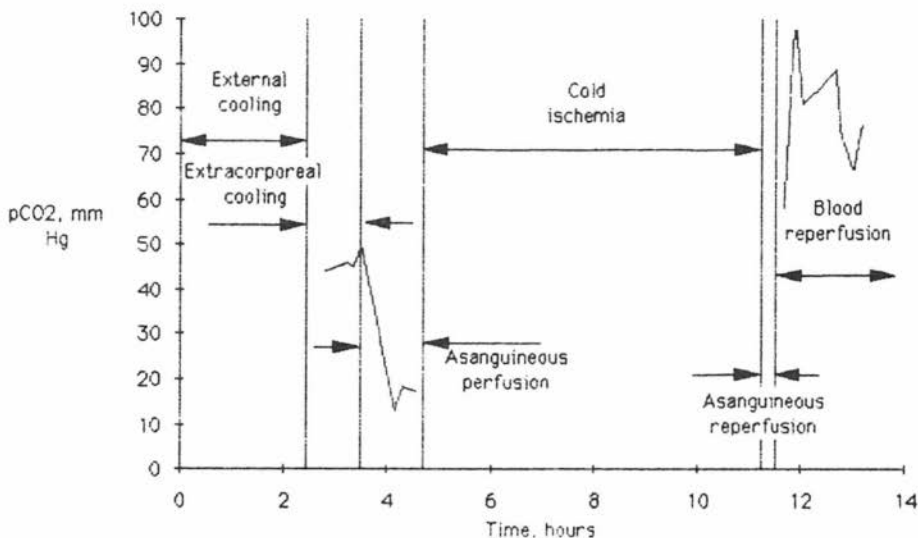
Arterial pO_2 

Chart VIII

Arterial pCO₂

effective in eliciting a gag reflex.

Approximately 2 hours after the start of blood reperfusion additional anesthesia was given, the chest was opened and the heart was visually inspected — confirming the presumed presence of reperfusion injury and electromechanical dissociation. A short while later the heart-lung machine was shut down and a thorough postmortem examination was performed. The postmortem examination disclosed widespread injury to skeletal and cardiac muscle. Blood flow through the intercostal muscles and limb muscles was minimal and the heart was edematous and seriously affected with calcium paradox (reperfusion injury).

The other organ systems were in excellent condition. The GI tract was well reperfused with blood and the mucosa appeared normal; free from ulcers or hemorrhage. Both the pancreas and liver were also grossly normal. This is in contrast to the typical 4 hour TBW dogs, which have some slight gastric, intestinal, and proximal pancreatic hemorrhage but which nevertheless survive and recover to complete normalcy.

The brain also appeared grossly normal, with no sign of hemorrhage or edema. The pial vessels were blood filled, indicating good reperfusion.

Discussion

As anticipated, UW-lactobionate solution appears to be very effective at providing outstanding hypothermic preservation for the pancreas and liver in

the ametabolic, flushed state. UW solution also appeared to be effective at providing good preservation for the GI tract and lungs. However, for the skeletal muscle (and probably for the heart as well) rigor was beginning to develop even before the start of blood reperfusion. Perhaps cardiac and skeletal muscle are especially susceptible to lack of substrate and/or oxygen in deep hypothermia.

The presence of rigor in the right lower leg up to the level of the groin and its absence in the lower left leg suggests that ligation of the femoral artery during cannulation (and subsequent hypoperfusion and ischemia of the limb during surgery and external cooling) resulted in depletion of muscle glycogen, hastening the metabolic exhaustion taking place during asanguineous, ametabolic storage. The pattern of onset of rigor observed in this experiment also suggest that what is being observed is the "typical" rigor mortis of muscle substrate exhaustion. In normothermic total body ischemia, rigor begins with the smaller muscles of the eyes and jaw and proceeds in a more or less wave-like action down the length of the body as the larger, more active muscles (with correspondingly larger glycogen reserves) become metabolically exhausted (13).

It is apparent that any attempt to maintain skeletal and perhaps cardiac muscle in an ametabolic state must take into consideration the mechanism and pathophysiology of rigor mortis and develop appropriate strategies to circumvent or reverse it.

As an interim step and to establish metabolic exhaustion as the primary mechanism of injury to the intact dog during ametabolic storage in deep hypothermia we are interested in conducting another experiment using the same perfusate and time course of hypothermic storage but employing continuous asanguineous perfusion and providing glucose and oxygen.

Given our routine success with 4 hour TBW/perfusion models and the preliminary evidence that UW-lactobionate solution is far more effective at protecting the pancreas and liver (with or without metabolic support) than our previous MHP-1 TBW solution, we think it very likely that routine cold storage of intact dogs for 8 hours or longer should be readily achievable.

While such research is not directly critical to establishing the feasibility or workability of cryonics as a whole, it does provide invaluable training for suspension team staff as well as provide insights into ways to approach and perhaps achieve viable (i.e., injury free) long distance transport of suspension patients. Past experience has demonstrated that the patient's condition at the time cryoprotective perfusion begins has profound impact upon the efficacy of the perfusion with respect to both the terminal concentration cryoprotective agent reached and the degree of systemic and cerebral edema encountered.

Acknowledgements

Our sincere thanks to Cryovita Laboratories, Patrick Heller, and the Life Extension Foundation for their generous support of this work.

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Thomas Donaldson, Ph.D. On Nerve Repair

For many years doctors and biologists have known that nerve cells in the brain do not naturally regenerate well, if at all. Even from the beginnings we've faced two possible explanations of this. Either these nerve cells fail to regenerate because their environment within the brain isn't favorable to regeneration, or they fail to regenerate because they lost the ability to do so. Taking a **very** long term view, of course, these two possibilities don't affect the ultimate potential for repair. If, however, environmental factors do in fact cause a major failure of nerve cell repair with the brain then we can expect work on artificially changing these factors. This would give us nerve repair without a prolonged wait for methods of artificially injecting lost developmental abilities into nerve cells.

A Way To Promote Nerve Cell Regeneration

Ever since Ramon y Cajal's work in the early part of this century, neurologists have recognized that nerve cells of the brain or spinal cord do not spontaneously repair injuries. To do something about this, we need to know **WHY**. After a long period of neglect, doctors and neurophysiologists have begun to study this failure of repair. Growing evidence suggests that repair is far from hopeless.

Two major theories exist. One says that the necessary cell machinery for repair in neurons is repressed. The second says that nerve cells in the brain or spinal cord simply lack the proper hormonal (or other) environment needed for repair. The most spectacular successes with repair so far have come from transplantation experiments. Fetal brain tissue, transplanted into brains of adult rats, can cause repair of brain injuries in the rats (cf A. Bjorklund et al, **NEURAL GRAFTING IN THE MAMMALIAN CNS**, (Elsevier, Amsterdam, 1985)). These experiments, though, don't really choose among these alternative theories. Perhaps the transplanted cells themselves grow and bridge the injuries. Perhaps again they provide an environment in which neurons from the host nervous system will respond with growth and repair.

Furthermore, transplants of fetal nerve tissue would create severe political trouble for anyone who seriously tried them.

A recent article in **SCIENCE** (236, 1106-9 (1987)) may have not only found a way around these political difficulties but also produced a choice between the two competing theories of why fetal nerve transplants work in the first place. George E. Davis, Fred Gage, and others at the NIH report in this article that rolled up **human amniotic membrane** will cause regrowth of cut nerve axons in the rat brain. It will also promote growth of neurites (the rootlike tendrils coming out of the nerve cell) in cell cultures.

They harvested their amniotic membrane from normal human placentas. They prepared it by removing all the cells, leaving a membrane consisting of collagen, fibronectin, and laminin. These are all proteins deposited outside the cells in a fibrous mat. Laminin, particularly, seems to promote nerve cell growth. They washed this membrane repeatedly and could shape and sew it for use in their experiments. For cell culture experiments they made sections

bound to paper on which nerve cells could grow. For implanting in rat brains, they made rolled up tubes. The implanted sections didn't cause any reaction from the immune systems of the host rats.

To test how well these membranes helped brain tissue to repair itself, they cut out the nerve cell axons which connect the hippocampus with another brain region, the medial septum. They implanted sections of prepared human amniotic membrane into the cavity caused, and looked at the host rats' brains 2 to 8 weeks later.

Out of 10 animals with implants studied 2 to 8 weeks later, eight of them had fibers growing along the implant from the medial septum back to the hippocampus. Other cell types in the brain, such as glial cells, had migrated onto the implanted amniotic membrane. Control animals showed no regeneration of the cut axons at all.

Of course it's possible, even likely, that both theories about nerve cell repair are true. Cells from a transplant may both promote growth of host cells and help to repair injury themselves. Still, human amniotic membrane is very easy to harvest. Once harvested, it is easily stored. Finally, nobody is likely to object if we use it for repair. We can hope for more animal and clinical experiments in the near future.

Are Regenerated Nerves Functional?

For several years now occasional experiments have suggested that nerve cells within the brain do respond to environmental stimuli by growth. In particular, experiments have shown that brain nerve cells will send axons into grafted tissue of many different kinds, including peripheral nerves, skin, fetal brain cells, and iris (from the eye) tissue. These are all cases in which the tissue is grafted into the brain of an experimental animal. Afterwards, experimenters find nerve cells from this animal sending axons into the grafted tissue (S. David and A.J. Aguayo, *SCIENCE*, **214**, 931-933 (1981); F. Tello *TRAB LAB INVEST BIOL UNIV MADRID*, **9**, 123-159 (1911)).

However up to now one critical question remained unanswered. Did these newly grown axons **function**? That is, could they conduct nerve impulses just like normal axons? The answer to that question has just come from a paper by C.G. Salame and R.P. Dum in *EXPERIMENTAL NEUROLOGY* (**90**, 322-340 (1985)). Salame and Dum grafted a segment of peripheral nerve (the sciatic nerve) between the brain and the spinal cord of adult rats. One end was inserted into the brain. The other end was inserted into the spinal cord, so that if the graft conducted electrical impulses it would cause muscle contractions in the rats' diaphragms. The grafts did indeed function. Electrical impulses along the newly grown pathway did cause contractions.

By killing their animals and making slides afterwards, Salame and Dum also studied carefully how these grafts had worked. They formed connections primarily to the brain tissue closest to one end of the graft. Many different kinds of brain nerve cells could grow axons into a graft. The major cause of growth lay in proximity to one end of the graft. However the nerves which grew into the graft also tended to be nerves which sent axons across long distances within the brain. Salame and Dum suggest that the peripheral nerve must exude some chemical factor which promotes regeneration. As yet we don't know what

this factor is.

I believe that this paper should convince most observers that the major reason for failure of nerve tissue repair in the brain lies in lack of chemical factor(s) which promote it. This work also means, of course, that we should attach a high priority to finding this chemical factor. That problem may be hard. Concentrations of most chemicals controlling development are very small. They resist discovery and characterization. However our techniques for study have also improved. Study of which genes are activated in the growing nerve cell may tell us a lot.

For cryonics the major implication of this work is to add more weight to suspicions which we already have. That is, the problem of repairing brain damage will be not at all so insurmountable as many people still believe.

Nerve Cell Connections Do Not Depend On A Mechanical Process

One common hypothesis about memory is that it depends on the physical interconnections of our neurons. This hypothesis would predict that if any outside influence disrupted these connections, they would also disrupt our memory. We can contrast this hypothesis with another one, which would say that the exact physical connections of our neurons are the expression of other chemical influences which REALLY encode the connections. That is, the information about which neuron connects to which other neuron isn't really stored in the connections themselves. Instead there are chemical affinities, of some kind not yet known, which would cause reformation of any disrupted connections. That is, the neurons themselves know where they should go. They don't just lie there where they've been put.

One striking piece of evidence for the latter hypothesis is the work of Paul Pietsch, who physically scrambled salamander brains and got them to come back together again (cf. his book **Shufflebrain**). But since nerve connections in mammals don't normally heal themselves, this hypothesis is hard to test.

Although its evidence is still not conclusive, another striking experiment by Constantino Sotelo and Rosa Alvarado-Mallart at INSERM in Paris, France has just given us more evidence for a hypothesis of intelligent neurons (**NATURE**, 327, 421-3 (1987)).

Sotelo and Alvarado-Mallart studied a strain of mice, **pcd** mice. These mice will spontaneously lose ALL members of a particular type of neuron, the Purkinje cells, at an age of about 3 months. The Purkinje cells are important to the cerebellum and thus to physical coordination. Losing them causes a total loss of coordination in the affected mice. Much more important for the issue of "intelligent" neurons, Purkinje cells only work because they make quite precise connections within the cerebellum. They don't work just because of a general hormonal influence.

What Sotelo and Alvarado-Mallart have done is to implant fetal neurons of the same type in the brains of **pcd** mice, after the **pcd** mice had lost their own Purkinje cells. The grafted cells didn't just **survive** in the host cerebellum. They actually reformed the proper connections, acting as replacements for the Purkinje cells their hosts had lost. They migrated within the host nervous system to the proper locations, grew the proper connections, and took up their

role as Purkinje cells.

Experiments of this nature should tell us some remarkable things about many bodily cells. They are not simple passive objects. They respond actively to the environment around them, migrating, putting out synapses, and taking their proper form even if they are some distance from where they ought to be. Not only do they do this, but the intervening cells must move out of their way for this to happen. Sotelo and Alvarado-Mallart point out that the exact timing of this migration resembles the timing which happens in the embryo during its formation. The final outcome resembled the normal alignment of Purkinje cells, replacing those which had been lost. The entire process had completed after 21 days.

It is very likely that most if not all tissues in our body have the same kind of intelligence and plasticity.

For survival of memory, the striking fact is simply that the Purkinje cell connections must necessarily have been encoded in some way other than physical connections. This adds to the evidence that our nerve cell connections aren't really the only location of a memory. But even more fundamental, this work is one more step in work on brain repair. This brain repair would not happen because we had built micromachines able to reconnect brain regions by force. Instead it would happen because we had understood the micromachines already there (the neurons and glial cells), and knew how to guide them to do what they wanted to do anyway.

Nerve Regeneration In Brains Of Untreated Rats

For a long time neurologists thought that brain nerve cells, once injured, could not regenerate. Although many neurologists now work on the problem of brain repair, their assumption is that they must artificially stimulate this repair. It does not happen without outside help. However a few neurologists have reported spontaneous, unassisted regeneration in mammalian brains. In 1982 A.P. Foerster reported spontaneous regeneration of cut nerve cell axons in rat brains (*J COMP NEUROLOGY*, 210, 335-356 (1982)). In 1981 S. Kawaguchi and others published a report of spontaneous regeneration in kittens (*NEUROSCI LETT*, 25 13-18(1981)).

A recent paper in *EXPERIMENTAL NEUROLOGY* (95, 65-75 (1987)) by J.S. Wendt and K.A. Ayyad at the VA Hospital in Dallas, Texas reports some very precise observations of this kind in adult rats.

They made a 2 mm cut in their rats' brains and then observed the healing process afterwards. Their article contains some fascinating photographs. To test for continuation of axons through the cut area, they used stains for acetylcholinesterase, the enzyme which degrades acetylcholine as part of nerve transmission. The stain showed axons as lines meandering through the brain tissue. They found evidence that after recovery some axons, formerly cut, have actually regrown through the incision and repaired the injury. Unfortunately their evidence isn't totally conclusive, although their photographs are highly suggestive.

I believe this work is much more significant than it seems. It is far easier to enhance a repair process which already exists than to create one out

of nothing. If we understand how this regeneration happens, we can expect to improve it.

Frozen Brain Tissue From Fetal Rats

With increased interest in nerve tissue transplants, scientists also become more interested in ways of storing these tissues longterm for later use. This necessarily involves freezing them. Our own interest in storing brain tissue of course comes from other goals. Furthermore, fetal brain tissue does withstand freezing better than adult tissue. Methods of freezing fetal brain tissue don't extend immediately to solutions for the problem of neuropreservation.

Nevertheless a recent article in **CRYOBIOLOGY** (24, 120-134 (1987)) by three scientists at the University of Aarhus in Denmark, Steen Jensen, Torben Sorensen, and Jens Zimmer, does deserve some notice in CRYONICS. The paper reports successful cryopreservation at liquid nitrogen temperature of samples of fetal brain taken from rat embryos. Several different regions were used, including the neocortex, the basal forebrain, and the cerebellum.

The fetal brain samples were stored in liquid nitrogen for varying periods up to 52 days before transplanting them. They were treated with DMSO as a cryoprotectant before storage. Freezing was done gradually, at about 1 to 4°C per minute. Thawing was done in a warm water bath. Since all samples were small, thawing was at about 70°C per minute.

The test of survival consisted of grafting these brain regions into brains of adult rats, allowing these host rats to live for a three weeks to 2 years, and then looking at their brains. The authors report that their survival results corresponded in all respects to those from fresh tissue transplanted immediately after harvesting.

In some important technical details this experiment differs from those previously reported. Houle and Das showed in 1980 and 1983 that fetal brain tissue could survive freezing to -90°C (**BRAIN RES**, 192, 570-574 (1980); **EXPERIENTIA**, 36 1114-5 (1980); G.D. Das, pp 1-64, in R.B. Wallace and G.D. Das **NEURAL TISSUE TRANSPLANTATION RESEARCH**, 1983). This experiment carried out freezing to liquid nitrogen temperatures, -196°C. It also extends to brain regions other than the hippocampus earlier liquid nitrogen experiments done by these authors on hippocampus tissue alone.

The authors conclude that liquid nitrogen storage is an effective way to preserve fetal brain samples for later use. Our major problem with these experiments, of course, is that they deal only with **fetal** brain tissue. For clinical use we need much more work on adult brain tissue. Mammalian brain tissue could be cultured in the laboratory after thawing and revival. That would allow tests of basic metabolic functions. Survival of structure, organization, and memory might be tested at least in vertebrates by using salamanders or goldfish, which repair brain injury and accept transplants easily (pers comm, Laurence Gale).

NOVEMBER - JANUARY 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) 736-1703 and page the technician on call.

ALCOR

The NOVEMBER meeting will be at the home of:

(SUN, 1 NOV 1987) Virginia Jacobs
 29224 Indian Valley Road
 Rolling Hills Estates, CA

DIRECTIONS: Take the Harbor Freeway (US 110) south to Pacific Coast Highway (State 1) and get off going west. Go along Pacific Coast past the Torrance Municipal Airport to Hawthorne Blvd. Turn left (south) on Hawthorne and go up into the hills past the Peninsula Shopping Center (Silver Spur Rd.). Hawthorne takes a long curve around to the left. Indian Valley Road is a little over two miles beyond the Center, on the left. 29224 is about 0.2 mi up Indian Valley Rd., opposite Firthridge Rd.

The DECEMBER meeting (Annual Turkey Roast) will be held at the home of:

(SUN, 6 DEC 1987) Marce Johnson
 8081 Yorktown Avenue
 Huntington Beach, CA

DIRECTIONS: Take the San Diego Freeway (Interstate 405) to Beach Blvd. (Hwy 39) in Huntington Beach. Go south on Beach Blvd. approximately 4-5 miles to Yorktown Ave. Turn east (left) on Yorktown. 8081 is less than one block east, on the left (north) side of the street.

The JANUARY meeting will be at:

(SUN, 10 JAN 1988) ALCOR/Cryovita Laboratories
(SECOND SUNDAY) 12327 Doherty St.
 Riverside, CA 92503

DIRECTIONS: Take the Riverside Freeway (State Hwy 91) east toward Riverside. Go through Corona, and get off at the McKinley St. exit. Go right (south) on McKinley. Turn left (east) on Magnolia. Go across the railroad tracks and turn left (north) on Buchanan St. Doherty is the second street on the left. Turn left on Doherty, and then turn right into the back of the industrial park. 12327 is the third building from the back, on the right.

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