

# CRYONICS

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#### EDITORIAL MATTERS

ALCOR's half-price CRYONICS gift subscription offer which was announced in the October issue is available for foreign subscribers too! The rate for foreign Gift Subscriptions is only \$15.00. So if you know someone who lives outside the U.S. who could profit from learning about cryonics then now's the time to act!

Several of our readers sent us notes asking if we have any pictures of the ALCOR research/training dog Phaedrus and if so could we print them. The answer to both those questions is yes, and we are happy to oblige. We apologize for the poor quality of the photo. In defense of the photographer it must be stated that the lighting wasn't the best (it was almost sunset) and the target was definitely moving. Wild animal photographers we are not!

#### MURDER CHARGES AGAINST CALIFORNIA PHYSICIANS DISMISSED

As most of our readers know we have been covering the case of two California physicians accused of murdering their brain damaged patient since April of this year (see CRYONICS #33, April, 1983). The physicians were charged with murder by the district attorney late in 1982 and have been grinding through the legal system in a complex series of appeals and counter appeals.

The charges were brought against internist Neil L. Barber and surgeon Robert J. Nejdil when they removed their patient, 54-year-old Clarence Herbert from a respirator in August of 1981, and then, when he continued to breathe, stopped supplying him with both intravenous and stomach-tube nourishment. Herbert had become comatose as a result of a cardiac arrest following his surgery for repair of a hernia. The case was brought to the attention of the district attorney's office because Herbert did not meet existing California criteria for brain death; which include total cerebral electrical silence and absence of spontaneous respiration. Herbert survived for six days in the absence of any respiratory support until he succumbed to starvation and malnutrition.

The California State Court of Appeal, in an opinion written by Justice Lynn D. Compton, has ruled that physicians have no obligation to provide their patients with "ineffective treatment"—including in some cases food and water by mechanical means. The lengthy opinion further stated that "the benefits and burdens of using mechanical devices to provide comatose, brain damaged patients with food and water should be evaluated in the same manner as any other medical procedure." The court further stated that while physicians may have a duty to provide life-sustaining machinery in the immediate aftermath of a respiratory or cardiac arrest, they have no duty to continue such treatment once "qualified medical personnel" have decided "meaningful recovery of cognitive brain function is exceedingly unlikely." The report said that physicians should decide "whether the proposed treatment is proportionate or disproportionate in terms of the benefits to be gained versus the burdens caused." Benefits here were defined not only in terms of how long the treatment was likely to extend life but as to whether or not treatment will lead to a restoration of an awareness of that life.

The flux of opinion in the various California media appeared to be that the district attorney's office will not appeal the State Court of Appeal's ruling.

As far as cryonicists are concerned this is a landmark decision which should have far-reaching consequences in terms of our ability to control the medical care we receive. It should be much easier in the future to demand that we be disconnected from respiratory support equipment, or even that feedings be discontinued where there is no prospect of "return to an awareness of our existence." This will be especially important in cases where progressive brain degeneration is occurring and the earlier suspension takes place the better the chances of eventual reanimation. Huntington's Chorea and Alzheimer's disease are both characterized by massive loss of brain cells which may, at the conclusion of the illness have left little of the individual's personality or memory to work with.

We applaud the Court's ruling and heartily agree with their admonition of the legislature for failing to establish guidelines to allow patients and their families to make decisions on the use of medical technology to prolong their lives.

#### FUTURE WORLD EXPO: THE RESULTS ARE IN

Early in May of this year ALCOR had a booth at Future World Expo in Los Angeles which provided us with an opportunity to meet several thousand people and tell them a little about cryonics and ALCOR. It was a tremendous amount of effort on our part and the results, at least the short term results, are in. Seventeen people contacted us following the Expo and followed through on appointments to visit our facilities in Fullerton. We sold eight subscriptions to CRYONICS and have two people who are in the process of making arrangements for suspension membership.

An additional benefit which is hard to assess was the public education and consciousness raising which our participation contributed to. Certainly this is the first promotional and educational event we have participated in which resulted in people coming out and seeing our physical facilities. More important still are the two people who have paid their dues and are in the process of signing up for suspension membership. It was the impression of several of the ALCOR board members that more vigorous follow up of the people who visited the facility or who otherwise contacted us to express interest would result in a higher "sign up" rate for memberships. However, at this time the personnel are simply not available to muster such an undertaking.

All in all this experience has demonstrated to us that there IS a way to interest new people in cryonics. The approach seems to be a personal discussion of the idea on a basically one-on-one basis. Labor-intensive as this approach appears to be, it seems to be the only approach which has yielded any results at all.

#### TOWARDS UNIVERSAL AUTOPSY?

The September 2, 1983 issue of the Journal of the American Medical Association has as its theme the need for more autopsies in American medicine. Since 1973 when the Joint Commission on the Accreditation of Hospitals dropped its requirement for a minimum autopsy rate for a hospital to maintain accreditation the number of autopsies being performed has dropped dramatically. As numerous articles in this issue of the JAMA attest, this drop in autopsy rate has adversely affected medical quality control. An article by Alfred Scottolini, M.D. and Stephen Weinstein, M.D. indicates that in one institution 13% of patients autopsied did not suffer from at least one of the major clinical diagnoses. In 24% the cause of death did not appear on the attending

physician's listing of clinical diagnoses. In 6% of the autopsied cases neither the cause of death nor the major clinical diagnoses were confirmed. In only 69% of the cases were both the cause of death and the major clinical diagnoses confirmed by autopsy. An added area of concern for the JAMA is the change in age distribution of autopsies. In recent years the autopsy rate for the elderly has declined sharply. We have reproduced a table and graph at the conclusion of this piece which appeared in an article by Judith Aronheim, M.D., and co-workers, on the autopsy rate and age at autopsy in the state of New Jersey during 1979-80 which documents this decline. (Readers in the 20-29 age bracket will be dismayed to learn that the autopsy rate for that age group is almost 90%!!)

What all of this means to physicians is that the decreased autopsy rate has resulted in diminished feedback. Physicians are not confirming their diagnoses and carefully evaluating the effects of their treatments, particularly among the elderly, who comprise the majority of the patient load. Finding out you were wrong about a diagnosis or mistaken about the impact of a treatment helps to reduce error and result in new therapeutic approaches. Many discoveries have been made and important new modes of treatment conceived of while poring over the failures of existing medical treatment. Certainly, from a historical standpoint the autopsy has been an invaluable clinical tool which has greatly extended the capabilities of medicine.

Unfortunately, for a tiny minority of us, namely we cryonicists, the autopsy is a devastating and unacceptable aspect of medicine. When the physician gives up on us, we've just begun to fight and we cannot and will not be regarded as just another scrap heap of worthless junk to be torn apart in order to improve life for the next generation. Cryonicists are unwilling to consent to autopsies for the same reason that living people are unwilling to consent to vivisection; because we still consider ourselves potentially recoverable even when everyone else has given up. The new push for more autopsies may be a severe problem for cryonicists. In the JAMA autopsy issue an editorial by George D. Lundberg, M.D., Vice President of the JAMA concluded as follows:

"In my opinion, autopsy should be universal\* in civilized countries. Some would say that this would increase costs substantially. I respond that an autopsy performed in a judicious and efficient manner involving "dieners"\*\*\* for much of the time-consuming physical labor, as has been done for many decades in European countries, need not be particularly expensive.

Enough is enough. The time has come for the decline in autopsy percentages in this country to cease. We must follow the lead of the medical students and the official AMA policy. Medical staffs, hospital administrators, teaching service chiefs, pathologists, and those who pay the bills should urge the reversal of this self-defeating trend and increase the autopsy rate to where it belongs.

With this autopsy theme issue the JAMA is declaring war on the nonautopsy."

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\* Emphasis mine.

\*\* "Dieners" are unskilled, nonprofessional individuals who do the coarse dissection of the body: basically butchers who move the bodies around, prepare them for the examination by the pathologist, and then tidy the mess up afterwards.

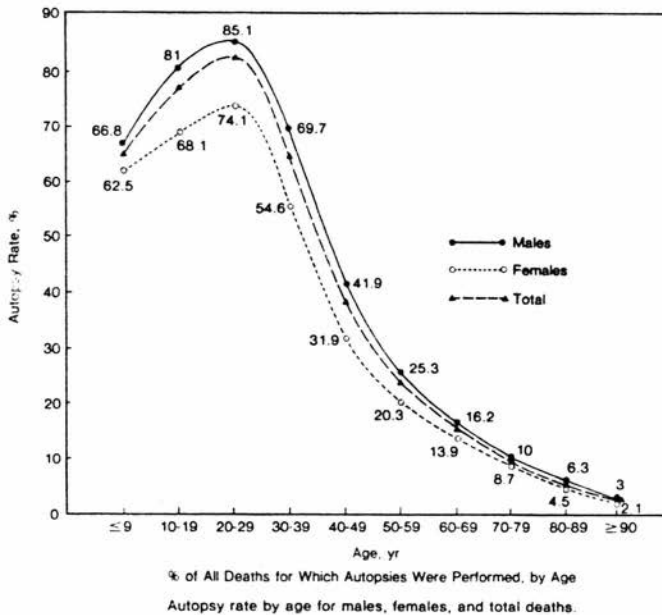


There seems little doubt that the American Medical Association and the American Council of Pathologists will succeed in raising the rate of autopsies performed. In general, if this is achieved through informed consent of the next of kin and the patient has stated no wishes to the contrary, we have no disagreement with this approach. However, if the strategy for raising autopsy rates is to make it "mandatory" or "universal" then we must be prepared to object vigorously and to fight back. Short of prohibitive legislation it is hard to imagine a more complete end to the cryonics program. Careful monitoring of the AMA's tactics over the next few months may well be critical to our survival.

Autopsy Rate by Age Group*						
Age, yr	All Deaths		ME† Cases		Non-ME† Cases	
	Total No. of Deaths	Autopsy Rate, %	Total No. of Deaths	Autopsy Rate, %	Total No. of Deaths	Autopsy Rate, %
≤34	6,055	74.6	4,061	90.5	1,994	42.1
35-64	24,652	25.3	7,950	43.7	16,702	16.6
≥65	68,438	7.8	10,129	16.2	58,309	6.4

\*P < .001 for all comparisons within each column.

†ME indicates medical examiner.



#### RESPIRATOR BRAIN: IS AN ANSWER AVAILABLE NOW?

Scarcely an issue of CRYONICS goes by without some discussion of the problem of "respirator brain." It is of critical importance to cryonicists that they not be maintained on life support equipment after cerebral circulation has stopped. This phenomenon which is known as no-reflow can occur after stroke,

resuscitation, head injury or drug overdose. It is a common problem and its occurrence has already resulted in the loss of one potential suspension patient. Up until this time the only way to determine the status of cerebral function was to do a blood flow study using sophisticated and expensive nuclear medicine equipment or to perform electroencephalograms (EEGs) at frequent intervals. Neither of these tests lends itself to monitoring of a patient's condition after an injury or insult to the brain has occurred and it is quite possible for a patient to slip into no cerebral flow or "brain death" many hours before it will be detected. Even relatively simple measurements of brain blood flow using a noninvasive technique known as carotid oscillography are very inconvenient to use and do not give a continuous, dynamic indication of the patient's cerebral status. The EEG is an excellent way to continuously chart a patient's cerebral status, but requires complex and bulky equipment, numerous electrodes and most importantly the presence of a trained technician to interpret the signals being generated on paper. All of these drawbacks have put the EEG out of range for use by cryonicists as a dynamic and continuous monitor of the brain's status.

Less than a week ago ALCOR met with a representative of Johnson and Johnson's Critikon division to discuss and evaluate a new device which they have just begun to market. The instrument is called a "Cerebral Function Monitor" and is designed to function as a completely portable, bedside device for continuously monitoring a patient's cerebral function. The device works by continuously monitoring a patient's brain electrical activity for amplitude and frequency. The unit employs a microprocessor to "read" the EEG and to produce a strip on a slow, continuous basis documenting the patient's cerebral status. Alarms are built into the device to immediately alert medical personnel to any significant deterioration in the patient's cerebral status. This eliminates the need for skilled personnel to evaluate the EEG: the microprocessor inside the device handles all such judgement calls and continuously produces a status report on the patient's brain function.

The Critikon Cerebral Function Monitor is designed for use in ICU's, recovery rooms, operating rooms and is being marketed as an early warning unit for evaluating cerebral status change in coma patients of all kinds. The unit weighs less than 19 pounds, is straightforward to operate and does not require any complex electrode placement on the patient (it uses three only electrodes). The device is structured similarly to Critikon's widely acclaimed and highly dependable Dinamap automated blood pressure monitor. Perhaps the best feature of the device is its price: \$4,500, which includes all accessories. (This may be contrasted with nearly \$20,000 for conventional EEG equipment which cannot be used continuously and requires a highly skilled technician to interpret.)

The ALCOR research committee is extremely impressed with the performance of this device. All the references we were given by Critikon had nothing but praise for the unit. We are extremely interested in acquiring one of these units. Perhaps the device would be more affordable if it were purchased jointly by several (or all) of the existing cryonics groups and some sort of rotation schedule for custody set up with the provision that it will be sent out in an emergency to whoever needs it. If this is not practical, then perhaps we should give some serious thought to whether we should try to raise the money amongst ourselves to purchase this device. We should also point out that the unit would have considerable use as a research tool for monitoring cerebral recovery following glycerol washout and total body washout experiments with animals. The commentary of our members would be greatly appreciated on this point.



THE ALCOR TURKEY ROAST  
WILL BE HELD ON DECEMBER 7th  
STARTING AT 1:00 P.M. DON'T  
MISS OUT! CALL MARCE JOHNSON  
AT (714) 962-7898 IF YOU PLAN  
TO ATTEND. SEE THE MEETING  
SCHEDULE ON PAGE 7 FOR DETAILS.

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DO YOU LIVE IN PHILADELPHIA?

Sidney Batt, an ALCOR associate member who lives on the East Coast has been trying for some time to get in touch with others in his area (New York, New Jersey, Pennsylvania) who are interested in cryonics and who might be willing to get to get some cooperation going on a local level. Mr. Batt may reached by interested East Coast parties by writing him at: Box 11694, Philadelphia, PA. 19116.

LIFE INSURANCE INFORMATION

We have prepared a brief listing of insurance companies who have statements on file with us to the effect that they WILL write life insurance for cryonics purposes. This list is in no way meant to be exhaustive.

College Life Insurance Co.  
3500 Depaul Boulevard  
Indianapolis, Indiana 46268

The Guardian Life Insurance Co.  
201 Park Avenue South  
New York, New York 10013

Security Connecticut  
Security Drive  
Avon, Connecticut 06001

Jackson National Life  
5929 Executive Drive  
Lansing, Michigan 48910

We would be happy to print the names of other companies who are willing to write insurance with the cryonics group as beneficiary. It is important to point out that two years after a policy has been written the policy owner can name whoever he or she chooses to be the beneficiary without contest from the company. So, if you can afford to wait two years one way around this "no insurable interest problem is to name your estate beneficiary and then change it over to the cryonics organization two years following the issue date. Of course, during the first two years you don't have any cryonics coverage unless you have provided for funding by other means!

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There are three kinds of people:  
Those who make things happen.  
Those who watch things happen.  
Those who wonder what happened.

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MEETING CALENDAR

**ALCOR****ALCOR LIFE EXTENSION FOUNDATION**4030 NORTH PALM #304  
FULLERTON, CALIFORNIA 92635  
(714) 738-5569

ALCOR meetings are usually held on the first Sunday of the month. Guests are welcome. Unless otherwise noted, meetings start at 1:00 p.m.

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The NOVEMBER meeting will be at the home of:

(SUN, 6 NOV 1983)

Jerry and Kathy Leaf  
13152 S. Blodgett  
Downey, CA 90242  
Tel: (213) 531-2708

DIRECTIONS: Depending on the direction from which you are coming, take either the Santa Ana Fwy (I-5) or the Artesia Fwy (Hwy 91) to Lakewood Blvd (Lakewood is a north-south street about midway between the 605 Fwy and Hwy 7. On Lakewood, go south from I-5 or north from 91 to Gardendale (which is about midway between Imperial Hwy. to the north and Rosecrans to the south). Go west on Gardendale to Blodgett (2nd street from Lakewood). Go south on Blodgett to 13152 (east side of street).

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\*\*\* ALCOR TURKEY ROAST \*\*\*

December will be the occasion of the 7th (8th?) annual ALCOR turkey roast. This is an informal potluck party hosted each year by ALCOR, designed to encourage newcomers to cryonics as well as "old-timers" who don't see each other often to get together in a convivial atmosphere where Robert's Rules of Order are strictly prohibited. So, all you obscure "party-animal" cryonicists and fellow travelers, come on out of the woodwork and show yourselves. Meet the crusty cryonics pioneers you have until now only read about in the history books. Find out first hand if the rumors are true. See the unedited videotape by Dick ("Fassbinder") Jones of last year's Roast! Eat, drink, and be merry, for tomorrow we re-animate!

This year's roast will be held at the home of:

(SUN, 4 DEC 83)

Marce Johnson  
8081 Yorktown Ave.  
Huntington Beach, CA  
Tel: (714) 962-7898

DIRECTIONS: Take Interstate 405 (San Diego Fwy) to Beach Blvd. (Hwy 39) in Huntington Beach. Go South on Beach Blvd. approx. 4-5 miles to Yorktown Ave. Turn left (East) on Yorktown. 8081 is less than 1 block on the North side of the street.

NOTE: It is requested that each person attending the Turkey Roast bring some pot luck food or drink item to the party. Please phone Marce and let her know what you'll be bringing.

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ETTINGER ON NEUROPRESERVATION:  
THREE STRIKES—AND YOU'RE OUT

by Michael Darwin



"To gain perspective we must also remember that, in emotional issues, much seems to hinge on subtle nuances of psychology, on shades of meaning and turns of phrase. Those who bristle at the blasphemous notion of "resurrecting the dead" may be perfectly agreeable to "saving life..." Only an imperceptible shift may be required to transform the pessimist who sees the door of opportunity nearly closed, into the optimist who sees it beginning to open."

"After all, we are at war. The ancient enemy will take ruthless advantage of every weakness, every hesitation. He will give no quarter, and allow no second chances. We must not abandon our fallen, however grievous their wounds. every time we do our duty, we strengthen the program, and gain confidence that those on whom we rely will, in turn, do their duty by us."

"I want to take by the scruff of the neck the dainty, the timid and the supercilious, and rub their noses in it; we must aspire to be, and intend to become, superior to mankind and to all its past heroes, individually and collectively, and in all aspects—physical, intellectual, emotional and moral."

—Robert C.W. Ettinger  
MAN INTO SUPERMAN

Immersed in liquid nitrogen a scant twenty feet from where I sit writing these words are three people who absolutely would not have been placed into cryonic suspension were it not for the existence of an option known as neuropreservation. For those readers who are relatively new to cryonics, neuropreservation refers to the suspension of the individual's head or brain with subsequent cremation or other conventional disposition of the rest of the individual's body. Neuropreservation has been undertaken for a variety of reasons; vastly lower cost, superior cryobiological attention to the brain, and moving and handling logistics ( it is much easier to quickly transport neuropatients in the event of political or natural catastrophe than it is to transport whole body patients). The tremendous reduction in cost available with the neuro-option has been a primary motivation for those patients and/or their relatives who have chosen it. Without the reduction in cost and ease of handling, transport and storage which accompanies neuropreservation, seven patients now in storage would not be there, and half again as many would never have been placed into suspension in the first place.

The above facts should be considered in light of a brief editorial (approx. 250 words) which appeared in THE IMMORTALIST, the newsletter of the Cryonics Association, located in Detroit, Michigan. The article is entitled "Head Only: Strike Three" and is written by none other than Robert Ettinger himself, one of the fathers of the cryonics movement. The purpose of "Strike Three" is to persuade CA/CI members that "it seems clear enough that the prudent person will execute a whole-body contract" and presumably never give neuropreservation a second thought. Actually, the "prudent person" or any other person for that matter who is signed up with CI doesn't have much choice, because as Ettinger points out in the first sentence of his editorial "The Cryonics Institute does not offer the option of "neuropreservation." The purpose of Ettinger's editorial therefore is not to tell CI members about why they shouldn't choose the neuro-option, but rather about what has been chosen for them and why they should "prudently" go along. This brings us to the specifics of Ettinger's arguments against neuropreservation which I quote below:

**STRIKE ONE: Public Relations Problems:** "When the cryonics program becomes somewhat larger and attracts more critical attention, "neuro" will be a severe public-relations headache; our detractors will have a field day with the grisly vision of rows of brains in jars."

**STRIKE TWO: Getting a New Body May Be Difficult:** "The implicit premise of neuro is that regenerating or constructing a whole new body, to house the brain, will not be notably more difficult than repairing a person frozen whole, or at least that its success is just as likely. But such an assumption is very far from proven, even on the basis of current freezing protocol. In fact, there are scenarios in which that assumption is so ludicrous that special attention is required." (Ettinger provides no such scenarios.)

**STRIKE THREE: Things Might Improve:** "Suppose that before you die—in 10 or 20 or 30 years—freezing methods are fully perfected...now how would you feel about neuro? Or consider a time when freezing methods are still imperfect, but much better than now, with demonstrably little damage. Now you have a high confidence of rescue in the relatively near future...but only if those future technicians have your whole person to work with."

Before considering these arguments individually it is probably wise to step back and take an overview of the whole question of neuropreservation and how it relates to whole-body cryonic suspension.

In 1973 when preparations for the first neurosuspension were begun, one major concern and objection to the procedure was the problem of reconnecting the spinal cord. At that time there was only indirect experimental evidence that this could be achieved in mammals and the primary reasons for optimism among those of us who had decided to undertake neuropreservation were the facts that some lower vertebrates could regenerate severed cords (salamanders, axolotls), and mammalian spinal cords appeared to attempt to regenerate but were blocked from doing so by scar formation following injury. We also looked at the sweep of medical developments in related areas such as peripheral nerve regeneration and concluded that the spinal cord problem would one day be solved. Recent developments certainly seem to be confirming our early optimism. Already researchers have demonstrated functional regrowth of mammalian spinal cords which have been completely severed under laboratory conditions (Undersea Biomedical Research, Vol 7, #4, 1980, p.305) (as opposed to the much more extensive crushing trauma which is seen in sports or auto injuries). In 1978, two years after the first neurosuspension was undertaken, the Spinal Cord

Society was formed by Dr. Charles Carson, a paraplegic who wanted action taken to cure not just provide passive care for victims of spinal injury. Five years later the Spinal Cord Society has grown to boast 80 regional chapters, 10,000 members and an outstanding Fund Raising Board consisting of people like Dr. David Barret of the Mayo Clinic, Dr. Robert Becker (the first scientist to demonstrate partial limb regeneration in a mammal), and James Sinnocchi of IBM. These and a large and rapidly growing group of others like them believe that the problem of achieving clinical regeneration of injured and severed spinal cords will be overcome within our lifetimes—probably within the next two decades. Just the fact that there are now two large national organizations (in addition to the Spinal Cord Society there is also the American Paralysis Association—an organization with a similar charter) dedicated to reversing spinal injury should point up that it will not be long before this problem is overcome.

With the solution to the problem of spinal cord repair on the horizon the issue of whether it will be possible to reconstitute neuropatients hinges only on the ability of future medical technology to repair age/disease/freeze injured brains and to provide bodies for interface. Recent advances in cloning, and in immunomodulation open the possibility of producing decerebrate clones as host bodies (eliminating the problem of histocompatibility) or using bodies of accident victims or others who suffer massively disrupting trauma to their brains (self-inflicted gunshot to the head accounts for nearly 10,000 deaths a year—a sizable number of available bodies for "recycling.") Even with current technology the limitations on reanimation of neuropatients do not seem insurmountable. Indeed, as I'll discuss later, the matter of repairing just the brain, and plugging in all new support components may be a much more reasonable order to fill than trying to repair each damaged organ and tissue on a one on one basis.

With this background in mind let us now examine the specific deficiencies of Ettinger's arguments:

**STRIKE ONE:** We are not in cryonics to play public relations games. We are in it to survive. If any of us made our decisions on the basis of trying not to worry, offend or outrage the rest of the world we would never have become cryonicists in the first place. We are cryonicists because we want both ourselves and those we love and care about to have the best chance possible, or at least SOME CHANCE. We cannot, and WE WILL NOT be deterred from the only reasonable course of action open to us merely because it might offend the sensibilities of the squeamish. Our love of life and our desire to secure it at any price constitutes the MORAL reason for our action. We refuse to sacrifice ourselves and our loved ones simply because "the public" thinks we should.

Another point worth making is that second guessing what people will or will not find "grisly" or "horrible" in the future is frequently a futile business. What is considered "horrible" in one culture may be considered good taste in another. Eating dogs is considered unthinkable here and a succulent delicacy in the Phillipines. The organ harvesting program and indeed the whole area of transplantation itself would have been considered incredibly macabre only a few generations ago—and it is now seen as a high achievement and a great good. Even procedures which have been around a long time vary in their acceptance from time to time and place to place; abortion is a classic example of this. Once adequate methods to regenerate severed spinal cords come on line it will not be long before transplantation of the head/central nervous system becomes a clinically viable form of treatment. This should go a long way towards changing social attitudes in this area.

Ettinger himself should by now be painfully aware of the dangers of trying to predict future attitudes toward new ideas. After a lifetime of misguessing public reaction to cryonics (it took him 20 years to write THE PROSPECT OF

IMMORTALITY because he expected others to immediately see the light on the basis of a short story and some short mimeos he'd written) he should be a bit more cautious about predicting mass reactions and social responses. Anyone now reading THE PROSPECT OF IMMORTALITY becomes immediately aware that "the freezer centered society" Ettinger so confidently predicted has failed to materialize and further, that virtually every major estimation of social response to cryonics made in THE PROSPECT has been WRONG.

To transfer Ettinger's argument about the possible public relations impact of the neuro-option to the broader issue of cryonics itself is an interesting exercise which may help to give us all a little perspective. What amounts to the same argument has been used again and again by cryobiologists who say that WE SHOULD NOT FREEZE "DEAD" PEOPLE NOW BECAUSE IT IS GHOULISH AND BAD PUBLIC RELATIONS. We are told that things which are ghoulish and bad public relations act to SLOW DOWN advances in cryobiology and thus DEFER the time when suspended animation will be developed. We are also told by these same cryobiologists that because cryonics is so ghastly and such bad PR, very few people will want to get frozen and all that those few who do get frozen will achieve is to PUSH BACK the time when suspended animation will be developed thus costing MILLIONS OF PEOPLE THEIR LIVES and saving NO ONE. I would hasten to add that a number of the cryobiologists who gave such clever advice are now dead and buried or cremated. I would also point out that since the advent of the cryonics program funding levels for basic cryobiologic research have been impacted no more or less than funding for other areas of biomedical research. In fact, the only discernable effect of cryonics on cryobiology is the contribution of two cryobiologists (who became cryobiologists because they were CRYONICISTS) who have outstanding reputations in their fields and have produced work which is admired and even lauded by their cryobiological colleagues as being a significant contribution to the field.

Arguments to lay ourselves on some sacrificial altar because we can't afford whole-body and "might" slow down the cryonics program at some un-named time in the future are as old as all the death-dealing garbage brought forth by any priest, shaman or nationalist war machine.

Finally, concerning STRIKE ONE there is the matter of the practical implications of Ettinger's and CI's position. What would Ettinger want if only his head could be recovered due to some accident? Should CI discard him because of some future public-relations headaches? What if someone can't afford whole-body even at CI's rate of \$30,000, but could afford neuro? What kind of person or organization would say "NO!"? What if a CI member decided on his own that neuro represented increased mobility, financial security and biological advantage? Why should such a person be forbidden what they believe to be benefits just because someone in the future "might" object?

STRIKE TWO: It may be difficult to regenerate a new body. Anyone who has looked at electron micrographs of brain and body tissue prepared with current freezing techniques is aware of the immensity of the job that confronts those who would reanimate us. Much of the damage will, it seems, have to be repaired on a one-on-one, cell by cell basis. This implies the existence of microscopic automata or the development of specialized organisms to effect repair. Either way, a very sophisticated technology is going to be required—and this to repair just one organ—the brain. With these considerations in mind it is possible to turn STRIKE TWO around and posit that in order to achieve repair of the whole body the same kind of technology will have to be applied to each individual organ, tissue and so on. It would thus be much simpler to just discard damaged supportive components and start out with freshly grown ones rather than pore over age and disease wracked debris trying to restore order and life. Indeed, this is the way technology works now. No one would the spend the time and

energy required to repair a bad integrated circuit in a television or refill a plastic ball point pen when it is cheaper to plug in a replacement component. Only the brain cannot be discarded in this fashion since it and it alone contains the essence of our personalities and identities. Considering the amount of injury we do today with existing freezing techniques (just the injury we know about) it seems almost absurd to think that regeneration or other production of a new body will stand in the way of our revival. Once we understand and control the operation of our genome it should be possible for us to fabricate a living system(s) which will accept our age, disease and freeze ravaged central nervous systems, make repairs to damaged cells, replace missing ones, and fabricate a new body for us. Such a "device" might weigh in at a ton or two, accept us as naked brains and a year later expell us as healthy, whole, fully functional young adults. If that seems incredible, it is no more so than how we got here to begin with: as a result of the union of two microscopic packages of programming and the metabolic machinery of a single egg cell. If an entire human being can be made from "scratch" in less than a year what is so incredible about the notion of rebuilding one starting with the most sophisticated and complex component of the individual to begin with?

STRIKE THREE is the only one of Ettinger's arguments that even approaches making good sense. It is something ALCOR/IABS has been telling people for years: buy enough insurance now to cover whole-body suspension. Indeed, buy SEVERAL TIMES THAT AMOUNT if you can afford it. This is recommended because suspended animation may be developed in the next 20 to 40 years and it is equally true that we may not be able to afford it if we have not provisioned for it NOW. Certainly there are a lot of people dying of heart disease who WILL DIE BECAUSE THEY CANNOT AFFORD HEART TRANSPLANTS WHICH WOULD SAVE THEIR LIVES. That should be a lesson to us all. Unfortunately, not all of us can afford the kind of insurance it takes for whole-body suspension. This is especially true of those of us who are older, as well as our parents and grandparents. We are not going to abandon these people when a realistic alternative which offers a chance for them exists. Clearly, neuropreservation even as a worst case is better than no preservation.

All of us at ALCOR have said many times that we hope we don't have to go neuro when the time comes because we hope we will live long enough to enjoy the development of suspended animation or "almost suspended animation." But we don't know that for sure, and in the meantime we want to have the neuro-option available. With the odds stacked heavily against us and the damage associated with freezing and dying being so severe, neuro can be argued to be the best way to stay suspended for the very long period of time (with the all risks attending) likely to be required in order to achieve revival. In any event, those of us who have chosen neuro have not closed our eyes to the march of progress and if the time comes (due to great technical advances in suspension techniques) we will not be dashing about like the Queen of Hearts shouting "off with their heads!"

To sum up STRIKE THREE, no one is saying you shouldn't go whole-body (with authorization to convert to neuro if necessary) IF you can afford it and you feel there is a genuine advantage to doing so. The point is, many of us can't afford it or remain unconvinced of the superiority or worth of the whole-body approach.

Finally, it is time to point out some things about Ettinger and the Cryonics Institute which bear on these points. CI at this time, to our knowledge, only has one patient in storage. That patient according to CI was accepted under special circumstances with funding below the CI minimum. At this time, over six years later, that patient is at last report still on dry ice. She is on dry ice presumably due to financial considerations which prevent



whole-body storage in liquid nitrogen. How many CI members or members of any cryonics group for that matter would like to be left sitting around on dry ice for SIX YEARS when the option of immediate storage in liquid nitrogen is available via neuropreservation?. Certainly the impact of dry ice storage on a variety of nucleated mammalian cell types is well documented in the literature. All of the advice ALCOR has received from professional cryobiologists and from a careful examination of the literature has led us to believe that serious biological/ultrastructural degradation can still take place at dry ice temperature. None of us at ALCOR want to lie about on dry ice for half a decade because of public relations reasons or because of fear of losing some disease ravaged, shriveled and worn out support structures WHICH FAILED US IN THE FIRST PLACE!!

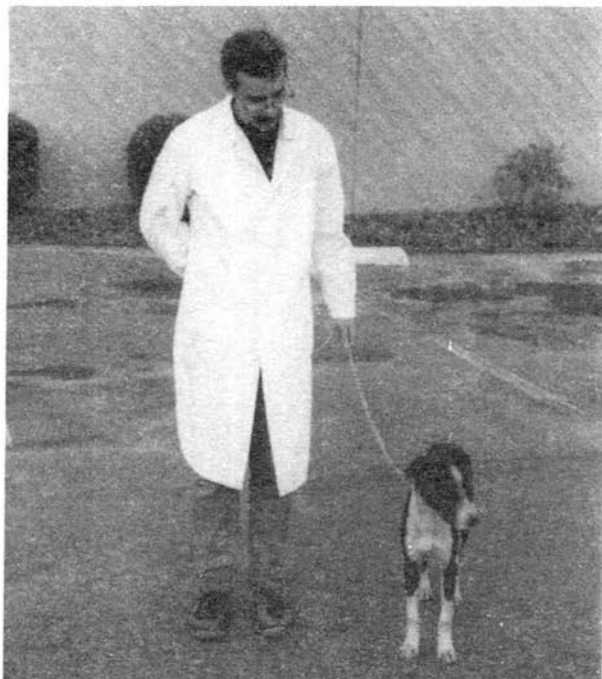
We expect that Ettinger will counter some of these arguments by pointing out that CI has whole-body preservation available for \$5,000 less than ALCOR's minimum for neuropreservation. It is now time to attempt to look at CI's claims straight on—on the basis of their performance rather than their promises. This will be difficult to do for several reasons: First, CI has closed their perfusion and storage facilities to most outsiders. No one from ALCOR is allowed in, and even Jerry Leaf, a BACS member, was refused entry. More recently Ettinger has broken off communication with ALCOR and their group refuses to answer even basic queries about technical sophistication, newsletter circulation, and their financial status. CI and Ettinger have both threatened litigation several times in the past when unfavorable comments about their operation have appeared in print. Most recently they threatened legal action against two CI members who were dissatisfied with CI services and threatened to make their dissatisfactions known unless their membership fees were refunded. It goes without saying that such action has a chilling effect on open discussion of any kind and discourages consumers of cryonics services from voicing their dissatisfaction and possibly alerting others to problem areas.\*

CI has not reported placing anyone into liquid nitrogen storage and thus their estimates of the costs and logistics involved in this operation must be regarded as merely the result of theoretical exercise rather than practical knowledge. They have not yet demonstrated that they can store someone on a break-even basis in liquid nitrogen even utilizing volunteer effort at their recommended minimum of \$28,000. In fact this minimum was predicated to some extent on the development of new insulation technology which was to significantly reduce start up and long-term storage costs. After years of delays and apologies CI has yet to demonstrate this system—or even a prototype. CI's earlier confident statements about the development of a nonvacuum system utilizing conventional foam insulation proved groundless and the approach was abandoned after several years of hard work and the failure of a "costly" prototype to confirm their theoretical predictions. Prior to undertaking their insulation project an ambitious plan to construct a reinforced concrete facility in rural Michigan was abandoned reportedly due to faulty or inaccurate contractor's estimates and unforeseen rises in costs. CI's perfusion technology remains a total unknown and there have been no substantive updates in THE IMMORTALIST since the announcement over a year ago they had lost the services of a perfusionist with whom they had contracted.

One thing IS clear about the Cryonics Institute, and that is that they have

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\* For those of our readers fortunate enough NOT to have been involved in litigation it is worth pointing out that just BEING sued can cost you THOUSANDS of dollars regardless of whether you win or lose. An expenditure of \$5,000 is not uncommon just in beginning a defense for yourself. This is something to consider, especially if the opposition's legal help is free or inexpensive!



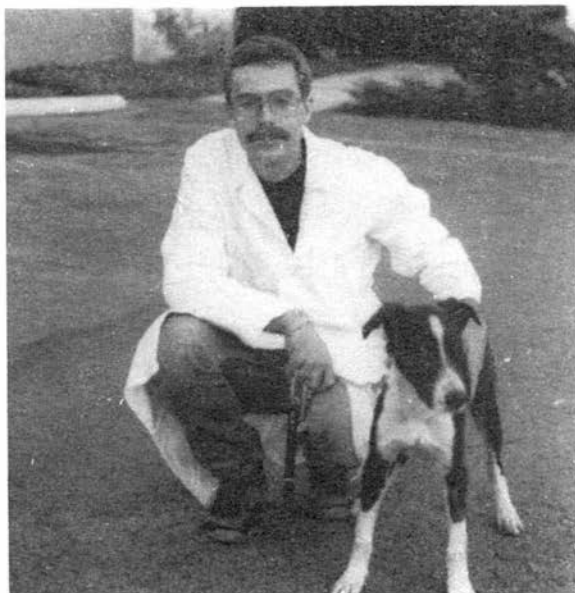
MIKE DARWIN

AND

PHAEDRUS

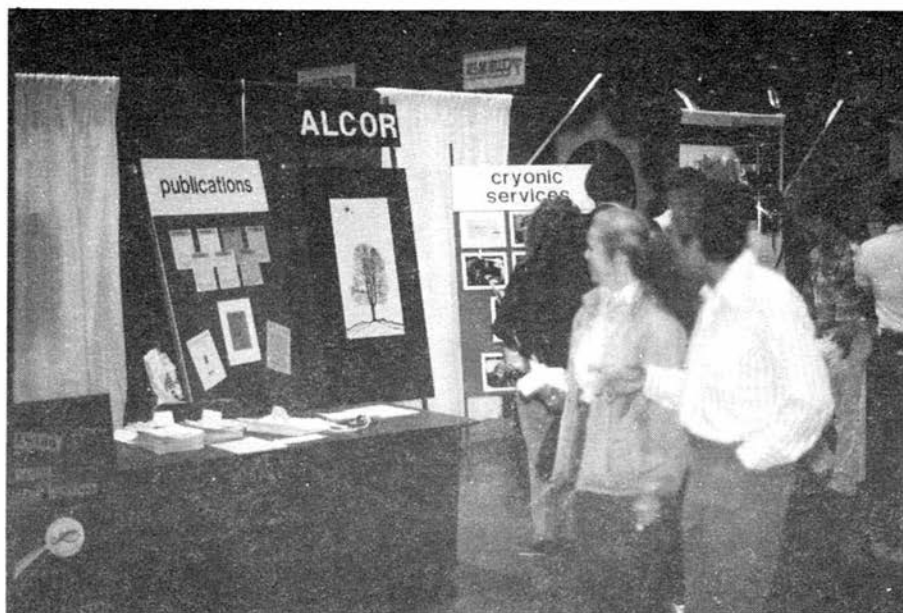
ALCOR research/training  
dog Phaedrus following  
femoral-femoral bypass  
and cooling to 10°C.

Phaedrus is now sharing  
quarters with ALCOR member  
Laurence Gale. We under-  
stand that he continues to do  
well and is none the worse  
for wear as a result of his  
"chilling" experience.





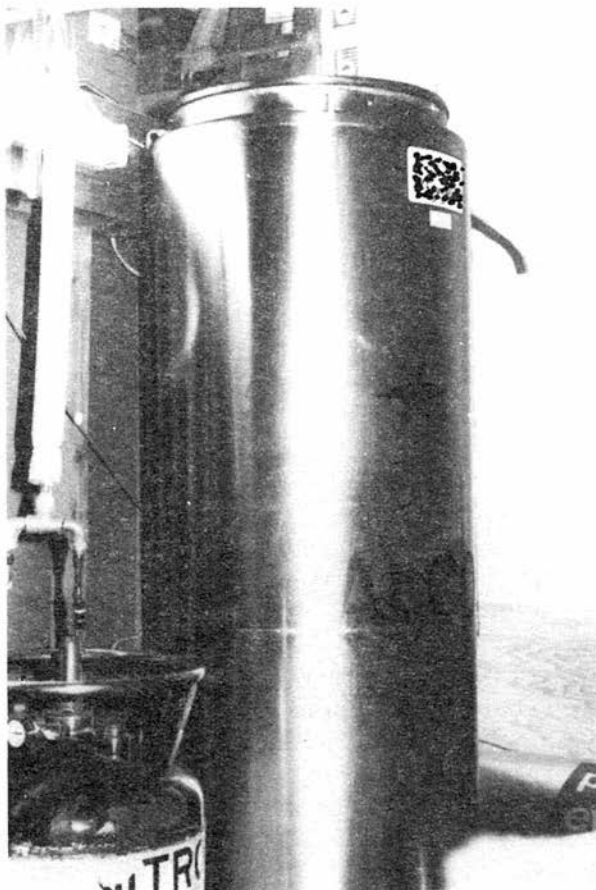
ALCOR's booth at Future World Expo. Above: layout of the booth which was designed by ALCOR Board Member Hugh Hixon. (Jerry Leaf and his sister-in-law Betty Leaf are in the foreground.) Below: Mike Darwin explains cryonic suspension to interested observers. Photos are courtesy of Jerri Rothacker.





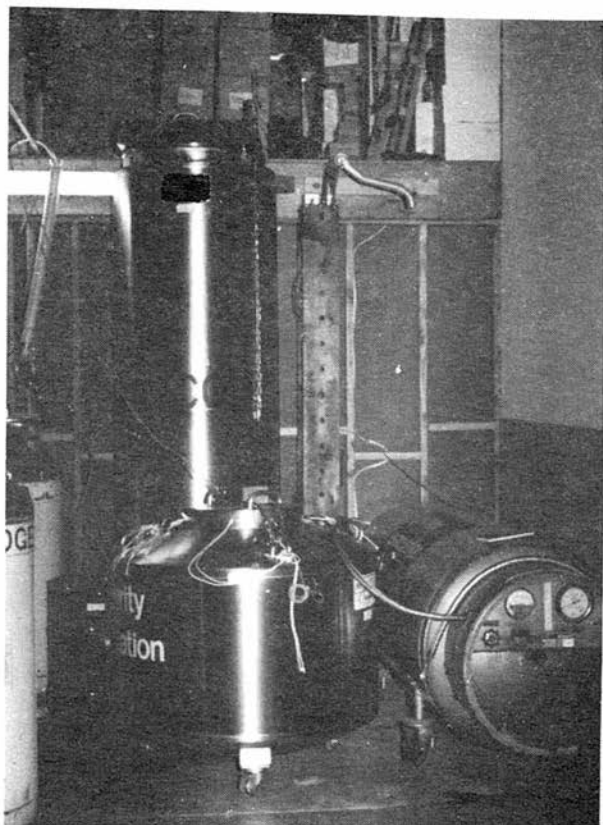
Above: Monthly ALCOR meeting held at the home of Paul and Maureen Genteman in September, 1983. From left to right: Bernie Krakower, ALCOR Treasurer Bill Jameson, Dick Jones, and Mike Darwin. Below: The ALCOR computer which experienced at least clinical and possibly biological death following completion of most of this newsletter. No--we are not panicking yet--we haven't had time to! Contributions for computer hospital bills are welcomed!!!!





Left: The ALCOR dual patient storage dewar. The dewar is a little over eight feet tall and weighs over three thousand pounds when fully loaded.

Right: Patient storage area at Cryovita which ALCOR leases for care of its patients. The large diameter dewar with the narrow neck in the foreground is the ALCOR cephalarium which current holds three neuro-patients. This dewar can hold as many as eight patients.





consistently failed to meet the milestones they have set for themselves in a number of areas. We wonder if they will be able to offer whole-body liquid nitrogen storage for the amount they are now asking. We also wonder exactly what kind of perfusion services they have available since they have no published standards or case histories to judge by.

The really sad thing in our estimation is that CI members do not have the option of neuropreservation, or even the option of converting to neuropreservation if funding runs out for whole body maintenance. Such lack of choice, on what amounts to the basis of public relations both sickens and angers us here at ALCOR. And there is no other way to look at such a decision on CI's part because each of Ettinger's other two STRIKES make no sense at all if the choice boils down to possibly coming back later or certainly not coming back at all.

Looking over the quotes by Ettinger which open this article it is hard to believe we are dealing with the same man. Where is the man who once wanted to take the timid and supercilious and rub their noses in the expectation of their coming superhumanity?

For Ettinger and the other members of the Cryonics Institute who are being denied the neuropreservation option we only hope it isn't "Three strikes and you're out!"



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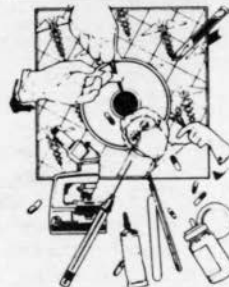
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SCIENCE UPDATES

by Thomas Donaldson



## LASHLEY'S EXPERIMENTS DONE CHEMICALLY

Every cryonicist knows of the early experiments by Lashley, who showed that physically removing brain regions from many different locations could not abolish or erase memory of how to run a maze in rats. The interest of this work for cryonics consists, of course, of the indications that our brains store memories in a very redundant fashion, so that the survival of our selves and our memories does not depend upon survival of one particular cell or brain region.

A very interesting recent experiment provides us with additional convincing evidence that our memories are stored independently in many locations throughout our brains, and furthermore even gives us some ideas as to how that storage takes place. JB Flexner, LB Flexner, and AC Church, in PHARM BIOCHEM BEHAVIOR (18 (1983) 519-523), describe their recent work on chemical means of duplicating Lashley's original experiments.

Their experimental scheme was simple. Many experiments have shown that the antibiotic puromycin will cause forgetting in mice if given soon after the mice have learned a particular task. The particular experiment of the Flexners involved direct injection of puromycin into the hippocampus, a brain region involved in the processing of recent memory. Such injections, localized to the hippocampus, will abolish memory of a maze if the animal receives them within 3 days of training, but they become quite ineffective if given 6 or more days after training. However by giving puromycin injections into much more widespread brain areas at 6 days these scientists could cause extinction of memory: while it only took injections to the hippocampus to cause forgetting after 3 days, after 6 days it needed injections over the whole of the forebrain.

However Flexner, Flexner, and Church didn't just duplicate Lashley's work by destroying a memory. Because their method was chemical rather than surgical, they could make a much more precise study of how a memory spreads. To do this, they used several different drugs which acted to inhibit the working of an enzyme which they had believed would play a particular role in spread of memory, the enzyme dopamine beta-hydroxylase. This enzyme promotes synthesis of the neurochemical norepinephrine. Treatment with drugs blocking this enzyme would slow the spread of the memory; in one case, treatment for 3 to 7 days immediately after learning would block the spread of memory for as long as a month. Another experiment, using several periods of treatment, prevented memory from spreading for as long as 3 months. It follows that whatever mechanisms may cause the spread of a memory, they can remain hidden but still capable of inducing the memory for a very long time after learning. These experimenters also feel that they can disrupt mechanisms causing spread of a memory more easily than they can disrupt the formation of the memory, something which makes study of this spread quite

important. As yet they have no idea why this suppression occurs, except that it lasts at least a month while the drugs causing it lose all detectable biochemical effects after only a few hours.

A further interesting fact about this chemical model is that reversal of the memory-suppressing effect of puromycin comes much easier than the suppression itself. Scientists had already known that injections of saline solution at the original site of the puromycin injections would cause a reversal of puromycin's effect, that is, recovering the memory. These recent experiments have clarified this and given us additional evidence that memory storage happens in a widespread way: although 6 puromycin injections at different brain sites were needed for suppression of a memory, injection with saline solution at only two different sites could cause recovery of memory.

A major advantage of chemical studies of memory comes because they are often reversible, unlike surgery. I believe that these researchers have achieved a major advance, not so much in our knowledge of memory, but in our understanding of how to study it. In particular, their work on how a memory spreads throughout the brain seems quite novel and will likely mean further discoveries in future.

#### LITHIUM AND CIRCADIAN RHYTHMS: A SPECULATION

Looking at the problem of aging very broadly, we see a wide range of animal species with a very wide range of lifespans, each one typical of the species. The idea that a cat is old at 20 is a commonplace of our childhood. Furthermore, developmental events such as puberty occur at specific times which also depend on the species. It therefore follows that we must have inside us, at some level, a means of measuring the passage of time (else how could our bodies know to begin puberty in our teens rather than, say, at age 40?).

Conceivably this clock could depend on a much more basic variable such as metabolic rate; but that merely begs the question, since we would still like to know exactly how our bodies link metabolic rate to the passage of time: why DOES old age occur at 60? Furthermore, a defect of any theory that clocking depends solely on metabolic rate is that lifespans DO vary among animal species of the same metabolic rates.

Nor does this clocking necessarily have to happen on some particular organizational level. We only have good reasons to believe that it exists, whether it is cellular or neurophysiological remains open. Certainly the same problem exists in talking about the lifespan of cell cultures: elapsed time, as distinct from number of cell divisions, still seems to play a role.

Now in fact biologists have known for some time that we contain many different clocks, and an entire branch of biology has grown up to study them. The existence of clocks isn't new; what I am pointing out here is their deep relevance for aging research.

With all these observations in mind, an immortalist would naturally speculate as to whether or not any means existed to ALTER existing neurological or cellular clocks. If we had such means, we might hope to study the relation between TIME and AGING much more closely.

There is in fact at least one drug, often given therapeutically, which causes an increase in the average period of our body cycles, apparently all of them without exception. This is the drug LITHIUM. However to prove alterations of our clocking rhythms turns out to be quite hard, first because they are very hard to change (do I hear an echo of the situation in aging research?) and secondly because our bodies tend to automatically adjust to any rhythms taking place around them. Therefore it simply isn't enough to, say, treat someone with lithium; we must also isolate them from all other cues and rhythms so that they will not take up the same period as the events around them.

A Johnsson et al, a team of researchers from Scandinavia and Germany, have recently done this experiment by isolating 8 volunteers without time cues in huts on Spitsbergen in the arctic and giving them lithium salts. The experiment took place in summertime, during constant daylight.

Results were simple; out of 8 volunteers, 4 showed a lengthening of the period of all three body rhythms measured. The rhythms measured were the cycles of body temperature, activity, and sleep-wakefulness. The periods of each increased by about one hour in each case. Four volunteers did not respond to the effect of the lithium.

In practical terms, this is hardly a great breakthrough in aging research. First, we can hardly expect to isolate ourselves from all external cues of the passage of time. Second, even assuming that lengthening of circadian rhythms would mean an increase in lifespan, we could get less than a 10% increase by means of lithium.

However if we want to study relations between clocking and lifespan a drug such as lithium gives us a means to do so. Furthermore, lithium will affect rhythm in a variety of animals and plants, perhaps even in cell cultures, so that relations between clocking and aging may turn out much easier to study with lithium. The major experimental difficulty, in fact, seems to be the need to isolate the experimental subject from all external cues about the passage of time.

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"All are born with halters round their necks; but it is only when caught in the swift, sudden turn of death, that mortals realize the silent, subtle, ever-present perils of life.

—Herman Melville, Moby Dick

## THE COMPLEX RELATIONSHIP OF NERVE CELL DNA AND LEARNING

Most neuroscientists would probably agree that DNA does not directly code for our memories. However a variety of experiments suggest that nerve cell DNA may play some critical role. For instance, one experimenter has found evidence that DNA synthesis increases when mice learn (S Reinis, PHYSIOL CHEM PHYS 4 (1972) 391-397; 4 (1972) 440-448; 4 (1972) 335-338). These experiments involved both the use of radioactive nucleotides which would be incorporated into newly synthesizing DNA and also the use of several different drugs to inhibit the synthesis of DNA and thus disturb memory. Reinis, in particular, has produced good evidence that some sort of relation must exist.

On the other hand, not every treatment which inhibits the synthesis of DNA will also disturb the ability to learn. Agranoff, particularly, who has done a good deal of work on learning in goldfish, has reported that one drug which inhibits DNA synthesis had no effect on memory in his goldfish. (BW Agranoff et al PROC NAT SCI USA 60 (1968) 1389-1395).

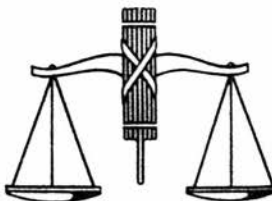
A recent paper in PHYSIOL BEHAVIOR (30 (1983) 577-582) by a team of researchers at the University of Naples (R Scaroni, MV Ambrosini et al) reports one attempt to piece out the relations between learning and DNA in rats. Although unsuccessful, their work did vary slightly from others and suggests some hypotheses for what may be happening.

This team injected radioactive thymidine, a nucleotide chemical from which our bodies make DNA, into the brains of rats and then trained them on an avoidance task. As part of their experiment, they kept a control animal in the same room as the other animal learned the task. "Avoidance learning" here means that the test animal got an electric shock if it behaved wrongly; this experience might well cause anxiety not only in the test animal but in any other animal witnessing the experiment.

Scaroni et al report that under these conditions DNA levels increased in both the control and the experimental animals, but that the exact location of DNA synthesised did vary between control and test animals. Those test animals which did in fact learn successfully later had more DNA in their cerebral cortex, while the other animals had increased DNA not only in their cerebral cortex but in the cerebellum too. The cerebral cortex, of course, controls thought and learning, while the cerebellum controls coordination.

Although in itself their experiment led nowhere clearly, Scaroni et al do suggest that the rise in DNA may primarily depend on stress. If so, that might help to explain why inhibiting DNA synthesis may not always affect learning, but does so sometimes. Learning often involves stress. Because of the difference in location of DNA synthesized between the learning animals and the controls, however, this relation with stress can't tell the whole story.





## CRYONICS AND THE LAW (PART II)

BY JAMES BIANCHI, ATTORNEY FOR BAY AREA CRYONICS SOCIETY

[ed.--This is Part II of a slightly edited transcript of a talk given by Mr. Bianchi at the 1983 Lake Tahoe Life Extension Festival. The first part was published in the October, 1983 issue.]

**Paul Segall:** In regard to spouses' rights, what about situations regarding these new forms of "spouses" these days?--spouses that aren't legal spouses but are spouses nonetheless--that get alimony and get all kinds of rights. What's the situation with them?

**Bianchi:** Unless it's spelled out in the statute that something else is permitted, then the married spouse will have priority. However, you have to realize that most people live together first for quite a while in a relationship that is very close to being married, at least emotionally, and perhaps the other individual should have some say over what happens to the human remains. You can arrange that, just by the person who is deceased having put in their will that their "loved one" will direct how their remains are to be dealt with. Or "I direct that my remains be disposed of in the manner that such-and-such says." They're just going to shift their own authority to someone else and that has priority over all other relatives. So there are ways to manage that if that's what you want.

**Segall:** I was just curious about what would happen when a person doesn't have a spouse, but has someone who for other purposes is similar.

**Bianchi:** It creates a very interesting legal problem; one which has not been resolved, but one which really hasn't been raised either. It's not going to be resolved until it's raised and God knows what's going to happen then. But if you want to arrange suspension as part of a living-together contract, I have a form that will do it.

**Dick Marsh:** You were talking about the sequence of power in regards to relatives, children, etc. What about step-children? Not adopted children, but step-children. Do they fit into the hierarchy anywhere?

**Bianchi:** If they are adopted, they fit into the hierarchy. Many stepchildren are adopted, of course, but if they are not, they do not control the disposition of the human remains. Control always proceeds to the next of kin, whether that be an uncle or cousin or whatever.

**Marsh:** Even if I'm closer to my step-children than, say, my great-uncle? Even if I would rather have control proceed to a step-daughter?

**Bianchi:** But that's only a problem if you don't make directions yourself.

**Marsh:** I could give her the power then, in my own will?

**Bianchi:** Yes.

**Laurence Gale:** What do you think about the idea of preparing injunctions ahead of time to prevent autopsy or delays in performing a suspension, should it be interfered with by any state agency?

**Bianchi:** That's a good idea. The problem is you would need a lot of money for some lawyer. I'm not sure that it's going to be a serious problem, though.

**Gale:** Would it be terribly expensive, if it's an easy thing to do?

**Bianchi:** Most injunctions in San Francisco cost \$2,000--\$2,500. That's expensive. Now even if you prepare a standardized form, no two situations are alike. It will still have to be modified and researched, and it still might end up costing a thousand dollars even if you do have a standardized form. Plus it depends on where the injunction has to issue. If the attorney who prepared it lives in San Francisco, and it has to issue in Visalia, then you have travel expenses and time and it could cost a fortune.

**Gale:** Well, I'm thinking of a situation where you don't have time for any of that. This would be something you'd have to have made up ahead of time and fill in the blanks as to who and where.

**Bianchi:** It would speed things up.

**Gale:** That's what injunctions are for, it is my understanding, where irreversible damage is going to occur if somebody isn't stopped from doing something; and you just slap it on them. Is there any preparation you can make ahead of time to prevent that sort of thing?

**Bianchi:** Yes. The best way to approach it to try to understand the possible problems that may arise and the reasons for them and do all of the research in advance. For an injunction to issue, there still has to be an affidavit, that is, a declaration by someone who personally knows the facts. That's something you cannot prepare in advance, and that's what the bulk

of the work is. The legal part isn't that difficult in doing an injunction. The legal requirements are the same for any kind of injunction. It has to be an irreparable injury; It has to be immediate; it has to preserve the status quo. It's just a matter of defining this in terms of an irreparable injury and that can be done in advance. But the factual affidavit has to be done over the phone or something at the last minute.

**Mike Darwin:** Something I want to point out on a question which was raised by your mention of autopsies and infectious disease: Hugh Hixon raised the point about AIDS cases and autopsies, and I then called County Hospital at USC. One hundred percent of AIDS cases are being autopsied at this point. No waivers on central nervous system. In fact, that's one of the structures they are most interested in, including the eyes. They are autopsying everyone, at least in Los Angeles County, and I understand from the fellow I spoke to at USC that that is a state-wide policy at this point, per CDC [ed--Center for Disease Control] recommendation.

**Bianchi:** I think that's going to be true nationwide. It's the scariest epidemic we've had for decades.

**Darwin:** And the point was made by the fellow that I spoke to that any homosexual man who dies of an infectious disease would be treated as a potential AIDS case and be autopsied.

**Art Quaife:** We talked about the problem regarding the suggestion that if we set up separate trust funds for each individual that the IRS may rule that this isn't being really used for proper charitable purposes; that we are providing a service to this dead person and we might lose our tax exemption. What is your latest thinking on that question?

**Bianchi:** My opinion is that it is not a matter of whether you have one trust or several combined. It's a matter of how you define the trust itself. If a charitable trust is designed to benefit a named individual or the persons giving the trust money, it is not charitable. There is no way it is going to be regarded as charitable and that is why they are giving you grief. However, it could be charitable if the whole trust document is characterized by saying that "the purpose of the trust is to promote education and research in cryobiology and one of the ways we're doing that is by suspending these people over here. But they are just tools for accomplishing this other objective. They are not the objective. The enhancement of knowledge and information in scientific research is the objective." That means that when there's a conflict between the scientific objective and keeping the person suspended forever, the suspension loses. And if it doesn't, it is not a charitable trust; and if it's not a charitable trust it can be extinguished in approximately 60 years and it would be taxed. A lot of people are not going to like the idea there are circumstances under which the trustee can

authorize that the suspension stop. I can perfectly understand that. And that is fine as long as they just avoid the charitable trust altogether; set aside enough money to pay taxes and hope they can be revived within about 60 years--a hundred years at the outside; it can be stretched a bit.

**Darwin:** Aren't you in a much better position if you act as, for instance, Alcor does, where you have a fixed amount flowing in that is donated and there is no separate accounting made, not even any record of who has what sum of money? Then there's no question really that this was set aside to benefit the individual that's been suspended or his relatives even. It is just a flat contribution of money which goes into a pool with everyone else's. Isn't that a stronger position?

**Bianchi:** I don't think it matters whether it is a pool or a separate accounting, because an individual can say the money doesn't go back to me, it goes to this foundation or that foundation if the trust fails. And I did think of a theory for accomplishing that in the forms I did. It's called "reversion to the grantor" and I won't get into it now, but it works. The system you have is fine. As far as saying it's any better than any other system, we don't know. It's just as good as any other system, except that if there's something in an individual's trust whereby if something happens and the trust falls apart or they can't be suspended because of contagious disease, what if they want the money to go to something other than that trust? What if they want it to go to dolphins or their grandchildren or something like that? For that to happen, you have to segregate it somehow, so you know what portion of the interest and all that belong with that individual's initial contribution to the trust. But for many that's not a problem and your mode of trust is fine.

**Darwin:** So you think that the form of trust we are using is an acceptable one? You've seen our paper work.

**Bianchi:** Yes, from what I can see, it's fine. These [ed--BACS's] forms are a lot different. They provide different kinds of protection. You can read them over and modify yours accordingly.

**Fred Chamberlain:** My question relates to the same thing, in terms of a pooled fund. Let's say that the organization sets up a standard for how much is required for suspension, say it were \$40,000; if the donor donates this money into a pooled fund during his high income earning years without a segregation of funds being required, would that be a tax-deductible type of situation?

**Bianchi:** As long as the IRS is convinced that it is not benefitting the individual or a select individual.

**Chamberlain:** It wouldn't benefit him unless he died.

**Bianchi:** You have to keep in mind that the IRS is going to construe facts in their favor, always. That is the way they'll get the most money. That is why Congress gave them Draconian powers to raise money...and they use it. There's no guarantee with any of this, which means the instruments that are used have to have provisions allowing amendments, giving the trustee authority to make changes as the law changes, as case law evolves. Legally, this is all in its infant stage, and there's really no reason why everyone has to use exactly the same approach. There are five or six legal approaches that could be tried. As Chairman Mao once said, "Correct ideas come from social practice." We try it out. If it works, good. If it doesn't, we do something else. And that's precisely the approach we are taking with the legal forms. They're fluid; they will change. You will probably amend your own forms seven times before they are put into force.

**Hugh Hixon:** I get the impression that in creating new law and precedent, it's much better to present the established organizations with accomplished fact rather than to ask their opinion first.

**Bianchi:** Oh, yes. It is good to have forms that look terribly legal on the outside, for example. It is good to have will documents that look like will documents and not applications to have your car washed, or something like that.

**Hixon:** My other question is concerning volunteer work on suspensions. We've had at least one dirty cloud on the horizon where irate relatives are talking about suing everyone, including suspension team members. The question is: apparently they can be touched rather badly if they take money; but if they're volunteers, a lot of their legal liability is removed. Can you address this?

**Bianchi:** They can't be sued for breach of contract if they don't take money. But if you engage in any affirmative act, volunteer or not, and do so negligently, somebody can get you for something. There will be a way.

**Hixon:** Further, they can raise the question of negligence, whether you were negligent or not and cause you great grief.

**Bianchi:** First of all, the best defense against negligence is not to be negligent. Secondly, the best approach, which a lot of organizations have taken, is to tell people in advance, "This is the training that people have. These are the standards we use. This is what we regard as an ideal suspension." And if it's not happening under ideal circumstances, tell them in advance before they put out money, "These are not ideal circumstances; there is much more damage than we like to see at



this stage." Tell them what the limitations are, what the problems are, and make sure when they sign those contracts that they state they understand these problems and waive liability for anybody else.

**Hixon:** Complete informed consent.

**Bianchi:** Right. It goes back to that basic maxim of jurisprudence: that you can't consent to something and then later be aggrieved by it. You know you're in trouble when people are running around trying to conceal stuff from members, and conceal problems and conceal information. That's the worst thing you can do. Look what happened to Nixon. You can have tremendous power and it will still do you in. Disclose all the problems freely. If people are really interested in suspension, they'll want to know the problems. That is the only way you'll rise above them. No more questions?

I guess next I should talk about the law of cryonics. While there are no laws dealing directly with cryonics, there are several that touch on the sort of things that cryonics people are doing. For example, the transportation of human remains is highly regulated. They have to be in a sealed container and all of that. I was happy to see that most groups discovered that and followed the regulations. Also, you need permits to transport human remains from one place to another and it appears that most organizations knew that, too. Then there are the laws regarding human donations that I don't think we should use for the moment until the law is modified. And there is the law stating who has the power to donate, which takes care of transferring the legal authority.

I suggested it be done in a will, because that is superior to any another form of document. It could be a codicil to the will; you could have a separate form prepared that people could just attach to prior-executed wills that will supersede anything that is contrary to it; or it can be incorporated into a new will. But it should be in the form of a will. Now there are a lot of wills. There is an international will, which is good regardless of in what state it is executed, the country in which you die, or where the property is located. It will be acknowledged in most countries, because it incorporates the little technical requirements of each country. It requires three witnesses, one of whom must be a lawyer or government official. It has to be signed on the bottom of each page. They all have to be numbered. In California law all you need is two witnesses; and you don't have to sign the bottom of each page. There are slight variations in the other states. But if it is an international will, it works every place. So that's on top, as far as what I recommend. A regular California will will work if you don't plan on dying in Marseilles or something like that.

Now, there'll be emergency situations under which people

will not have the leisure to call their attorney and his secretary and his law clerk and have them all camp on the death bed and take care of all these legal arrangements. So what do you do? One way, if that situation arises is to get a "statutory will." There is a will form published in the California civil code to be used by all those people in very simple situations--"I want to give all my money to my kids or my wife"--and nothing complex or bizarre. You can just rip that form right out of the statute book, sign it before two witnesses, and that's your will. That is something you can bring to a person's deathbed and say, "Write down that you want a cryonic suspension," and then just sign it and the authority is transferred. The suspension is authorized without getting a lot of lawyers involved and without the drafting of a huge will.

If that's not possible, there is what's called a holographic will. That's a will entirely in your own handwriting and it doesn't have to be witnessed at all. The requirements to be valid as a will are: there can be no other printing or typing on the page, it has to be entirely in your own handwriting, and it has to be dated and signed. All you have to say is, "This is my will and I want my remains cryonically suspended," plus name and date. And that's a valid will. It deprives the relatives of the authority to do anything else, and it is something that can be done at the last moment, as long as the person can write. [Question from audience: Does it have to be longhand, or can it be printing?] It has to be identifiable. It can be writing or printing as long as witnesses can say, "I have known this person for many years; I have reason to know their handwriting; and I can say under oath, 'That is theirs.'" [Question from audience: Should you have a holographic will witnessed for extra protection?] If there are witnesses, it's not a holographic will; it's a regular will. If there is only one witness, then it is only acceptable if it satisfies the requirements of a holographic will, i.e. if it is entirely in handwriting, not in print. The reason they have problems with print is that afterwards someone could type in to "give myself \$10,000" and things like that.

Now, the other way to do it...as the law says, it doesn't have to be a will. A will takes priority over anything else, but it doesn't have to be a will. It could be written or oral instructions. If you're going to do any kind of writing, it might as well be a holographic will. The least useful method is the oral instructions. If somebody calls you on their deathbed and says, "What do I do?", have them call in two nurses and say, "I want my remains cryonically suspended." Make sure you know who these witnesses are, so if it comes to the point where you have to prove that person left oral directions, you can do so. You can call these people as witnesses.

**Hugh Hixon:** What is the problem with wills which are contested on the basis that the person who accomplished them was

not of sound mind? I know this was done, for example, with the Bedford Foundation. Things were accomplished at the last minute, and the will was challenged.

**Bianchi:** That is always going to be a risk unless...I have a form here to be signed by next of kin, because I thought about this problem, too. What the form says is that the person wants a cryonic suspension and that they know the problems with it; and the form is to be signed by the relative. And what the relative is saying is that the person told them all of this, told them they knew there were problems with it, knew what the limitations are, and wanted to give all his money to it. But also it includes the provision that whether the relatives agree with it or not, they believe that person to be of sound mind. Now if that relative signed that document and they later go into court and say something different, their credibility goes down the toilet. This eliminates the ability of the immediate relatives to challenge the will, and they are the ones who are going to be the most concerned about it. That is the best way to protect against that. However, if it was due to undue influence or coercion, or if the person was of unsound mind, then that document is going to be ineffective, and there is no way around that. I don't think we should be even considering forcing people into suspensions if they would rather be buried or cremated; nor should we condone that in anyone else.

**Hixon:** That's not the problem we normally face. The problem is grasping relatives. There's a quote from Machiavelli, I think, to the effect that it's O.K. to kill somebody's parents, but when you deprive the individuals of what they consider their rightful inheritance, you get bad trouble.

**Bianchi:** There is another protection against that, and that is also in the standard will form: that if any relative or heir dares to challenge this, any previous inheritance is revoked. It is one dollar, or it is revoked altogether, not only for them, but any inheritance their children would get. And that's enforceable. [Hixon: This is a clause in the will?] It's a clause in the will. It's very severe; you may want to make it less severe. It does usually clean up the relatives' act if they are thinking of challenging the will without sound reason. And if it turns out they challenge it anyway and prevail, they should have prevailed. They're taking all of these risks and if the law finds that the person was crazy or unduly influenced, then that's the way it should be. You should not impose your wishes on other people, even if you disagree with what they are going to do.

**ALCOR LIFE EXTENSION FOUNDATION**

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

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