

Cryonics

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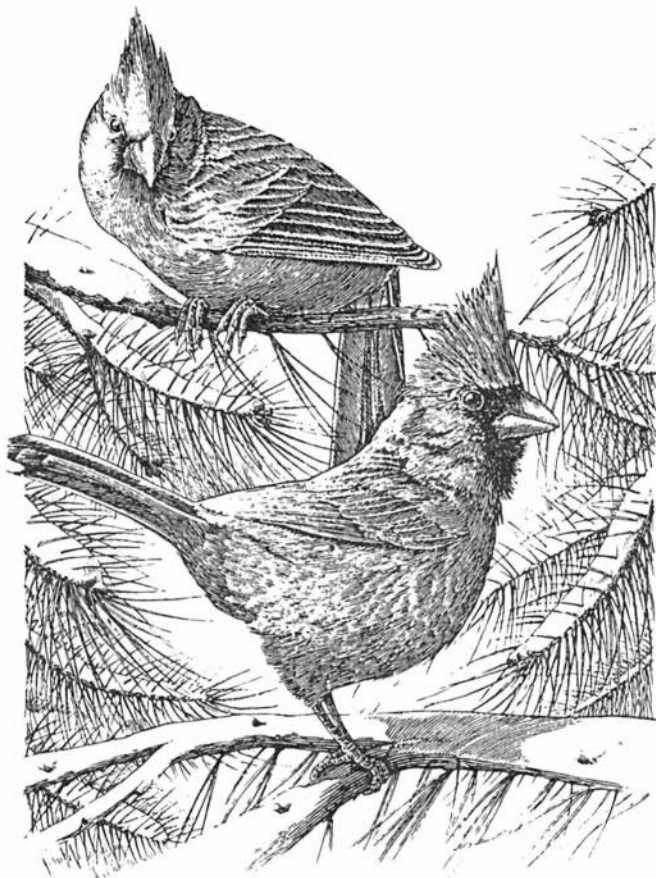
Cover: Dick Jones, placed in cryonic suspension December 12, 1988.

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The work on this has undergone several permutations since it started, including a joint effort by Brian Wowk and Mike to produce a book, some of whose chapters have appeared in previous issues. And finally (for a while, at least) a booklet titled, *Cryonics: Threshold To Tomorrow* (CTTT).

We will be printing about 500 copies of CTTT as a "test run". We are quite sure that there are problems with it: things assumed; things left unsaid; bad grammar; organizational problems; and even (in spite of computer spelling checkers), spelling errors. *We need your feedback.* Obviously, we won't be able to satisfy all your suggestions, but we are always in the market for new angles on presenting cryonics. So please, let us know what we have done wrong. And what we've done right.

If you would like a free copy of CTTT just let us know. Better still, if you'd like buy a copy or copies of CTTT call us at: (800) 367-2228, or (714) 736-1703 in California.

MEMBERSHIP COUNT

Alcor now has 114 Suspension Members, 225 Associate Members, and 11 members in suspension.

EDITORIAL MATTERS

As you have no doubt noticed, your issues of *Cryonics* have been coming later and later. This is in no small part due to the fact that in the past 12 months, we have performed four suspensions, entered into several legal battles, managed to keep our heads above water in our day-to-day operations, and attempted to maintain some forward momentum. Since there are always more things to do here at Alcor than there are people to do them, the time needed to deal with these extraordinary events has often come from other routine, but necessary, tasks -- like the *Cryonics* production schedule. Part of working to maintain forward momentum has been a major revamp of our educational literature and our interface with the public. Work on this massive task has contributed significantly to delays in *Cryonics*.

For several years now, Mike Darwin has been itching to overhaul some of our core literature, specifically, *Cryonics: Threshold To The Future*, our mainstay in explaining Alcor and cryonics.

DICK JONES ENTERS BIOSTASIS

On the 12th of December, Alcor placed into suspension long-time cryonicist Richard Clair Jones. Dick was the "John Roe" of *Roe vs. California Department of Health Services* and was also known professionally as Dick Clair. Dick was a highly creative talent who was responsible for many of the funniest episodes of the Carol Burnett Show. He also created several popular television situation comedies, including *Flo*, *Mama's Family*, and the Emmy-Award-winning *Facts of Life*. All told, Dick had won three Emmies for his writing efforts.

Dick was present at the meetings leading to the founding of the Cryonics Society of California in late 1966, and had been a Suspension Member of one cryonics organization or another continuously ever since. He has been an Alcor Suspension Member since 1979.

Placing any member into cryonic suspension is never an easy task -- emotionally or practically. In Dick's case, the effort required was monumental. Most of us knew Dick very well. He was a regular at Alcor social gatherings and he was a close personal friend to a fair number of the Alcor directors, officers, and members. He was a stalwart backer of Alcor and gave generously of his money, his time, and his reputation. He opened his home to our holiday gatherings and he opened his heart to suspension patients in need. Watching Dick's slow, painful decline and having to place him into suspension was almost unbearable for everyone involved.

Two years before his ischemic coma, Dick had been diagnosed with AIDS. He was fortunate to have had a relatively stable, complication-free illness up until the last four months of his life. Unfortunately, what he was spared in terms of minor crises was more than made up for in major ones during the last 12 weeks of his illness.

As is typical of patients with AIDS, he was hospitalized frequently near the end of his illness; initially with pneumocystis carinii pneumonia (PCP), mycoplasma avians intracellulae (MAI) (a liver infection), and cytomegalovirus (CMV) (a systemic viral infection). Shortly after he was discharged from the hospital with these problems, he was readmitted with a protozoan infection of his brain (toxoplasmosis gondii) which robbed him of his rational faculties and left him in a confused, twilight state for the last 12 weeks of his life.

Dick's multiple health and legal crises were a serious drain on everyone concerned. Alcor staff were called in for Remote Standby a number of times before Dick's ischemic coma on December 12th. On several occasions, Alcor Suspension Team Members Mike Darwin and Jerry Leaf were at the hospital around the clock for 2 - 3 days at a time.

As we have reported here in the past, it was necessary for Dick and Alcor to go to court to obtain a restraining order *forcing* Sherman Oaks Community Hospital, where Dick was a patient, to give Alcor prompt access to him and to release him to Alcor's care after pronouncement of legal death. The hospital had refused to cooperate with Alcor, in part due to the position taken by the California Department of Health Services (DHS) that cryonics is *illegal*.



Dick Jones
First Life Cycle
November 12, 1931 -
- December 12, 1988

Ischemic Coma

Despite the legal complications and problems, Dick did get suspended. At about 9:00 PM on the evening of December 11th the Alcor phone rang: the nursing personnel attending Dick notified us that he was deteriorating sharply and that cardiac arrest was only a few hours or at most a day or so away. Jerry Leaf, Scott Greene, Mike Darwin, Arthur McCombs, and Carlos Mondragon were dispatched to the hospital, and the mortician Alcor had retained to handle his transport was notified and also came to stand by.

The Alcor Transport Team waited down the hall from Dick's room until we were notified, at about 3:45 AM PST on December 12, that Dick was experiencing final, agonal respirations. At 3:59 AM PST Dick was pronounced legally dead and cardiopulmonary support using a heart-lung resuscitator (HLR) began a few minutes later. Since we were prohibited (by the court order) from intubating Dick by the hospital, we used an Esophageal Gastric Tube Airway (EGTA) to secure his airway against stomach secretions and ventilate him. We also used a new (to us) model of HLR, the Michigan Instruments MICPR unit. Both the EGTA and the MICPR unit performed very well. Dick promptly regained color and the EGTA was very effective at both protecting his airway and giving good chest expansion during ventilation. At the same time cardiopulmonary support was started, Dick was packed in ice. He was then moved out of the hospital to the mortuary we had contracted with, which was conveniently located only a mile or two from hospital.

MALSS Support

We arrived at the mortuary at approximately 4:30 AM and began administration of transport medications at 4:40 AM. We were unable to give transport medications in the hospital at the start of cardiopulmonary support as we normally do because of restrictions placed on us by the hospital. By 5:25 AM Dick had been positioned on the Mobile Advanced Life Support System (MALSS) and surgery was underway to raise his femoral artery and vein. In addition to his continuing good skin color, Dick's arterial blood was noted to be bright red (indicating good oxygenation) and he had bright red capillary bleeding into the wound during surgery -- all good signs. At 6:00 AM Dick was on bypass -- connected to the blood pump and membrane oxygenator of the MALSS. He had already cooled to 29.3°C by the time bypass was started, and was rapidly cooled to a rectal temperature of 9°C over the next 45 minutes.



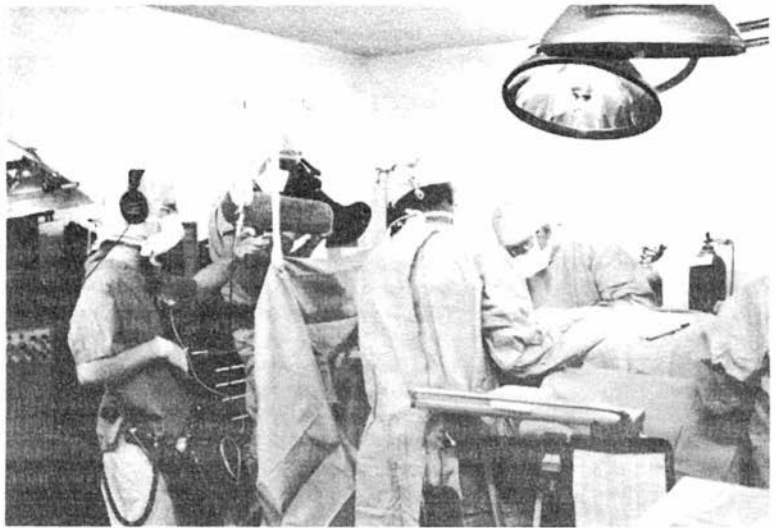
1) *After arrival at Alcor, Dick was placed on the operating table and repacked in ice. A bed scale was used as the operating table platform so that pre- and post-procedure weights could be taken to determine the degree of any dehydration or edema as a result of cryoprotective perfusion.*

Perfusion

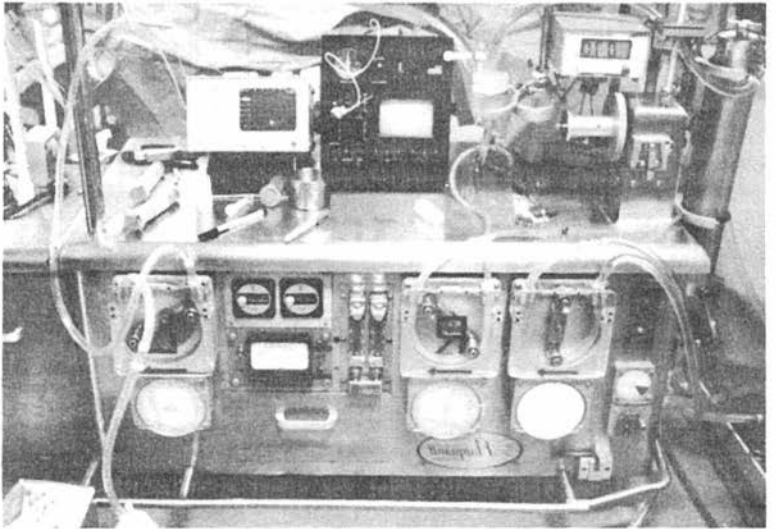
Around 7:30 AM Dick was transported from the mortuary in Sherman Oaks to Alcor's facilities in Riverside. He was further cooled to a pharyngeal temperature of 6.0°C, taken off MALSS support and positioned on the operating table. A median sternotomy with cannulation of the aortic root and right heart was used to access his circulation. Complete blood washout was started at 5:27 PM using Alcor's standard Sucrose-Hepes Perfusate (SHP-1), containing 5%w/v glycerol. The cryoprotective "ramp", wherein glycerol concentration is slowly increased in the circulating perfusate, was begun at 5:45 PM at a rate of 30 mM/minute.

Blood washout and cryoprotective perfusion went very well. Dick had experienced a fairly long period of severe hypotension (low blood pressure) and hypoxia prior to cardiac arrest. His immediate cause of death was probably a toxoplasmosis lesion in his brain stem, and he no doubt suffered some hypoxic and ischemic injury prior to legal death. As a consequence he developed moderate facial and mild cerebral edema during MALSS support (as evidenced by slight bulging of his cerebral cortex surface against the edges of the burr hole that had been made to observe the brain) and we were concerned that this would limit subsequent cryoprotective perfusion. However, both his peripheral and cerebral edema disappeared during glycerolization and, as usual, brain volume decreased due to osmotic removal of water by the glycerol.

As perfusion progressed, very modest cerebral edema was again noted and it was decided



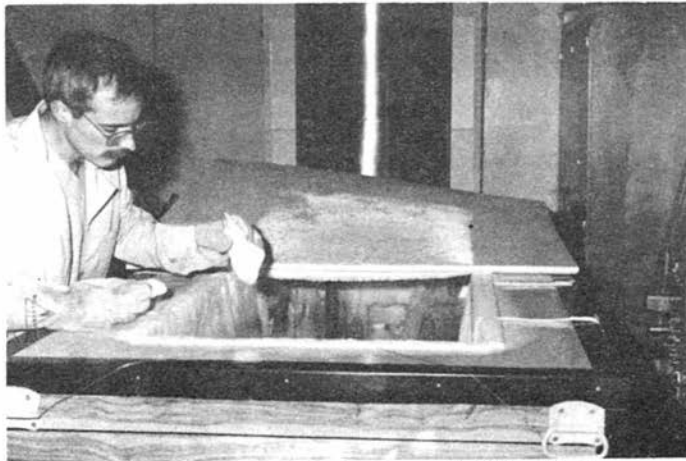
2) Suspension Team Leader Jerry Leaf and Alcor physician Thomas Munson begin surgery to connect Dick to the heart-lung machine for cryoprotective perfusion.



3) The heart-lung machine used to deliver cryoprotective drugs to Dick's tissues.



4) *The Shiley Tamari-Kaplitt pulsatile perfusion unit. This device converts the relatively constant flow produced by the heart-lung machine roller pump into a pulsatile flow which mimics that of the heart.*



5) *Mike Darwin adds dry ice to the Silcool bath.*

to switch from continuous to pulsatile perfusion. Because of the possibility of ischemic injury we had set up the perfusion circuit with a Shiley Inc. Tamari-Kaplitt pulsatile perfusion system. This device converts the smooth, continuous flow generated by the heart-lung machine roller pump into a pulsatile flow which mimics that normally delivered by the heart. Numerous studies have documented the benefits of pulsatile flow during human cardiopulmonary bypass in reducing cerebral edema and increasing the degree of perfusion to ischemically injured tissues.

Within 15 minutes of beginning pulsatile flow there was a noticeable reduction in the degree of cerebral edema, and within 30 minutes brain volume had returned to normal -- where it remained until the conclusion of perfusion. Perfusion was discontinued at 8:43 PM when a venous glycerol concentration of 4.2M was reached. Following closure of the scalp and chest incisions, Dick was placed inside two heavy plastic bags and submerged in a silicone oil (Silcool) bath which had been precooled to -17°C . His temperature was then lowered at a rate of approximately 1°C per hour to -77°C by gradual addition of dry ice to the Silcool bath. This was the first time the new cooling chest had been used (other than in static tests) and it performed very well. A high capacity circulating pump was used to circulate the oil and pump it

through a spray-bar assembly positioned over the patient. This technique completely eliminated the "hot spots" and "cold spots" which have plagued other whole body cooling efforts. The superior insulation of the cooling chest reduced dry ice consumption from the 15 pounds per hour experienced during the last whole body suspension to an average of 5 pounds per hour during Dick's.

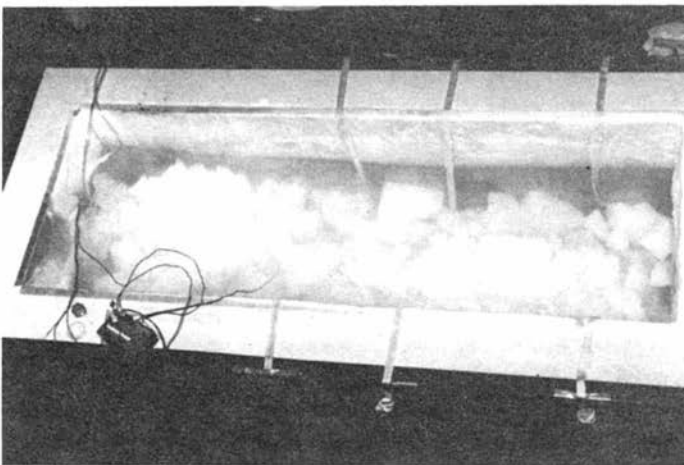
Cooling to -196°C

Dick reached dry ice temperature at 12:30 PM on

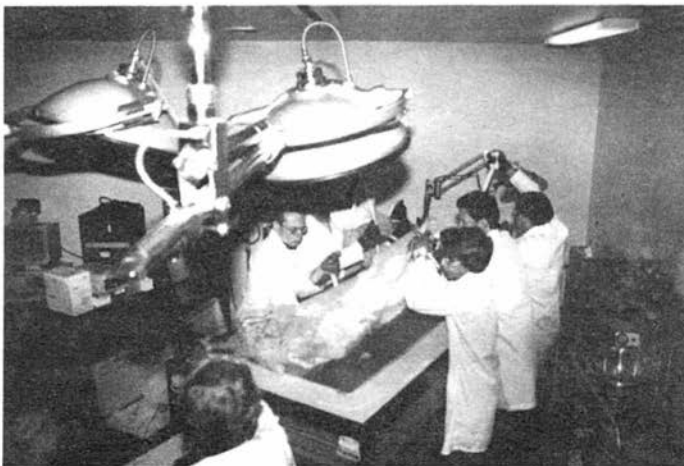
6) Dick was cooled to -79°C by submersion in a silicone oil (Silcool) bath. This photo shows the spray bar used to distribute Silcool evenly over the patient, preventing "hot spots" or "cold spots". The 1-gallon plastic jugs to either side of Dick were filled with sand and used as to consume volume in the cooling tank (i.e., to raise the Silcool level), minimizing the amount of costly Silcool required.

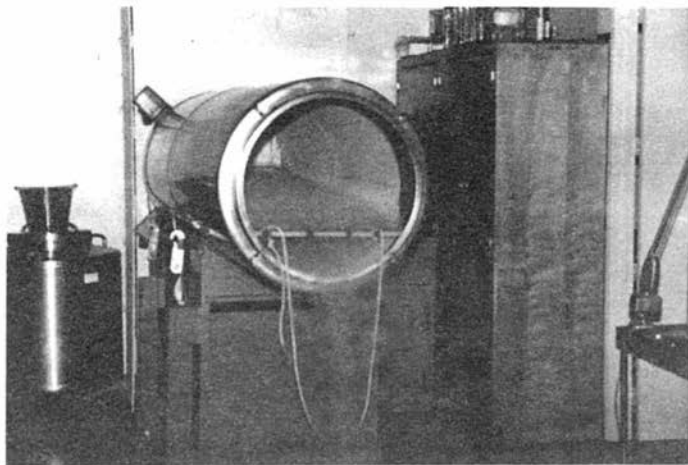


7) Following cooling to -77°C , the Silcool was pumped out of the cooling tank and Dick was covered with dry ice for temporary storage at -79°C .

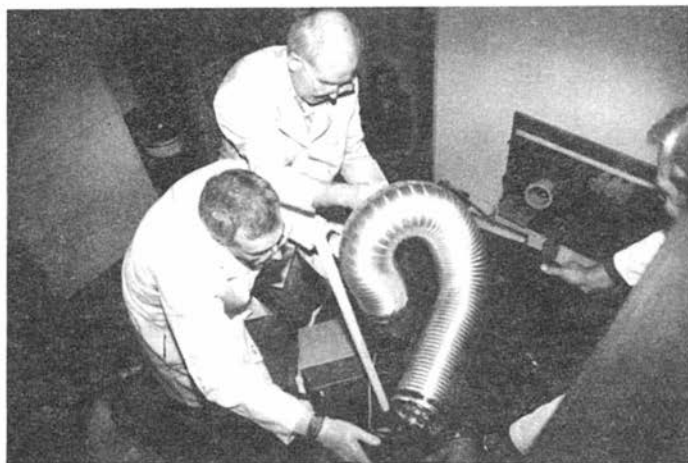


8) Dick was lifted out of the cooling chest and placed momentarily on an insulated table top for removal of the outer, oil soaked, protective plastic bag.





9) *Precooled cryogenic dewar with the patient insertion guide in place.*



10) *Hugh Hixon, Mike Darwin, and Jerry Leaf position the controlled rate cooling lid atop Dick's dewar for the descent to -196°C .*

11) *The dewar, rocked upright and set up for controlled cooling of the patient to -196°C .*



December 15. At 2:25 PM on December 18, Dick was transferred from the dry ice chest to an Alcor dual patient dewar for controlled cooling to liquid nitrogen temperature (-196°C). This set another record for speed, in beginning cooldown to liquid nitrogen temperature.

Once the dewar had been precooled and rocked upright with Dick inside, a custom-fabricated lid with a fill line and fan was sealed into place with Dux-Seal putty. The fan was then turned on and boluses of liquid nitrogen were

added at 15 to 30 minute intervals over the next nine days. The nitrogen was sprayed into a 6 foot long aluminum pipe, closed at the bottom, placed inside the dewar to prevent pooling of liquid at the bottom of the dewar and excessive cooling of the patient's head. Temperature readings were taken at 30 minute intervals during most of the cooldown. Careful monitoring and control using this system resulted in a 1°C differential between the top and bottom of the dewar, and a 1°C to 2°C differential between external head and pharyngeal (core) temperatures.

At 19:42 on December 27, the dewar was completely filled with liquid nitrogen and Dick entered long term storage.

Legal Complications

During the last weeks of Dick's illness, when he was desperately ill and confused, his sister Claire Martin, and long-time business partner Jenna McMahon began maneuvering to take control of Dick's affairs from Saul Kent, whom Dick had chosen as his Power of Attorney and Executor. Since there is active litigation relating to control of Dick and of his estate (valued at about five million dollars) we cannot comment on this. We can and have reprinted representative newspaper coverage which should help to inform you of the broad outlines of the case. Pending resolution of this matter (which may come within the next 6 to 8 months) we will have a full report and discussion since there are (as usual) important lessons for *all* of us in this case.

Another legal complication unrelated to the problems with Dick's relatives and partner is that the California DHS is *refusing to issue a death certificate* for Dick. The DHS is refusing to certify Dick's death because it is their position that cryonic suspension is illegal and they will not issue *any* document which lists cryonic suspension as the method of disposition. The refusal by the DHS to issue death certificates on cryonicists who experience legal death in California is a serious situation because it interferes with the collection of the patient's life insurance.

The irony of this situation in Dick's case is unbelievable. Dick was very anxious for Alcor to have access to as much money as possible to pay for and defend his suspension as well as to conduct basic cryonics research. He left us five million dollars to this end. Now, over a month later, due to bureaucratic stupidity and a scheming relative and "friend" Alcor has received exactly nothing.

* * * * *

DHS LITIGATION

Due to the suspension of Dick Jones and the subsequent legal battles for control of both Dick and his estate, the DHS litigation has been delayed. Nevertheless, it is anticipated that the legal action against the DHS will start to move again toward the end of January or the beginning of February.

Other cryonics groups with members in the state of California should be advised that the DHS will refuse to issue death certificates on any person placed into cryonic suspension who experiences legal death in California. If the member belongs to an out-of-state cryonics organization, the DHS will not issue a burial/transit permit for movement of that member's remains outside the state to a cryonics organization. Other organizations might wish to notify members who plan to travel or vacation in California that they face this risk until/unless the DHS is forced to change its policy with regard to cryonics. (Continued on page 12)

THURSDAY/25¢
 DECEMBER 15, 1988
 SPORTS FINAL ★★ ★

The Sun

SAN BERNARDINO
 COUNTY

Cryonics lab freezes body of TV producer

Emmy winner, AIDS patient joins 10 others
 preserved by Riverside firm

By **TONY SAAVEDRA**
 Sun Staff Writer

A Riverside cryonics laboratory has frozen the body of an Emmy-award winning television producer who sued state health officials in August for the right to be preserved in liquid nitrogen.

Richard C. Jones, who worked under the television name Dick Clair, was identified Wednesday as the anonymous AIDS patient who filed suit against the state health department so his body could be frozen after death.

Jones' identity was released by the cryonics firm, Alcor Life Extension Foundation, following his death early Monday of AIDS-related complications.

Jones, 57, of Toluca Lake, joins the 10 other people who paid from \$35,000 to \$100,000 to have their heads or bodies preserved by Alcor in the hope they can be later resurrected.

The laboratory is best known for the still-missing, frozen head

of 83-year-old Dora Kent, whose death Dec. 11, 1987, was declared a homicide by the Riverside County Coroner's office.

A criminal investigation is continuing into the Alcor workers who gave the dying woman what the coroner said was a lethal dose of barbiturates.

Meanwhile, Alcor President Carlos Mondragon said Jones' suit against the state will continue despite the death of the producer-writer, who co-created the television shows "Facts of Life," "Flo," "It's a Living" and "Mama's Family."

"We want to make sure he stays frozen," Mondragon said.

Jones' journey to the life-size, stainless-steel cylinder that will keep his body at minus 385-degrees Fahrenheit has been marked by litigation.

Jones joined Alcor last summer in suing Dr. Kenneth W. Kizer, director of state health services, for refusing to issue the permits the state says are necessary for the laboratory to store human bodies.

The so-called disposition permits are being withheld because cryonics is not recognized by the state as a legitimate practice, according to the state health department. However, there are no laws directly forbidding cryonics.

Jones' suit is pending in Los Angeles County Superior Court. No criminal action has been taken against Alcor for keeping frozen bodies at the Doherty Street cryonics center in Riverside without legal permission.

Jones recently won another legal battle, obtaining a court order for the hospital he was staying in to cooperate with Alcor after his death.

Sherman Oaks Community Hospital, concerned with the possibility of breaking state regulations, was hesitant to work with Alcor in rushing Jones to the Riverside laboratory, said the hospital's chief executive officer, M. Marc Goldberg.

After the court order, the hospital complied with Jones' wishes.

The Sun

SAN BERNARDINO
COUNTY

TUESDAY/25¢
DECEMBER 27, 1988
SPORTS FINAL ★

Battle for writer's estate involves greed, cryonics

By **TONY SAAVEDRA**
Sun Staff Writer

More chilling than television producer Richard Jones' icy tomb at a Riverside cryonics center is the bickering over his multimillion-dollar estate.

Charges of greed and manipulation are being volleyed between Alcor Life Extension Foundation and Jones' family in the fight over more than \$5 million in future residuals from his TV shows.

"It's all gotten so ugly," said Jones' partner, Jenna McMahon, who is mounting the battle on behalf of the man's sister.

"Dick would be horrified by what's going on," says Mike Darwin, Jones' counselor at Alcor.

Each side blames the other.

Jones, who worked under the name Dick Clair, was an AIDS-stricken comedy writer who wanted life to grant him an extended engagement.

He also is remembered as a financially naive, sweetheart of a guy, vulnerable to pressure from his family, or from cryonics researchers offering a chance for resurrection.

Attempting to please everybody, Jones, 57, ended up leaving two wills — one signed in 1987, and an amended version signed Dec. 9 on his deathbed at Sherman Oaks Community Hospital. The bulk of Jones' estate is expected to be generated by reruns of the "Facts of Life" sitcom.

The first document gave all of the money to Alcor for the advancement of cryonics, the obscure practice of freezing diseased people until science finds a cure for their disease.

But the second will, signed three days before his death from acquired immune deficiency syndrome, gives half the money to Jones' family — sister Claire Martin of Bedminster, N.J., and other relatives.

Both documents are being contested, each side claiming the last word on what Jones wanted done with his estate. The case hinges on whether the dying man was mentally competent when he signed the amended will.

Meanwhile, Jones lies frozen at minus 385 degrees Fahrenheit in a stainless steel capsule filled with liquid nitrogen.

His assets also were put on ice last Wednesday in Los Angeles County Superior Court until a ruling is made on the legitimacy of the new will.

Leading the tug-of-war for control of the estate are McMahon, Jones' partner for 27 years, and cryonics advocate Saul Kent, Jones' friend for nearly as long.

In dozens of comedy skits on the Ed Sullivan Show and other television programs, McMahon played Jones' wife, fretting over the tea stain in the sink or the whiteness of his dress shirts. That marriage-like bond also spilled over into their personal friendship, McMahon said.

"We trusted each other implicitly," she said.

The comedy-writing team of "McMahon and Clair" won three Emmys for the Carol Burnett Show and created the long-run-



Richard Jones
Last will sparks confrontation

ning "Facts of Life," "It's a Living," "Mama's Family" and the short-lived "Flo."

But the talented jokester was haunted by his own mortality, seeking a reason to hope for eternal life in the early 1960s with the budding cryonics movement founded by physics professor Robert Ettinger, McMahon said.

"Dick just had a morbid, morbid fear of dying. He wouldn't even talk about anybody that died," she said. "The fear was so great that when (Ettinger's book) 'The Prospect of Immortality' came out, Dick went overboard with it. He just grabbed at that one hope."

Alcor officials confirm that Jones even tried to have his mother frozen after her death, but was thwarted by relatives.

Jones' motivations may be found in a recruitment flier he penned for Alcor two years ago.

"Even if the odds are a billion to one against surviving (cryonic) suspension, that's better than no odds," he wrote.

"So fasten your seatbelts, floss your teeth, eat fresh veggies, exercise and sign up for suspension. With a little luck . . . all the time in the world may be just around the corner," Jones wrote.



Saul Kent
Cryonics advocate, writer's friend

He first met Kent in 1966 at a gathering that led to the formation of the now defunct Cryonics Society of California. Twenty years later, Jones was diagnosed with AIDS.

He made legal preparations, giving Kent power of attorney over his estate and leaving Alcor nearly all of his assets, mostly the promise of residuals from syndication of his shows.

McMahon's attorney, Barrett McInerney, estimated those residuals could reach as high as \$20 million over the next several years. But Jones had no idea of the potential value of his estate, McMahon said.

"He always felt that he didn't have enough money to stay frozen. Dick used to say, if Saul Kent's a con man, then he's a con man. I have to trust him," McMahon said. "Not necessarily, I told him. You don't have to buy them new cars and swimming pools."

McMahon said that, under the original will, the money would go to Kent and other Alcor leaders if anything happened to the cryonics firm. Fueling her concern is the whirl of controversy surrounding Alcor during the last year.

A Riverside homicide investigation continues into the death of Kent's mother, whose head was surgically removed and frozen by Alcor in December 1987, then hidden. Meanwhile, state health officials have refused to issue

permits they say are required to store bodies at the laboratory.

In the new will, McMahon replaces Kent as trustee over Jones' estate. She would not receive any money, but would be empowered to disburse the funds to Alcor and monitor how they are spent.

"I'm doing it because the family can't. They would look too much like money-grabbers," she said. "I think most of the (cryonics) guys mean well, even if it is screwy."

Kent protested what he believes is McMahon's attempt to undermine Jones' wishes, especially in a field she knows nothing about.

"Jenna's knowledge of cryonics probably extends to her experience thawing out frozen food," Kent said.

Kent noted that Jones completed his original will more than a year ago, when he was in better health. The recent amendments were made while Jones was suffering from toxoplasmosis, a blood-borne disease that attacked his brain.

Dr. Anthony Scarsella, identified in court records as Jones' physician, testified that he saw the ailing writer the day the new will was signed.

"He certainly was not able to make any rational decision and he was in no condition to comprehend any kind of legal document," Scarsella said in a court deposition.

Two weeks before bringing Jones the new will, McMahon filed for a court order giving her legal power to make decisions on his behalf. In asking to be named Jones' conservator, McMahon said the man was "no longer able to manage his financial resources."

Alcor officials claim that statement conflicts with McMahon's current position that Jones was competent enough to change his will.

"First, they say Dick isn't mentally competent (to handle his own affairs). Then they say he is," Kent said. "Greed can be a great motivating factor in life."

Arthur Grebow, the Los Angeles attorney representing

Jones' sister, Claire Martin, said people deemed incapable of handling their own affairs can still be mentally fit to sign wills.

"Mental competency is often a matter of degree," Grebow said. "It doesn't mean that (Jones) didn't know who he wanted to leave his estate to."

McInerney, who once represented Jones, said the writer wanted to bequeath at least \$1 million to his family and establish safeguards ensuring that Alcor used its inheritance for cryonic research.

He expressed surprise that the cryonics firm was unwilling to settle for half of what could be as much as \$20 million in potential residuals.

"It's so petty and vindictive (for Alcor) to say we want it all, the family's not allowed to share the amount that goes beyond what anybody dreamed it was," McInerney said. "It's also irresponsible to give that kind of money to an organization without any supervision."

The terms of both wills give Alcor control of Jones' Toluca Lake home and his current assets, totaling about \$1 million.

Besides the debate over the wills, tempers are flaring after Alcor's announcement that Jones was the AIDS-stricken man who anonymously sued state Health Department officials for withholding permits from the laboratory.

McMahon, who placed Jones' obituary in Hollywood trade publications, tried to cover up that he had AIDS, because, with his Catholic upbringing, Jones was ashamed of the affliction, she said.

Kent and other Alcor officials said Jones gave them permission to publicize his freezing in hopes of furthering the cryonics crusade.

Nevertheless, McInerney insisted it was in poor taste to make a public spectacle of Jones' condition. And the lawyer was at a loss for words to retaliate against Kent.

"I mean, what can you say to a guy who has his mother decapitated?"



If you are an Alcor whole body suspension member and you think you may be at increased risk of ischemic coma (legal death) you might wish to consider prepayment of all or part of your suspension minimums. Regardless of what your situation is, if you are a suspension member of any cryonics organization or plan to become one, please consider supporting Alcor financially in its suit against the DHS. Our loss will be *everyone's loss*. Please contact Alcor if you wish to do either of these things.

* * * * *

DORA KENT CASE UPDATE

The Riverside District Attorney has recently attempted to use the Riverside County Grand Jury as a vehicle for eliciting testimony from members of the Dora Kent suspension team. On advice of counsel, team members had declined to answer questions from the DA directly, on Fifth Amendment grounds. To circumvent this, the DA has offered "use immunity" in testifying before the Grand Jury.

There are two generally recognized forms of immunity, "transactional immunity" and "use immunity", the distinction being that transactional immunity is comprehensive, giving the individual immunity from his actions, while use immunity merely prevents one's own testimony from being used against oneself.

Use immunity is not recognized in California, and the three attorneys for the team members being questioned regard the DA's attempt to make use of it here as "novel" and outside of statutory law. In any event, the use of use immunity will be appealed before the Riverside Superior Court, probably around late February, after which the DA either gets to use the Grand Jury as he wishes, or is forced to reconsider his position.



It is not at all clear what the nature of the DA's agenda is, since key members of the team provided detailed information to Coroner's investigators in late 1987, shortly after Mrs. Kent's suspension and before hostilities were initiated by the Coroner. As usual, we'll keep you posted on each new turn of the rabbit hole in this *Alice In Wonderland Case!*

* * * * *

Alcor Members Sue FBI

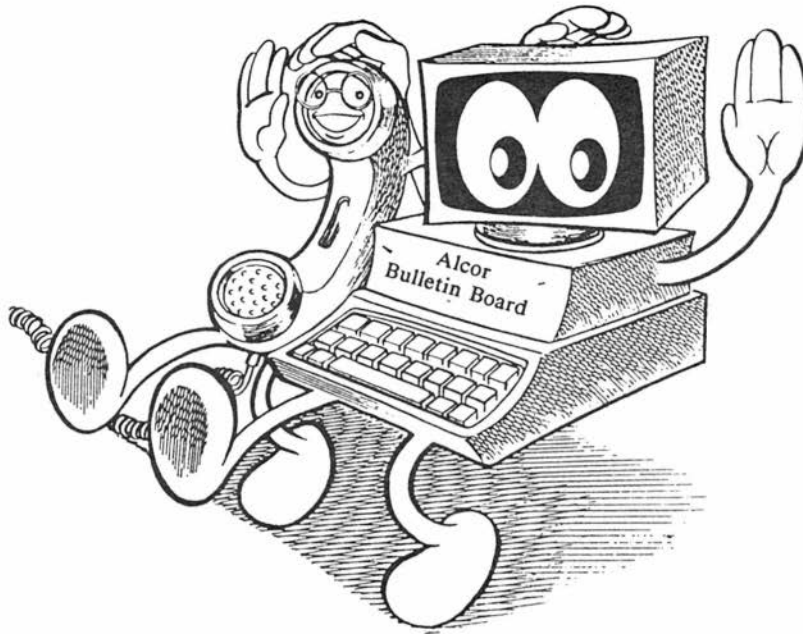
by H. T. Watcher

The legal fallout from the Dora Kent suspension seems to have no end. One problem with the search and seizure a year ago was that private electronic mail was taken without a warrant when the computer which was used for the Alcor bulletin board was taken (with a warrant.) However, taking electronic mail without a specific warrant for it is forbidden by the *Electronic Communications Privacy Act of 1986*, wherebyin electronic mail was given the same protection as regular mail.

Three Alcor members, Keith Henson, Thomas Donaldson, and Roger Gregory, who are also deeply into the computer world, complained to the FBI, their congressmen, the local US Attorney's office, and the Justice Department. After a year of trying to get the law enforced, they filed suit in Federal Court to force the FBI and Justice Department to either enforce the law, or provide an explanation as to why the law was not violated.

The suit was filed December 9. Any Alcor members who had E-mail on the BBS and want to be part of this suit or the civil damages suit against the coroner, DA's office, and police department should let Keith or the BBS sysop (Hugh Hixon) know. We are not sure we can get names of all the users because the hard disk came back to us in an inoperative condition; perhaps as a result of being thrown on the back of a flatbed truck when the coroners took it away.

* * *



(From the electronic magazine, *comp.RISK*.)

In January 1988, Riverside, CA coroner's deputies obtained a warrant to seize all the computers at the Alcor Life Extension Foundation. This was done in connection with the widely reported cryonic suspension of 83-year-old Dora Kent. The coroner accused the Alcor staff of murder, arguing that the cryonics procedure, where life support and anesthesia/cooling is applied after legal death, is murder, because resuscitation technology is applied without the intent to revive the patient.

The deputies took six or seven computers ranging from an Apple II to an Amiga, and have held them for the last 11 months.

Only one of these had a hard disk, so there wasn't much they could get out of the computers anyway. However, they did succeed in making it much more difficult for Alcor to conduct business.

The computer with the hard disk was being used as a bulletin board. Some 50 to 100 people had correspondence on the machine. No warrants, not even any "John Doe" warrants, were issued which would permit the coroners, DAs, or the Riverside Police Department to access these electronic communications in storage under the Electronic Communications Privacy Act. The ECPA requires that the particular people whose communication is to be seized be named in the warrant, similar to the warrants required to seize a person's postal mail. This search warrant specified that "all electronic storage devices... and the complete hardware necessary to retrieve electronic data" be confiscated, not even naming Alcor, but simply giving the address of their office.

Keith Henson (best known for founding the L5 Society, which encourages the exploration of outer space) was one of the people whose E-mail was confiscated. He complained to the FBI about his E-mail being taken without a warrant last April. The

FBI's Riverside office inquired of the US Attorney's office as to their interest in E-mail, and, on getting a "not interested," declined to investigate. Henson tried through his congressional representatives to get enforcement action out of the Federal government against the various local law enforcement agencies who had taken his E-mail.

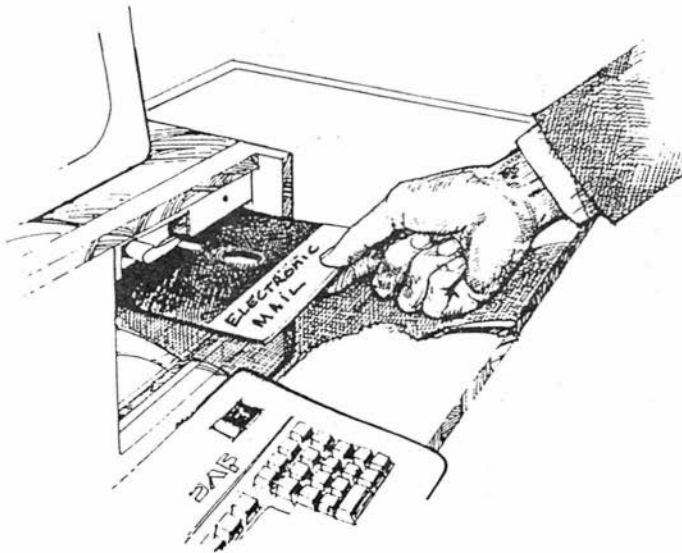
Finally, becoming convinced that this route was ineffective, Henson and two other BBS users filed suit against the US Attorney's office and the FBI. One of the BBS users, Roger Gregory, is well known for guiding project Xanadu, the proposed hypertext library system; the other, Thomas Donaldson, has contributed two science fact articles to *Analog* magazine in the last year. The suit, "Complaint for Declaratory Judgment" number C 88 20788, was filed in the U.S. District Court for the Northern District of California on December 9, 1988.

The crux of the matter is whether the ECPA prevents electronic mail from being read if the entire computer containing the mail is seized under a warrant. If this is not held true, the ECPA provides little or no actual protection. Consider the non-electronic or real-time analogies; can a warrant that names no names be used to seize and read all the mail in a building providing private post office boxes? Can a warrant claiming that someone is doing something illegal in a telephone company office be used to tap all the subscribers' lines going through that office?

A complete on-line copy of the suit (40 kbytes) is available as E-mail from keith@toad.com. He can also send out hardcopies for the disabled, or for people whose E-mail has been seized. The plaintiffs are:

H. Keith Henson	+1 408 978 7616	keith@toad.com
Thomas K. Donaldson	+1 408 732 4234	cis 73647,1215; source beb610
Roger E. Gregory	+1 415 493 7582	roger@xanadu.com

[by] John Gilmore (sun,pacbell,uunet,pyramid,amdahl)!hoptoad!gnu
gnu@toad.com



Love your country but never
trust its government.

-- from a hand-painted
road sign in central Penn-
sylvania

Enter <RETURN> to continue.

From *The Reporter*, a legal newspaper for the San Francisco Bay area.
Tue. Dec. 13, 1988

Consultants File Suit Over Electronic Mail

by Howard Mintz

A trio of Santa Clara County software consultants has filed a class action suit in Federal court to prevent law enforcement officials from seizing electronic mail systems in the course of criminal investigations.

The suit, filed Friday in U.S. District Court in San Jose, stems from an investigation earlier this year in Riverside County that targeted the controversial activities of the Alcor Life Extension Foundation, a group involved in preserving bodies in a frozen state purportedly for resuscitation in the distant future.

The Riverside County coroner's office in the course of a highly publicized probe into whether one of the bodies had been alive prior to the freezing process, seized a variety of computer equipment during a search in January [88]. The equipment included electronic mail and other computer data.

In *Henson vs. Federal Bureau of Investigation*, C-88-20788 RPA, Santa Clara county software consultants and Alcor members Keith Henson, Thomas Donaldson and Roger Gregory, acting *pro per*, contend that the seizure of electronic mail amounts to a violation of Fourth Amendment rights and is a violation of the *Electronic Communications Privacy Act of 1986*.

Specifically, the suit states that Title 18, Section 2701, should prohibit law enforcement officials from seizing electronic mail, regardless of whether the search warrant authorizes the seizure of the computer on which the data is stored. The search warrant, attached to the suit, listed a variety of technology, including "all electronic storage devices."



The suit names the FBI and the U.S. attorney's office in Los Angeles because of their alleged failure to investigate what the plaintiffs contend is the equivalent of an illegal wiretap. The suit includes several letters sent to the two agencies asking for an investigation, as well as letters to U.S. Sen. Pete Wilson, R-San Diego, and U.S. Rep. Norman Mineta, D-San Jose.

The suit states, "It is easy to understand the reluctance of one law enforcement agency to investigate another, especially in the small-town, close working conditions of Riverside. But if the FBI will not protect the Fourth Amendment rights of citizens from overzealous local officials who violate the privacy of electronic communications, who will?" None of the three named plaintiffs could be reached for comment Monday.

Assistant U.S. Attorney Michael Emick, a named defendant and head of the criminal complaints division in Los Angeles, said he did not recall Henson's charges and was unaware of the suit.

Emick said his office would have jurisdiction to intervene on Alcor's behalf if computer data were seized illegally. But according to letters attached to the suit, both the FBI and federal prosecutors determined that intervention was not warranted in the Riverside case.

Alcor's attorney, Christopher Ashworth of Los Angeles' Garfield, Tepper & Ashworth, said Alcor was not involved in the legal challenge to seizure of the electronic mail but that the actions by the coroner's office appears to be "like a slow tap."

"The underlying theory is sort of intriguing," said Ashworth, who focuses on cases involving federal constitutional law, "Taking computer data that had been recorded adjunct to wire communications is no different than tapping the telephone."

Santa Clara County deputy District Attorney Kenneth Rosenblatt, head of the high technology unit, said the issue appears interesting but that it has thus far posed no problem in the prosecution of any cases in Silicon Valley, where the use of electronic mail has proliferated.

"I can't think of an instance when we've seized electronic mail," Rosenblatt said. "I guess the only thing I would ask is even if [the plaintiffs] are right, where's the damage?"

* * * * *

PROMOTING ALCOR AND CRYONICS

Eight pages of this month's magazine are devoted to a catalog of educational materials available from Alcor. Many of the items are things we've offered for some time, but which you may have either not known about or simply have forgotten about. Hopefully the catalog will change all that. We hope you will use it to target your promotion of cryonics to your audience's needs. If you are dealing with someone who has technical objections, giving them a copy of *Cell Repair Technology* or *24th Century Medicine* may help answer their questions. One of the Alcor videotapes could help to orient prospective members

EDUCATIONAL MATERIALS AND BOOKS AVAILABLE FROM ALCOR

NOTE: All prices include postage and handling and are in U.S. dollars. Maximum order \$100. Overseas orders must be paid for with U.S. dollars or International Money Order.

MAGAZINES

Cryonics magazine: The monthly news and information magazine of the Alcor Life Extension Foundation. Each issue has articles covering a wide range of topics relating to cryonics and life extension. In-depth articles explore the technical, legal, social, and political aspects of life extension technology. Typical issue length is 40 to 48 pages.

In --United States	\$20.00/year
--Canada and Mexico	\$30.00/year
--Outside North America	\$35.00/year

Cryonics 1983 issues, each

In --U.S., Canada and Mexico	\$ 2.00
--Outside North America	\$ 3.00

Cryonics Magazine Index -- 1981-1984 \$ 1.00

to the people and facilities of Alcor and make it all seem more real.

One very important product which is *not* in the catalog is Alcor's new introductory slide presentation. This presentation was created by Alcor Midwest Coordinator Steve Bridge and is by far the best lecture and slide presentation about cryonics we've ever seen. It uses the Alcor approach to communicating cryonics, which begins by disabusing people of the notion that cryonics involves freezing "dead" people. The presentation carefully points out that current, function-based criteria for pronouncing death are invalid and explains that the information/structure based criterion is the only true way of evaluating patients for viability (an approach developed by Brian Wowk see "The Death of Death in Cryonics", *Cryonics*, 9(6), 30 (June, 1988)). Elsewhere in this issue is a discussion by Steve Bridge on the effectiveness of this approach.



We have given this presentation experimentally in several markets here in California and the results have been very exciting. The slide presentation consists of approximately 70 slides and 16 pages of text. It can be given easily in 45 minutes, and is suitable for anyone from junior high school to senior citizen. It contains up-to-date visuals and text dealing with every major aspect of the cryonics program. The presentation comes complete with an introductory handout which can be distributed before the lecture begins.

We are currently marketing this presentation for \$195. This price includes the complete slide set with accompanying text packaged in an attractive three-ring binder. For those of you with public speaking skills or a desire to acquire them, we highly recommend this presentation. It has been our experience in Southern California (and Steve's experience in Indianapolis), that there are an almost endless number of groups in need of speakers about cryonics. Optimists Clubs, Rotary Clubs, garden clubs, Libertarian supper clubs, ambulance companies, and even coroner's and mortuary conventions are all anxious to hear presentations on cryonics.

If you are interested in purchasing a copy of this presentation and getting some personalized help in using it, please send your check or money to Alcor, c/o Steve Bridge, 1720 N. Layman, Indianapolis, IN 46218 or call Steve at (317) 359-7260. *Be sure to make all checks or money orders payable to Alcor.* Allow 2 - 3 weeks for delivery.

* * * * *

CRYOEVANGELISM

If Alcor has had any area where success has been better than expected, it has been with the Coordinator program. The activities of Steve Bridge in Indianapolis as highlighted in both this and the November issue of *Cryonics* are the most striking example of this.

Fortunately, Steve is far from being alone in his efforts. The Alcor Northern California (ANC) people have been boiling over with activity in recent months and it seems fair to report that a full-fledged Alcor chapter has emerged in Silicon Valley. We now have 17 Suspension Members in the Bay Area, with most of them concentrated in Silicon Valley. In addition to the 17 currently signed up, we have about 6 people in Silicon Valley pending approval -- in the final stages of completing their arrangements.

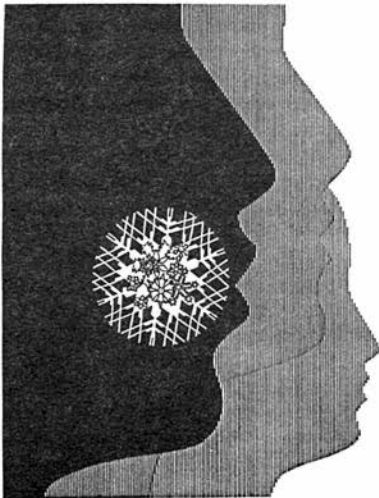
The Northern California Alcor members have banded together to form a group, opened a bank account, begun monthly meetings, and undertaken a program to upgrade their emergency readiness. ANC member Naomi Reynolds has taken an EMT course which she passed with flying colors, and is in the process of taking more advanced training! Frank Rothacker has done some valuable maintenance work on the group's Heart-Lung Resuscitators (HLRs) and has greatly improved readiness in this area. He has also identified a couple of potentially serious failure modes in our aging Brunswick HLRs -- problems which could surface for any Alcor Coordinator using this equipment.

At the current rate of growth, ANC will *very* soon have a larger concentration of members than Alcor Southern California!

Nor has activity been confined to just the West and Midwest. The New York discussion group is growing rapidly, with anywhere from 9 to 12 people attending meetings. New York Co-Coordinator Al Roca recently completed his EMT training and was certified. Alcor now has three EMT-certified Coordinators. New York Co-Coordinator Jerry Arthus will be taking the EMT class shortly. In response to this effort on the part of the New York group, Alcor will probably be deploying a Rescue/Stabilization kit and patient air transport case in the New York area in April or May of this year.

Activity in London, England is also increasing. Under the leadership of Luigi Warren, the Mizar group has resumed regular meetings and publication of a newsletter. As a result, a number of new people have become interested. Arrangements have been made with a mortuary service specializing in international shipment of bodies, and plans are being developed to deploy a higher level of capability (blood washout and possibly cryoprotective perfusion facilities) in England during the next couple of years.

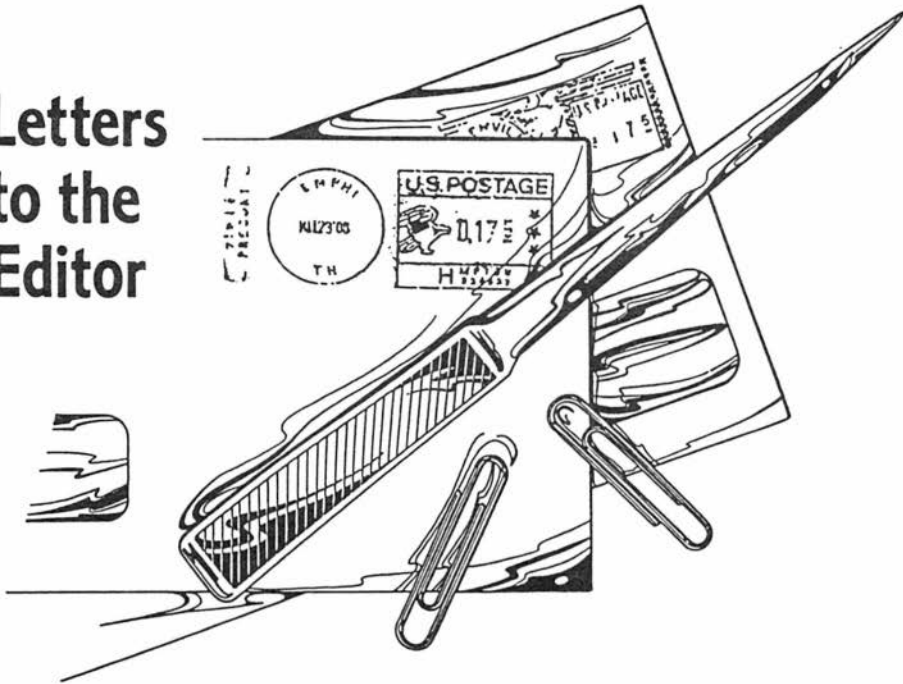
The British group is also sponsoring a one-month European trip by Mike Darwin. The



purpose of this extended visit is to generate additional local interest and allow Mike to assess the situation with respect to hospital cooperation. Mike will also be meeting with German cryonicists who hope to begin developing cryonics capability on the Continent. European subscribers to *Cryonics* or Suspension Members wishing to meet with Mike should contact Luigi Warren at: No. 6 Townend House; High Street; Kingston, Surrey KT1 1NA; United Kingdom, or by telephone, 01-546-3020 (home, landlord's answering machine) or 01-541-1944 (work, DuPont Pixel Systems) as soon as possible. Mike will be leaving for Britain on February 7 and returning to the United States on March 8.

Interest in cryonics has not been at this level since the mid-1960's. Enthusiasm and competence on the part of cryonicists has never been higher. To all the Coordinators: Thank you! And keep up the good work!

Letters to the Editor



To the Editors:

I enjoyed Steve Harris's reply to my article even though I disagreed with it.

I too have not failed to notice the extreme joy with which the public has greeted concepts such as neurosuspension. Where I part from Steve is with the issue of whether or not we must actually resuscitate someone from suspension to overcome these feelings. Technology isn't an autonomous agency which causes all other social and philosophical changes. Feminism (at least its history to date) caused people to think about devices like the Pill and to engage in research to bring them about. So did technology cause feminism, or feminism cause technology?

One point I'd make about technology comes close to Steve's ideas: It is very important, not that we go all the way to bringing someone back from suspension, but that we be seen to be continually *working* on the problem of doing so. And making progress.

Changes in public philosophy have often happened without obvious technological change, Christianity in the Roman Empire being one example. The main points I was making were first, that we need another mythology to replace the old one (as Christianity did). And second, regardless of technology or not, major changes like cryonics just don't happen swiftly.

Thomas Donaldson
Sunnyvale



FROM THE BEGINNING: GIVING EFFECTIVE CRYONICS TALKS TO HIGH SCHOOL STUDENTS (AND OTHER GENERAL AUDIENCES)

By Steve Bridge, Midwest Coordinator

During the past five years, I have made about seven cryonics presentations to elementary or high school students. Speaking to young people about life and death issues requires a somewhat different approach, using less technical information and an understanding of a young person's different position in society. So I have had to do a lot of experimenting to determine how to deliver the most effective talk.

"Effective" is a relative term, of course. It is hard to imagine a cryonics presentation so good that even high school students rush right out to sign up. Students generally lack the funds to purchase life insurance or start trusts; but just as importantly, for most of them, this is their first detailed exposure to the idea. Becoming involved in cryonics requires some basic changes in a person's life, not the least of which is in the person's self-concept. Few students are used to the idea that they have to take control of their own lives. For most of us that did not happen until we left high school or even college. And of course, nearly every young person is afflicted by what Mike Darwin calls the "personal immortality syndrome" -- they understand that death exists, but deep down they don't really believe it will ever happen to *them*.

In some ways, it is more fun talking about cryonics to grade school children than it is to older students or adults. A typical group of adults will usually feature one or more characters who ask smug questions in order to show off their knowledge, instead of looking for answers. The question will often be put in put-down tones, phrased something like, "Well, this is very interesting, but I once worked in the emergency room of a hospital, and everyone knows that the brain can't survive more than 7 minutes of no blood flow, so you really can't bring anyone back, can you?" I suppose they somehow assume that this is a devastating observation that we have never considered before; so that this will

make us say, "Gosh, you're right!" fold our tents, and give up this "nonsense." One must avoid the temptation to sneer back at this person by pointing out his own obvious brain damage. Generally, a calm, well-reasoned response shows both the cryonicist and cryonics in the best light, and subtly shows the rest of the audience that the heckler doesn't know what he is talking about. Remember, such a person is probably such an uncreative thinker that he himself cannot be convinced. It is the rest of the audience you are really talking to. Do not let such a person monopolize the questions, and absolutely avoid any one-on-one discussion with him. Your audience will be bored and you will be frustrated.

Children, on the other hand, are filled with true curiosity. They are ready to at least half-believe almost anything, from ghosts and UFO's to political rumors, Jesus, and suspended animation. They are eager to ask questions, because they really want to hear your answers. They don't have enough world experience to have become cynical, and they don't have a very detailed world view yet. Just about any belief is still being considered for inclusion. While such a dialogue is fun, one must also keep perspective. No one is going to turn a child into a cryonicist with one talk. The most one can hope for is to add some new



ideas to the intellectual stew they are creating, with the hope that this may give them a basis for better understanding cryonics as they get older, and with the object of enhancing their tolerance to new ideas such as ours. They will have to have further exposures to the cryonics "meme" as they get older for the idea to take deeper root.

High school talks are a different problem yet. A Senior in high school has gained enough frustration to become pretty cynical, on the surface at least. This may be coupled with a negative feeling about the future, particularly about the possibilities of a devastating nuclear war. At the same time, students of this age have probably developed their first worldview, including their views on religion and life after death. Since they haven't been out among people with wildly different views, and since in spite of their cynicism they still lack a lot of real-world experience, this worldview has not had to undergo any serious challenge -- until the cryonicist faces them. Perhaps because the structure of their belief is so shaky and untested, they defend it even harder. Their objections and questions may have a lot more to do with their own self-image than with a logical response to your ideas.

My first high school cryonics slide-lecture in the spring of 1988 was a revelation for me. The talk was given in an auditorium to about 150 juniors and seniors, who were taking classes in "Thanatology" (the sociology and psychology of death). I was using pretty much the same talk for adults I had been using for two or three years, modeled after talks I had heard Mike Darwin give several times. Mike once described his frustration at speaking to high schools in California and getting nothing but glazed looks. Perhaps Midwestern schools are different; but that was not the reaction I got. While it was apparent that some of the students had followed my points, most of them were bewildered by the technical parts of the presentation and confused by the emphasis on bringing "people back to life." So, instead of glazed looks, many of these students got

off on a wild track of "what happens to the soul?" and "How do you know God wants you to do this?" A friend who came with me swore that one group of students were discussing attacking the stage to throw this "atheist" out of the school. I think I handled the entire thing fairly well, with calmness and good humor; but I also recognized that going into schools to incite religious arguments was not really my purpose.

A few weeks later, the teacher who had invited me to speak called to say that my talk had really enlivened her classes and had led to better class participation for the remainder of the semester. She had polled one of her classes as to their reaction to my talk. Two students were very interested in cryonics, two thought it was okay, and nineteen thought it was a bad idea. She then asked me to speak again in the fall. Obviously her definition of success was different than mine. Still, I felt I wanted to explore this and do better, so I accepted.

Even as I agreed to do another talk for this class, I was concerned that I didn't know how to undercut the religious objections. I experimented with a couple of approaches, but nothing clicked for me until I read Brian Wowk's article, "The Death of Death in Cryonics" (*Cryonics*, June, 1988). Of course, I thought, we are doing a medical procedure, not performing miracles. The religious question shouldn't matter, at least not to the vast majority of people who already accept heart transplants and recovery from drowning, without questioning the whereabouts of the soul. I added a new introduction and completely changed the tone of my presentation.

Over the summer, I gave two open presentations to adults at public library branches in Indianapolis. I was amazed at how well this new approach worked. The audience seemed to be more alert and involved in the talk, and religious questions afterward were practically non-existent. All focused on medical problems, repair problems, and concerns about the future.

Further discussion with local friends, as well as with Brian Wowk and Mike Darwin led to continued modification of the talk. I also discovered, as I related in a recent Letter to the Editor (*Cryonics*, September, 1988), that the approach of discussing suspension in terms of medicine and comas seemed to be very productive in one-on-one discussions. When I again spoke to the high school students in November, the talk had a vastly different emphasis than it had during the spring. In addition to the new medical emphasis, I eliminated a lot of detailed technical information, including areas like vitrification, which were only appropriate for more sophisticated audiences. I wanted to concentrate on getting across the central messages of cryonics. I'll give you a brief outline of the talk, with some quotes to show the flavor of the new approach.

I started by reminding the students that "common knowledge" is very frequently wrong, such as when we say "the sun rises in the east." (Of course, the sun neither sets nor rises; the Earth turns to meet it.) I pointed out how some scientists over the past one hundred years had looked pretty foolish by stating that certain developments were absolutely impossible, just before they in fact occurred. I also reminded them of the basic structure of atoms, molecules, and cells which make up who we are.

As I began to define cryonics, I immediately began setting up this new approach:

"Cryonics is not a religion or a cult. It is a medical technology. Like other new ideas and technologies, it might affect discussions of religion, but on its own it has no more religious content than a heart transplant.

"Cryonics is also not a new way of storing dead bodies. It is a new way of saving lives. Cryonicists refer to these frozen people as *patients*, because we firmly

believe they are, in some manner, still alive. Perhaps a better word would be "viable," which means "able to live." Physicians often refer to newborn children who are strong enough to live as "viable births." An even better image might be that of "viable seeds," which are "seeds stored properly so that they are likely to grow when planted."

The next basic step was a brief tour through what happens in a cryonic suspension. During this, a very basic series of questions had to be asked and answered. "If you are trying to save lives, why do you have to wait until legal death to suspend someone?" "Doesn't legal death mean there is no hope of recovery?" I had been counseled by Brian to pass quickly over this question, since he believed it was medically meaningless. Perhaps it is trivial to us experienced cryonicists, but to first-time listeners, it is not. In fact, it is one of the main questions on their mind, and an understanding of the truth in this matter is essential to any comprehension of cryonics. In part, my answer was:

"It's important to remember here that "legally dead" does not mean the same thing as "biologically dead". Biological death would indicate that the cells are so broken down that they are no longer viable. Biological death is the only "real death." The term "legal death" is strictly a legal technicality. "Legally dead" merely means that a physician has decided that his medical abilities are not enough to keep the patient alive and functioning.

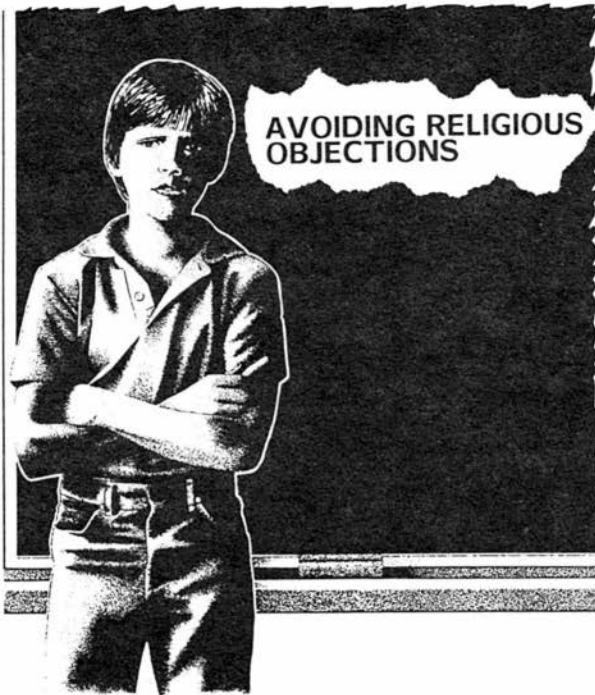
"In effect, putting a patient into cryonic suspension is like holding that patient in a very deep coma, in which the structure of the patient's cells and memories are preserved intact, but where all metabolism has been halted, put on hold. Metabolism, you might remember from your biology class, is the various chemical processes our cells go through -- oxygen and other chemicals come into the cell, energy is produced, waste products are sent out. Cryonics researchers have taken to calling cryonic suspension an "ametabolic coma" -- a coma without metabolism.

"Now, think what this knowledge means. With a fairly simple change in technique, the outer limit for brain death has gone from ten minutes to one hour. We may discover other techniques which might push that limit out to two hours or six hours or longer. For the purposes of cryonics, this means that the human brain is viable long after the physician pronounces death. And it means that, if we get the patient's brain cooled down rapidly, we can protect that patient's brain very well, while we do the other procedures necessary before the actual freezing begins."

After the discussion of the suspension procedure, I mentioned briefly the problems of ischemic damage and freezing damage, and discussed how cryonics has attempted to solve them. I then went into a discussion of possible repair technologies, including nanotechnology. The rest of the talk avoided technical issues altogether, focusing instead on emotional ones. At this time I confronted the religious question head on.

"Remember, here we are viewing humans as structure. If the structure is essentially preserved and the minor flaws are corrected, we assume the structure will function correctly and that the life of that person is therefore preserved.

"I realize many people are uncomfortable with the notion that human beings may be only physical. We are so anxious to see ourselves as different from the rest of nature. And it is conceivable that there is some non-physical component. But it isn't necessary to worry about this in order to work on saving lives through cryonic suspension. We already have heart transplants; people have awakened from 40-year long comas, and they have been revived after an hour of drowning. These medical marvels are accepted by most religious people. No one argued that these people lost



their souls. No one argued that this proved there was no soul. Everyone accepts that these people are alive. I don't see that cryonics will be treated that much differently in the long run. If this works, then the patients are alive. We are still talking about medicine, not religion.

"We are not saying we can revive people who are truly dead. We are saying that current medicine is *wrong* about when death occurs. There is some point where a person really is dead, when the brain is absolutely destroyed. But that point is *not* when physicians currently give up on their patients. Today, people are still alive after so-called "legal death."

Finally, I finished up with an analogy to get them more emotionally involved, so they could better

understand the life-and-death decisions which have to be made in cryonics.

"This leaves us all with decisions to make. Imagine this: someone your age is in the hospital with incurable cancer or severely injured in a collision. They have only a few days left to live. The doctors can't make them better now. But let us say that the doctors know that in two years they will have a new drug which will cure that cancer. Or they know that research is taking place on new surgical techniques which will allow that crash victim to be healed, perhaps in ten years. What if the doctors were to say, "Listen, we have a way to put this person into a coma, so she won't die. We will take care of her in that way, and in two years we can bring her out of the coma and cure her cancer." Would you say, "Put her into the coma" or would you say, "Let her die?"

"That kind of decision might not be difficult. But it is similar to the decision to be made about cryonic suspension. We are saying, "These people cannot be cured now. We can put them into a type of coma which we think will stop them from dying and from growing any older. Right now, we don't know for sure that people will be brought out of this kind of coma, although it seems very possible. But we are very sure that someday the disease this person has will be curable." Now, do you say, "Put her into the coma," or do you say, "Let her die?"

"I believe that twenty years from now the evidence in favor of cryonics will be overwhelming. And what will we think of ourselves then? What will physicians and relatives think when they realize that the people dying today could have been saved? I am not insisting that all terminal patients be suspended. But I do think that free choice should be encouraged. Patients who plan for this in advance should have the

option of continuing their existences, with the full cooperation of the medical establishment, that is if the medical establishment is really interested in saving lives. These kinds of choices will not be easy to make; but right now for most people there is *no* choice. I would rather have tough choices than no choices."

There were two other major differences in the way this talk was done, compared to the one the previous spring. First, it was given in the classroom, to two different classes, instead of in an auditorium. This probably made a more personal approach possible. Also, I decided not to discuss the concept of neurosuspension unless a question was asked. When it was asked, I presented it simply as an option, not as the main idea of cryonics. (Most people find the idea of cryonics difficult enough to deal with on first hearing, let alone adding in all of the misconceptions possible when one brings up frozen heads. I believe that neurosuspension is best avoided or played down for most general groups, especially students. Save it for those people who become more interested.)

As with my experience in the summer's talks, religious questions were at a minimum. Only a couple of students seemed actively hostile, and most seemed to catch on to the main points I was trying to make. Near the end of the question period following the talk (but before any questions on neurosuspension had come up), I polled the two classes on their reactions to cryonics. This time, reaction was split almost evenly among three positions: a) that cryonics was a bad idea, b) that the idea was OK but you are not personally interested, and c) that you might chose to do this yourself someday.

There is still a lot of work to do to develop Alcor's presentation to a point where we can immediately persuade a lot of listeners that we are correct. We know we are dealing with centuries of ingrained cultural habit, which exerts a powerful influence on each individual of our society. Yet this new emphasis on cryonics as a "life-saving medical technology" does appear to be making some progress. And, while few of you give formal talks on cryonics, most of you attempt to discuss it with your friends and acquaintances. My personal experience is that some modification of your approach might keep them listening to you longer.



Cocoon: The Return

Movie review by Brian Wowk

Cocoon: The Return is the 1988 sequel to the 1985 Ron Howard film, *Cocoon*. For those who have never seen this immortalist classic, *Cocoon* is the story of extraterrestrials called Antareans who come to Earth to recover companions they left in suspended animation centuries ago. Antareans are immortal, and, as the story unfolds, a group of aging, dying humans are ultimately offered the opportunity to leave Earth and explore the galaxy as rejuvenated and immortal beings themselves. Of course they take it! And so concludes one of the most pro-life, pro-immortality, and indeed pro-cryonics films ever made.

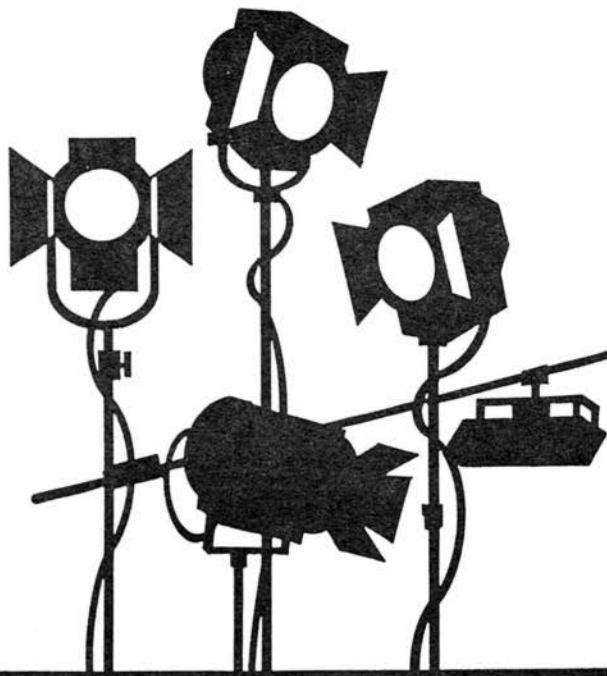
In *Cocoon: The Return*, the Antareans return to Earth five years later to complete their original rescue mission. Along for the ride are all the principal characters the first movie, including those played by Hume Cronyn, Wilford Brimley, and Don Ameche. They came from a place with a "golden sky, three moons, and shining silver cities." A place "without war, poverty, sickness, or death."

The film begins predictably. The aliens set about their rescue operations, while the returning humans create a stir by visiting family and friends who thought they were all dead! As in the first movie, we are treated to numerous scenes showing how much fun "old" folks can have in rejuvenated bodies. Nursing home orderlies are tossed aside, teen-agers beaten at their own games, and a good time is had by all... just like the first movie.

Unfortunately, the similarity soon ends. As the plot develops, it becomes clear that *this is not an immortalist movie*. A series of disasters and strange decisions results in most of the returning humans choosing to stay on Earth and die after all. It's as if the filmmaker was implying these people could not escape their karma, and it was foolish for them to aspire to immortality in the first place.

In fact, some scenes are just textbook deathism. Brimley's character is particularly annoying, several times saying "it ain't right for a man to outlive his children." At the end, Brimley bids farewell to the alien Walter (Brian Dennehy's character, who unfortunately makes only a cameo appearance) by saying "I may see you some other time, some other place." To which Walter replies a smiling "maybe", adding sanction to the notion that maybe death isn't so bad and final after all. This is totally opposite from the message of the first movie.

Yet the film is not entirely devoid of positive philosophy. By far the best characters are Don Ameche and his wife. They express no misgivings about their decision to leave Earth, and observe that they should never have come back. (If they hadn't, none



of the disasters that befell the other characters would have happened.) When the Antareans need help to rescue one of their friends from the clutches of local authorities, Ameche says, "Do you realize what they've done for us? We owe them *everything*. If one of their friends is in trouble, you can count me in!"

When the time comes to leave Earth again, Ameche and his wife are faced with an interesting complication: she is six weeks pregnant. Attention turns to the child, and what's best for him/her. Ameche asks whether it's right to deprive their child of a life on Earth. His wife replies with the best line of the movie: "For all the sunsets, rainbows, and snowflakes he won't see, think of what he *will* see." For a few brief moments the film shines with the brilliance of the original.

What happened to this movie? What went wrong? For starters, Ron Howard was not involved. In fact, neither were any of the original writers or creative personnel. It seems the studio just up and decided to capitalize on the success of the first movie without really understanding what made it a success. They simply constructed a story consistent with the first film, and that contained many elements of the first film, but that was utterly devoid of the philosophy that made *Cocoon* a great movie. In short, they came up with just another flick for Christmas.

Is this movie worth two hours of your time? It wasn't for me, and I would only recommend it to the very curious. In fact, I think that this film is best forgotten. Despite the title and characters, it bears little in common with the real *Cocoon* and its message: that being alive *is* good, even if we have to travel very far to stay that way.

* * * * *

SCIENCE UPDATES ON ISCHEMIA

by Thomas Donaldson

A DRUG FOR BRAIN ISCHEMIA

Intermittently we have reported on the progress of an experimental drug, MK-801, under investigation by Merck, Sharpe, and Dohme. There have been several reports already, often only short abstracts, of work with MK-801 in ischemia. There are also a few longer papers (cf. E. Oyzurt *et al.*, *J Cerebral Blood Flow and Metabolism*, **8**, 138-144 (1988)). Recently, in *Annals of Neurology*, (**24**, 543-551 (1988)) some of the authors involved in these reports (J. McCulloch, G.M. Teasdale, D.I. Graham, *et al*) present a full article describing their experience with MK-801 as a treatment for stroke. We present their most central results here.

MK-801 distinguishes itself by acting not just before ischemia (many drugs do that) but by clearly and definitely acting afterward. McCulloch and his colleagues studied rats. They applied ischemia to imitate a stroke by cutting off blood flow through the middle cerebral artery of their rats. They did not try to see how well their rats did long-term. Instead, 3 hours after the artificial stroke, they killed their rats and chopped up the rats' brains for slides. Their results come from examining these slides.

They gave MK-801 both 30 minutes before ischemia and 30 minutes after. If anything, MK-801 is even more protective given after ischemia than given before. If the rats received MK-801 30 minutes before ischemia, it reduced the volume of damaged brain by 38% in the cerebral cortex and lesser amounts in other brain regions. But if they received MK-801 30 minutes after ischemia, it reduced the volume of damaged brain by 52%. The other brain areas also showed reduced damage.

This drug does not act in any mysterious way. For several years, scientists have known that ischemia and other kinds of brain damage have involved massive discharge of one brain transmitter, glutamate. The nerves release this chemical in a kind of convulsion. Once released, the receptor cells receiving it admit massive amounts of calcium. The calcium stresses them too much and they die. Even without ischemia, this kind of convulsion can cause brain damage just as if ischemia had happened. Very severe convulsions, for instance, will cause brain damage for this reason.

Up until quite recently, however, no one knew of a drug which could pass through the blood-brain barrier and prevent this problem. MK-801 distinguished itself by being just such a drug.

It's important to notice that MK-801 didn't prevent all ischemic damage. Even in the best case, we have a 50% reduction, not a 100% reduction. The drug is still of value, not just for treating stroke but for our treatment of brain ischemia. For brain ischemia we must know its effects at greater times after injury. And it isn't a total solution. But it is one of the best solutions so far.

Unfortunately MK-801 is currently a proprietary drug inaccessible to us. It isn't even approved for use on human beings. Given the need for drugs to treat stroke, that should soon change.

* * *

BLOOD FLOW AND BRAIN RECOVERY: NO RELATION

For some time many researchers into ischemia have used the degree of blood flow after ischemia as a test of recovery. They have also tried to increase blood flow after ischemia as a way of increasing survival. In some cases they have used this sole indicator as a measure of how effective their treatments may be. For instance, one paper uses the calcium channel blocker *flunarizine* (*Ann Emergency Med*, 11, 119-126 (1982)). The authors (B.C. White and others) used restoration of blood flow to the brain as their test of effectiveness. They reported favorably on flunarizine solely for this reason.

A very interesting paper has just appeared in *Experimental Neurology* (101, 234-247 (1988)) which specifically questions this assumption. The assumption, that blood flow after brain ischemia predicts recovery, has indeed been important. Their very interesting result is that it is *not* predictive. The authors are J.C. LaManna, R.C. Crumrine, and D.L. Jackson.

LaManna and his coworkers took a group of 20 dogs. They put balloons into their blood stream and inflated them to cut off blood supply to their brain for a period of 11 minutes. They then allowed these dogs to either recover or die, for up to 7 days from the time of surgery. After the 7 days, they assessed recovery in the survivors. During recovery, they kept careful watch on blood flow in their dogs' brains.

The usual pattern of blood flow in animals treated this way consists of a short period in which blood flow increases to levels greater than normal, followed by a much longer period in which it is reduced.

Total brain ischemia for 11 minutes caused death in about 50% of the dogs. Since LaManna and his colleagues were also watching blood flow, they could state that there was no relation between low blood flow during the early recovery period and survival of the dogs. They also noticed that surviving dogs tended to have lower amounts of red blood cells in their blood than normal.

The authors feel that prolonged low blood flow after ischemia is not pathological. In fact, the dogs may even be trying to adapt to ischemia by a persistent low blood flow to the brain.

This paper may prove to be very important. The authors seem correct in their belief that many workers in the area of ischemia believe that low blood flow after ischemia is automatically unhealthy. Obviously if blood flow is low enough (like none at all!) patients are not well. But it does not follow that blood flow should be normal for patients to actually be doing well.

Of course it will take much more work to find out just what levels of blood flow are needed. Even more fundamentally, blood flow rates are easy to measure. If we can't use them to test a treatment, we need better measures. If the ideas of this paper hold up, we need a lot more work even to find out how to *measure* recovery after ischemia. Still, the discovery that we are ignorant about something we thought we understood is a real and positive advance.

* * *

HOW TO BRING BACK NEURONS

Many scientists have observed that cutting nerve fibers in the brain will cause degeneration of parts of the brain from which they come. This fact has lots of bearing on repair. If brain damage does cause loss of neurons, neurons once lost are lost forever, together with any information they contain. As cryonicists, we know that many people die of strokes. The first stroke does not kill them. But it will damage brain regions other than those it first damages, because it interrupts paths and so causes later degeneration. Later strokes will cause even more damage. What do we know about this process? What could we someday do about it?

An interesting paper in *Experimental Neurology*, (101, 303-312 (1988)) presents some data quite contrary (and much more hopeful) to the normal interpretation. Theo Hagg and others at the Department of Biology, UC San Diego began their analysis by suggesting that much of the supposed loss of neurons after injury could result not from their loss but from the loss of particular transmitter systems from the neurons. The neurons themselves would still exist.

They were particularly interested by some earlier studies of McBride and others (*J Neuropathology Experimental Neurology*, 46, 359 (1987)). McBride and his coworkers used special staining techniques. They recovered evidence of living neurons 10 weeks after an injury.

The point of their study was that many scientists have used stains which detect particular neurotransmitters. For instance, if the neurons used acetylcholine, they would look for these neurons with stains for acetylcholine. What would happen, they said, if the neurons were still alive but had just stopped making acetylcholine?

They performed experiments on rats to test this. They cut pathways in the rats' brains. These were pathways which used the nerve transmitter acetylcholine (the fimbria-fornix path). They then infused nerve growth factor into the region of their cut, from 1 to 3 weeks after injury. It was already known that nerve growth factor would *prevent* degeneration of nerves after injury. Nerve growth factor is an important hormone for nerves both within and without the brain. The new thing about their treatment was the idea of applying it long after injury.

The interesting result of this experiment was that it worked. The neurons had not in fact degenerated. They were still there. What had happened instead was that they no longer made acetylcholine. Any scientists looking for them with stains for acetylcholine would have seen nothing. He or she would have said that the neurons had simply degenerated. Treatment with nerve growth factor caused them to start making acetylcholine again.

It is easy to confuse our tests that something is gone with its actual absence. Cryonicists should know this very firmly. "Death" itself consists of a confusion between a test for absence and the absence itself. As we go on, we can expect many more such confusions. Tests for memory may later turn out invalid -- they don't prove the absence of memory at all. In this case, survival of neurons after brain injury is much more subtle than formerly thought.

Practically, this treatment is far from a way to recover all the brain tissue lost from strokes. But it may give us a way to recover some of it. That would be valuable, regardless. Similar methods may also bear on diseases such as Alzheimer's disease, where similar problems of nerve cell degeneration apparently happen.

* * * * *

If

Rudyard Kipling

If you can keep your head when all about you
Are losing theirs and blaming it on you;
If you can trust yourself when all men doubt you,
But make allowance for their doubting too;
If you can wait and not be tired by waiting,
Or being lied about, don't deal in lies,
Or, being hated, don't give way to hating,
And yet don't look too good, nor talk too wise;

If you can dream—and not make dreams your master;
If you can think—and not make thoughts your aim,
If you can meet with Triumph and Disaster
And treat those two imposters just the same;
If you can bear to hear the truth you've spoken
Twisted by knaves to make a trap for fools,
Or watch the things you gave your life to, broken,
And stoop and build 'em up with worn-out tools;

If you can make one heap of all your winnings
And risk it on one turn of pitch-and-toss,
And lose, and start again at your beginnings
And never breathe a word about your loss;
If you can force your heart and nerve and sinew
To serve your turn long after they are gone,
And so hold on when there is nothing in you
Except the Will which says to them: "Hold on!"

If you can talk with crowds and keep your virtue,
Or walk with Kings—nor lose the common touch,
If neither foes nor loving friends can hurt you,
If all men count with you, but none too much;
If you can fill the unforgiving minute
With sixty seconds' worth of distance run,
Yours is the Earth and everything that's in it,
And—which is more—you'll be a Man, my son!

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In:	--United States	\$20.00/year
	--Canada and Mexico	\$30.00/year
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Cryonics back issues, each

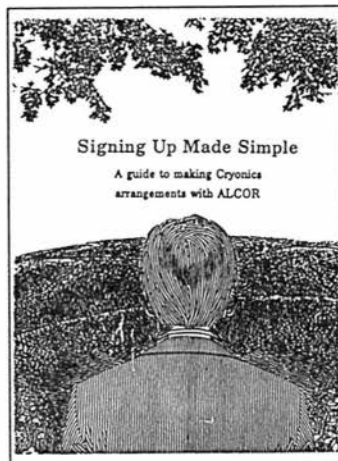
In:	--U.S., Canada and Mexico	\$ 2.00
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Cryonics Magazine Indexes -- 1981-1984 \$ 1.00



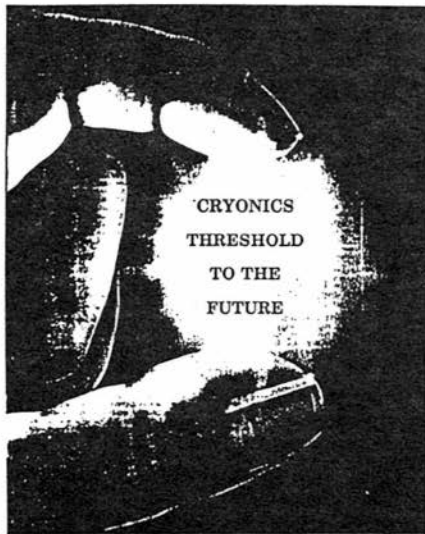
BOOKS AND MEMBERSHIP

Signing Up Made Simple (SUMS). A guide to the legal and financial arrangements which need to be executed to make cryonic suspension arrangements with Alcor. The SUMS manual explains in simple, easy to understand terms the purpose and procedure for execution of each document involved in the "sign-up" process. It is strongly recommended for people wishing to look over the contracts and supporting legal documents which Alcor uses to facilitate members' suspension arrangements. 100 pages, \$10.00.



Alcor Suspension Membership. Requires completion of all legal and financial arrangements for cryonic suspension. An Alcor Suspension Coordinator will work with you to prepare the necessary legal documents and provide information and advice on obtaining funding (via life insurance or other means) and executing the paperwork. After completion of suspension paperwork and approval of funding, an annual emergency responsibility fee of \$200 is charged (this includes a subscription to *Cryonics* magazine). A one-time fee of \$300 is charged (includes a copy of the SUMS manual) to cover the cost of preparing suspension documents and counseling on their execution.

Cryonics: Threshold To The Future. A booklet of general information about cryonics which raises and answers most of the commonly asked questions. Serves as an excellent introduction to cryonics and Alcor. 22 pages, \$1.00.



Cryonics: Threshold To Tomorrow, by Brian Wowk and Michael Darwin. An introduction to the scientific, practical and ethical aspects of Alcor's program of cryonic suspension. 76 pages, \$5.00.

Engines Of Creation by K. Eric Drexler. This is a magnificent exploration of the shape of things to come. Drexler details how the emerging field of molecular engineering or "nanotechnology" will reshape our lives. Nanotechnology represents the most significant development in human history since the discovery of fire or the development of language. The most exciting aspect of *Engines Of Creation* is Drexler's "profiles of the possible", including brass-tacks predictions of the kinds of capabilities nanotechnology will bring within our reach:

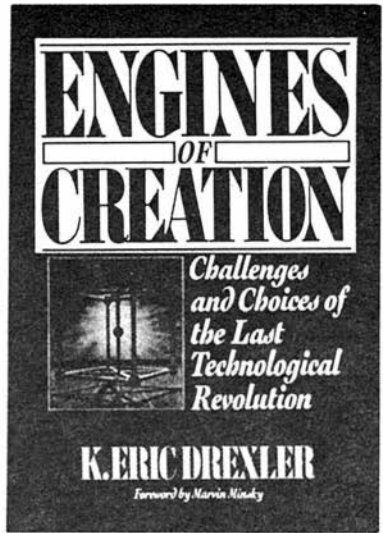
- Self-replicating factories of human cell or bacterial cell size which will contain self-reproducing "nanomachines" capable of manufacturing consumer good, skyscrapers and computers.
- Ultramicroscopic computers and cell

repair devices which will be able to enter aged, diseased, or damaged cells and carry out repairs; eliminating old age, restoring youth, and banishing most of the diseases which causing suffering and death today.

This is the single most important book you can read. We highly recommend it. 298 pages, soft cover, \$10.95.

The Prospect Of Immortality by Robert Ettinger. This is the book that launched cryonics in 1964. Out of print for many years, it is now available in limited quantities. \$11.00.

Cryonics Reports Volume III, 1968 and Volume IV, 1969. These collectors items are hardbound collections of the magazine of the Cryonics Society of New York (the first cryonics society). These are the *original* magazines as available from CSNY. They are very rare and in very short supply. Volume III, \$75.00; Volume IV, \$75.00.



ARTICLES AND REPRINTS

Why We Are Cryonicists. A brief introduction to the personal motivations and philosophy behind cryonic suspension. 2 pages, \$0.25.

Alcor: The Origin Of Our Name. The story of how Alcor got its name and came into existence. 1 page, free.

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The Scientific Validity Of Cryonic Suspension: A Bibliography. An extensive bibliography which cites references from a wide range of scientific disciplines which provide evidence in support of the potential workability of cryonic suspension; hypothermia, cryobiology, neurobiology, regeneration, cloning, neural transplantation, gerontology, and nanotechnology. 18 pages, \$3.00.

The Cryobiological Case For Cryonics. A comprehensive review and discussion of the evidence generated by cell and organ preservation scientists which supports the workability of cryonics. 14 pages, \$2.00.

Declarations by scientists in support of Kent vs. Carillo. A compendium of declarations from leading scientists in pathology, cryobiology, and nanotechnology in support of the rational basis and scientific validity of cryonics.

These declarations were produced as a result of a recent police action against Alcor wherein a County Coroner attempted to remove a patient from cryonic suspension for purposes of autopsy. Alcor won a permanent restraining order against the Coroner forbidding him to autopsy the patient. 78 pages, spiral bound, \$20.00.

Case Report: Two Consecutive Suspensions, by Jerry Leaf, Mike Darwin, and Hugh Hixon. Report documents whole-body cryonic suspension techniques as they were practiced in the early 1980's. 26 pages, \$3.00.

Postmortem Examination Of Three Cryonic Suspension Patients, by Michael Darwin, Hugh Hixon, and Jerry Leaf. Pioneering report documenting the gross effects of early cryopreservation procedures on human patients. Many of the findings documented in this 1984 report are still of relevance, and those wishing to make arrangements for cryonic suspension should read this paper. 20 pages, \$3.00.

Histological Study Of A Temporarily Cryopreserved Human. In-depth technical report which evaluates the degree of injury and preservation encountered with existing cryonic suspension techniques. 20 pages, \$3.00.

Alcor Places Member In Biostasis by Mike Darwin. Documents the cryonic suspension of Alcor Member Theresa Cannon in 1985. This suspension highlights some of the technical and logistic problems encountered in responding to member emergencies remote from Alcor's facilities and staff. 6 pages, \$1.00.

Case Report: Neurosuspension Of Alcor Patient A-1068, by Michael Darwin and Jerry Leaf. Detailed, technical summary of the transport, perfusion, and cooling procedures used by Alcor to place patients into cryonic suspension. 29 pages, \$3.00.

The Journey Begins: Alcor Member Enters Biostasis by Mike Darwin. In June of 1987 Alcor placed a 29 year old member with AIDS into cryonic suspension. This lay-level report documents the circumstances surrounding his suspension and the care he received. 12 pages, \$2.00.

Long-Time Alcor Member Enters Biostasis, by Michael Darwin. A lay-level case report documenting the cryonic suspension of an elderly Florida man who experienced ischemic coma suddenly at home in May of 1988. 16 pages, \$2.00.

Mathematical Analysis Of Recirculating Perfusion Systems, With Application To Cryonic Suspension, by R. Michael Perry, Ph.D. Documents development and implementation of a mathematical model to allow for computer generated predictions of the course of cryonic perfusion. 15 pages, \$2.50.

Mathematical Models Of Perfusion Processes, by Art Quaipe. Pioneering paper which formulates mathematical models of many of the processes that take place during cryoprotective perfusion and freezing of humans. The primary focus of this paper is to analyze the rate of removal of heat from the body and the rate of build-up of cryoprotectant in body cells. 48 pages, \$5.00.

Heat Flow In The Cryonic Suspension of Humans, by Art Quaipe. Mathematical treatise which surveys the general theory of macroscopic heat flow during cryonic suspension of human patients. 22 pages, \$2.50.



Calcium Blockers Given After CPR May Save Brains Denied Blood Up To 1-Hour. A discussion from *Medical World News* of clinical research in the rapidly developing field of cerebral resuscitation. 3 pages, \$0.50.

Viability Of Long Term Frozen Cat Brain, by Isamu Suda. This paper appeared in the prestigious journal *Nature* in 1966 and documents recovery of good electrical (EEG) activity in the cat brain after glycerol perfusion and freezing to -20°C . 3 pages, \$0.50.

Vitrification as an Approach to Cryopreservation¹

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Recent developments have opened the possibility that the problems of freezing and thawing organs might eventually be overcome by an alternative approach to organ cryopreservation, namely, vitrification. Here we will review some of the principles of vitrification, describe the current state of the art, consider how a practical vitrification scheme might work, and conclude by noting how the principles of vitrification relate to and illuminate the principles and practices of freezing.

VITRIFICATION OF CELLS

Vitrification can be and has been defined in many ways (12, 19, 34, 42), but essentially it is the solidification of a liquid brought about not by crystallization but by an extreme decrease in viscosity during cooling. During vitrification the solution is said to become a glass; translational molecular motions are significantly arrested, making the effective end of biological time but without any of the changes brought about by freezing. An organ capable of being vitrified need no longer satisfy classical constraints of optimal cooling and warming rates, but instead can nearly accept any "infinite effects" injury and the dangers of intracellular freezing.

Vitrification of relevant aqueous solutions using cooling rates that are realistic for whole organs requires the presence of high concentrations of a cryoprotective agent (41, 44, 45). The primary challenge that must be met in order to successfully vitrify organs, therefore, is to make the required concentrations of cryoprotectant nontoxic to the organ. Although this is a demanding task, it must be kept in mind that freezing ultimately exposes organs to even higher (41, 44, 45) and probably even more damaging (17) concentrations of cryoprotectant than are required for vitrification because of the concentrating action of ice separation on the residual solution liquid.

The basic concepts of vitrification are best described by reference to a supplemented phase diagram such as the generalized one shown in Fig. 1. T_m is the equilibrium freezing or melting point curve. Solutions normally supercooled to some point between T_m and T_g , the homogeneous nucleation temperature, before they actually nucleate or begin to freeze, as represented here by T^* . T_g is the glass transition temperature, at which supercooled liquid vitrifies. And finally, T_c is the devitrification curve, at which the previously vitrified solution begins upon rewarming.

There are certain rather well-defined regions on the phase diagram in which different types of vitrification behavior ap-

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Vitrification As An Approach To Cryopreservation, by Gregory Fahy, Ph.D., et al. An exciting survey of an emerging tissue and organ preservation technology which sidesteps freezing injury completely by eliminating ice formation at low temperatures. Vitrification will probably be the technology ultimately used to develop true suspended animation for cryonics patients. 19 pages, \$3.00.

Histological Cryoprotection Of Rabbit Brain With 3M Glycerol, by Gregory Fahy, Ph.D. An abstract documenting the effectiveness of 3M glycerol in preserving brain architecture after cooling to dry ice temperature. 1 page, \$0.50.

Histological Cryoprotection Of Rat And Rabbit Brains. Evaluation of the degree of structural preservation of the rat and rabbit brains using various compounds to protect against freezing injury. 13 pages, \$1.50.

Molecular engineering: An approach to the development of general capabilities for molecular manipulation, by K. Eric Drexler. Pioneering paper which outlines the theoretical possibilities and practical implication of engineering with atomic precision. 4 pages, \$1.00.

Molecular Technology And Cell Repair Machines, by K. Eric Drexler. Discussion of nanotechnology as applied to cell repair. This paper is the text of a lecture given at the Lake Tahoe Life Extension Conference in May of 1985. 18 pages, \$2.00.

Nanotechnology, by Brian Wowk. A comprehensive summary of the general capabilities nanotechnology will bring with special reference to the problem of recovering patients in cryonic suspension. 15 pages, \$2.50.

Cell Repair Technology, by Brian Wowk. A discussion of the kinds of biological repair and healing technologies which will likely emerge over the next 50 to 150 years. Special attention is given to possible scenarios for resuscitation of patients now in cryonic suspension. 11 pages, \$2.00.

How Cold Is Cold Enough?, by Hugh Hixon. Discusses why liquid nitrogen temperatures are used to

CELL REPAIR TECHNOLOGY
by Brian Wowk

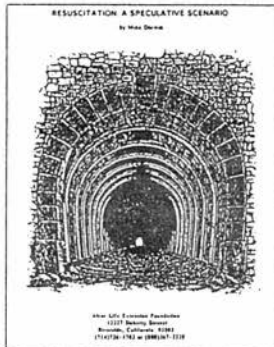
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store patients and critically evaluates what the warmest safe temperatures for long term storage of suspension patients are. 7 pages, \$1.25.

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But What Will The Neighbors Think: The History And Rationale Of Neurosuspension, by Mike Darwin. An evaluation of the history of neurosuspension and a balanced discussion of the advantages and disadvantages of the procedure. 16 pages, \$2.00.

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Resuscitation: A Speculative Scenario, by Mike Darwin. A speculative exploration of the kind of techniques that will probably be required to recover today's freeze-injured suspension patients. 5 pages, \$0.50.

The Death Of Death In Cryonics, by Brian Wowk. An thought-provoking article which discusses the critical importance of semantics in determining the public's reaction to cryonics. *A must read.* 7 pages, \$1.00.

24th Century Medicine, by Thomas Donaldson. An intriguing and exciting exploration of the capabilities and limits of future medicine. Highly recommended reading. 18 pages, \$2.00.



VIDEOTAPES

Alcor Time Travelers. A 30 minute introduction to the people and facilities of Alcor. VHS format only, \$10.00.

Cryonics: The Living Dead. A British documentary about cryonics and Alcor. There are many problems with this documentary from a cryonics standpoint, but it does serve to provide useful background. Most importantly, it contains approximately 20 minutes of positive commentary by respected research scientists in nanotechnology, the biology of memory, and solid state organ preservation. \$10.00.



MISCELLANEOUS

My Right to Cryonics: My Right to Life lapel buttons. \$1.00.

Other Resources

A variety of videotapes, reprints and other materials of a technical nature not listed here are available from Alcor on loan. If you require specific information which the previous listings do not provide, please contact us for information -- we may be able to help.

ORDER FORM

NOTE: All prices include postage and handling and are in U.S. dollars. Minimum order \$5.00. Overseas orders must be paid for with U.S. dollars or International Money Order.

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Meeting Schedules

Alcor business meetings are usually held on the first Sunday of the month. Guests are welcome. Unless otherwise noted, meetings start at 1 PM. For meeting directions, or if you get lost, call Alcor at (714) 736-1703 and page the technician on call.

ALCOR

The FEBRUARY meeting will be held at the Alcor facility:

(SUN, 5 FEB, 1989) Alcor Life Extension Foundation
12327 Doherty St.
Riverside, CA

The MARCH meeting will be held at the home of:

(SUN, 5 MAR, 1989) Marcelon Johnson
8081 Yorktown
Huntington Beach, CA

The APRIL meeting will be held at the home of:

(SUN, 2 APR, 1989) Brenda Peters
8150 Rhea
Reseda, CA

* * *

Alcor members in the San Francisco Bay area have recently formed an Alcor chapter, and are aggressively pursuing an improved rescue and suspension capability in that area. Meetings are generally held on the second Sunday of the month, at 4 PM. Meeting locations can be obtained by calling the chapter's Secretary-Treasurer, Thomas Donaldson, at (408) 732-4234 (home), or at work, (415) 593-3200 (ask for Thomas Donaldson).

The FEBRUARY meeting will be held at the home of:

(SUN, 12 FEB, 1989) Roger Gregory and Naomi Reynolds
2040 Columbia St.
Palo Alto, CA

The MARCH meeting will be held at the home of:

(SUN, 12 MAR, 1989) Thomas Donaldson and Cathy Woolf
1410 Norman Drive
Sunnyvale, CA

The APRIL meeting will be held at the home of:

(SUN, 9 APR, 1989) Frank and Geraldine Rothacker
3017 Green Dr.
Palo Alto, CA

* * *

The Alcor Cryonics Supper Club is an informal dinner get-together in the Greater Los Angeles area. These meetings are for newcomers and old-timers alike -- just an opportunity to get together and talk over what's happening in cryonics -- and the world!

If you've wanted an opportunity to ask lots of questions about cryonics, or if you just want a chance to spend some time with some interesting and nice people, pick a date and come! All dinners are scheduled for Sundays at 6:00 PM.



* * *

The New York Cryonics Discussion Group of Alcor has recently formed.

The group meets on the the third Saturday of each month at 7:30 PM. The November 19 meeting will be held at the **El Paso** restaurant, in Manhattan's Greenwich Village. The address is 134 West Houston St., between McDougal and Sullivan. Telephone (212) 673-0828. Ask for the Alcor group at the rear of the restaurant. Subway stops: Houston St. on the 1 train; Spring St. on the C, E, or K trains.

If you live in the New York, Philadelphia, New Jersey, or Boston areas and would like to participate in the rebirth of New York cryonics please contact one or more of the following people:

- Gerard Arthus (516) 273-3201
- Al Roca (201) 352-5268
- Curtis Henderson (516) 589-4256

* * * * *

"If you are strong enough, there are no precedents."

-- F. Scott Fitzgerald

* * *

"The most dangerous untruths are truths moderately distorted."

-- Georg Christoph Lichtenberg

ALCOR LIFE EXTENSION FOUNDATION
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