

CRYONICS

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EDITORIAL MATTERS

As many of our readers kindly pointed out, the sixth month of the year is June not May, and in any event there is only one month of May per year. One of the hazards of one man proof-reading the cover before it goes to press is that it is easy to overlook something simple like changing the month on the masthead. We apologize for any inconvenience or confusion this may have caused. Issue # 35 was indeed the June issue, even if it was labeled May.

We are planning to begin a series of changes to improve the readability and the attractiveness of the magazine. These changes will come slowly, and watching for them may be as frustrating as watching for the hands on a clock to move. Please be patient. The first thing we plan to do is to begin the occasional use of pictures. Many of our more isolated readers have expressed interest in seeing what we look like and more important what our physical facilities look like. We hope to satisfy this need.

We would also like to begin using illustration, bits of comic art and standing illustrations to open regular features and columns. In this department we need help. We know that some of you out there are illustrators or artists. It would be a big help if you could do some art work for us, even on a one-shot basis. Sketches of columnists which can be used regularly to open their columns would help tremendously to break-up the "bleak walls of text" we have been accused of having.

In the works right now is a series of basic articles covering areas like finances, perfusion and social issues. These articles are designed to help people who are relatively new to cryonics learn about us, but they will also be of interest to many of our long-time readers as well.

Of course, we could always use some financial support. Not only for improving the quality of the magazine, but for community outreach and education as well. Enclosed in this issue of CRYONICS you will find a pledge form. This form makes contributions to support cryonics easy and painless. Think about the difference your money can make—even a small amount given monthly can make a huge difference for us—and fill it out and drop it in the mail today.

ANOTHER SUSPENSION REPORTED

The May issue of THE IMMORTALIST contained a brief announcement that there has been another cryonic suspension. THE IMMORTALIST reported that a young man who is an Associate Member of the Cryonics Association froze the brain of his father using "a rudimentary procedure under adverse emergency conditions." The article goes on to state that the son is now maintaining his father in liquid nitrogen at home. No other details about the case are available at this time. THE IMMORTALIST offers a word or two of caution to people who undertake storage operations "on their own." We would like to expand on this warning not only for the benefit of our own members but hopefully for the benefit of the individual who is out there now with a huge load of responsibility on his hands.

The first thing to remember about high vacuum or even soft-vacuum liquid nitrogen storage dewars is that they can fail suddenly and without warning. Failure of vacuum storage dewars has resulted in serious warm-up or loss of at least four suspension patients. Neuropatients are especially vulnerable to this kind of disaster if they are maintained in small capacity dewars such as the Linde LR-40 or the MVE TA-60 or TA-90. A vacuum failure on one of these containers when full can result in complete boiloff and serious warm-up or thawing in a matter of hours. Sudden vacuum failure with an LR-40 which resulted in warming of a patient (though fortunately not thawing) has already

occurred. An LR-40 or similar low volume container is in Alcor's opinion not a safe way to store a neuropatient unless it is checked at least twice daily and has an alarm on it at all times. These containers must never be used without a back-up available on the premises as well as an additional reserve of liquid nitrogen to fire-up the back-up unit. Any alarm system should be hooked into an automatic telephone dialer which in turn is coupled to a paging service, so that if a low volume dewar fails someone can come and attend to it immediately.

The best solution is to use a high volume system so that some cushion is available. We have chosen an MVE A-2542 which can hold 8 patients and 440 liters of liquid nitrogen—ten times more liquid nitrogen than an LR-40 or TA-60. Of course these larger dewars also mean economies of scale. The cost of liquid nitrogen in small lots is in the range of \$0.50 to \$1.25 a liter plus a delivery charge, or the expense of going to pick it up. For an LR-40 stored privately at \$0.50 per liter and figuring in delivery costs of \$10.00 per month the total annual marginal cost is going to be in the vicinity of \$600.00 per year. If one includes the cost of an alarm sensor, dialer and paging service the cost goes up to around a thousand a year. The marginal cost of storing a neuropatient in the A-2542 when full is in the vicinity of \$125.00 per year including alarm system, pager, and amortization of the container over a 10 year period. Not only is this a safer way to go, it offers cost reduction as a result of economies of scale.

It should also be pointed out that caring for a patient in liquid nitrogen at home is a tremendous, wearing burden. Trips of day-long or weekend length are a serious risk and vacations for extended periods of time are unthinkable unless there is someone who is skilled and knowledgeable enough around to step in while you're away. This can be a real psychological ball-and-chain. In the past, it has ultimately resulted in physical disaster for the suspension patient. In one case a husband went away on vacation to Florida and left his wife in the care of a friend only to receive a telegram informing him of problems—problems which his friend was unequipped to handle and which resulted in the thawing of his wife and another patient stored with her.

We would urge the young man who is caring for his father to at least get the proper monitoring equipment and to have a back-up container available. Alcor will be happy to give free advice in this area and point toward reliable manufacturers for every component of a good alarm system. This is the least that should be done. If a suspension is worth undertaking, it is worth doing properly and safeguarding well. Every passing year not only increases the risk of disaster, but also the magnitude of accumulated investment in terms of dollars and cents. This investment, from a financial standpoint alone soon becomes very significant and well worth guarding. We would also point out that "do-it-yourself" rarely makes sense, especially not now when there are reliable groups around whose facilities are fully open to inspection and whose rates are below those the individual will experience in undertaking the project at home without back-ups or safeguards of any kind.

We hope the Cryonics Association will put a copy of this article in the young man's hands. We hope he will at least contact us for advice on the basics of safe care.

ALCOR RECONFIGURING SUSPENSION ARRANGEMENTS

Within a few weeks of receiving this newsletter Alcor members will be mailed a packet containing documents for an interim update of suspension arrangements. This packet will contain an addendum to our current paperwork, and an authorization for automatic conversion to neuropreservation in the event

whole-body funds become depleted or are unavailable. We also will now begin enforcing the requirement that members provide us with verification of funding in force either by double billing or by providing us with cancelled checks or other evidence that insurance or trust arrangements are in force. Failure to comply with these new requirements will result in cancellation of a member's suspension status and a reversion to Associate Member status. Members will be given a 60 day period to fill out the new interim update and return it to Alcor. When the member returns the interim update he/she will be issued a new bracelet tying him/her into the new Alcor communication system.

Over the next six months to two years (we're being realistic about how long this will take us—based on much past experience) we will be completely reconfiguring the Alcor suspension documents and legal arrangements. We expect to set out a completely new system for suspension arrangements which we hope will offer security and stability heretofore unavailable. In the near future we hope to have our contract forms ready and we will try to get these out to members to execute as soon as possible. It is anticipated at this point that we will be going to a separate account system with individual member contracts for suspension arrangements. We urge our members to carefully examine the interim update packets when they arrive and to give them prompt attention. We would also like to point out once again that current minimums are \$100,000.00 for whole-body suspension and \$35,000.00 for neurosuspension. If you do not have this level of funding you should make arrangements to get it and be able to show proof of funding in force within the next two months.

Any Alcor member who has questions or who needs help in completing the interim update should give us a call. We have several volunteers available to help ease you through the paperwork. We would also like to emphasize that this interim update is very straightforward and involves only a few simple documents. The most complicated piece of the new requirements is getting a will. At this point, we urge members to contact an attorney for advice in this matter and we have several specimen wills available for your consideration. For members who wish to wait until the new Alcor paperwork is completed before hiring an attorney for a will, we recommend a simple holographic will stating your desire to be suspended. We have sample copies of such wills available and we will be happy to provide them upon request.

BUG JACK BARRON - THE MOVIE???

In 1969 when cryonics was still "bursting" into the public consciousness, science fiction writer Norman Spinrad wrote a novel called BUG JACK BARRON. Among the many books written about cryonics before and after, BUG JACK BARRON stands in a class by itself as the best cryonics/immortalist novel yet written. In the science fiction community the book is considered a classic and it has been called everything from an off-beat masterpiece to an exercise in moral and aesthetic obscurity. We will not attempt to tell you here about BUG JACK BARRON we'll try that a little later on. For those who'd rather get the book right away and read it, it has recently been reissued by Berkeley Books and is available in most major bookstores.

What we want to do here is to tell you that supposedly, BJB is going to be made into a movie! Some months ago a rumor began circulating that a major studio was in the process of filming BJB. All attempts to verify these rumors failed. Calls to major studios produced incredulity and annoyance. "Bug Jack Who..." was the general nature of the response we got. Then, a few weeks ago mention of the project appeared in a couple of science fiction magazines (Isaac Asimov's among them) stating that not only was the project scheduled, but that

it was in production with Costa-Gavras (Missing) as director at Universal Studios. A few dozen calls to Universal Studios brought us to the office of one Sean Daniel, producer in charge of the BJB project. No, we didn't get to speak to Mr. Daniel who was variously in meetings, at lunch, in the air, out of town, with a writer, on a set... (one is given the impression Mr. Daniel is a busy man) but finally his secretary was nice enough to stop long enough (between the breathless business of keeping track of the indefatigable Mr. Daniel and all the indefatigable people one imagines are constantly trying to reach him) to tell us that A) the BJB project is not yet in production, and is only strongly being considered for production at this time, B) Costa-Gavras is busy on another project now, not working on BJB and C) No, they weren't really consumed with interest in free information about real-world cryonics (we offered to have them out to see our facility and to send them some of our literature) as they had their own "in-house" technical and special effects people and D) as she was very busy keeping track of the indefatigable Mr. Daniel, would this particular indefatigable person who wanted to reach him please accept the fact that Mr. Daniel was too busy to talk to him.

So...that's all we know about BUG JACK BARRON and in a nutshell, just like you folks, we'll wait to see if the cover of the new edition lives up to its promise: "soon to be a major motion picture..." If it makes it that far it ought to be a honey of picture with Gavras at the helm. Gavras is a Greek director with a hatred for Americans, a reported passion for communism and a taut and talented style of movie making. This movie may bug more than Jack Barron.

LETTERS TO THE EDITORS

AN OPEN LETTER TO BACS:

Please excuse this public means of communication, but we had to get your attention. We are about this far (picture your thumb and finger held about half a centimeter apart) from quitting BACS and joining ALCOR. Since this involves an awful lot of paperwork - wills, applications, insurance-policy changes, etc., we'd like to make sure that we're doing the right thing.

The thing that's getting us upset about BACS is that you never seem to answer your mail. We cannot understand this. We wouldn't buy cheese from an outfit that never responded to letters. With something as important as cryonics it is just unbelievable that you can be so cavalier. For years we were never even notified when our membership renewals were due. Now at least that's improved. We've sent everything from little notes and business offers, to items that we wanted to add to our files. Nothing. No acknowledgement - nothing. This has been going on over the years now, and while we've never really brought it to your attention, we have been slowly getting more and more pissed-off about it.

We don't really need to know why things are this way. We run a couple of mail-order businesses ourselves and we understand some of your problems. You have our sympathy. But, to have our business, we need more. What we want to know is: is this going to continue or is this going to change? If it's going to change how is it changing and when is it changing?

Sincerely,
Eric Geislinger
Jane Talisman
Portland, Oregon

Dear Editors,

A fairly large number of people within the international immortalist community seem to have had fairly serious problems in finding competent attorneys willing to provide legal advice and prepare legal documents in connection with cryonics purposes.

Because I'd had some of these problems myself (for various reasons I did not consider my general-business attorneys to be a good choice for that role), and because some other people involved in immortalist projects had asked me for advice on the subject, I undertook a multistate search for a good attorney or law firm who would combine the qualities of high competence, reasonable fees, and willingness to work on projects of the "unorthodox" nature of cryonics. That search has been a successful one, but before explaining that success it's worth making this point in passing: There are some fine attorneys around who are members and advisors to cryonics organizations (e.g., David and Connie Ettinger, associated with the Cryonics Institute), but for several reasons it is important for individuals to have the benefit of outside counsel in the preparation of cryonics documents: One is that cryonics organizations themselves have had the integrity to request that. A second reason is that on purely commonsensical grounds, one making cryonics arrangements should have the benefit of advice from a counselor not affiliated with the organizations with whom one is contracting—no matter how great their integrity, it is hard for an attorney associated with a cryonics organization to be fully objective and to give the kind of arms-length/disinterested advice that is needed. The third reason is that after an individual's death, disgruntled relatives trying to break a pro-cryonics will might very well have a peg-on-which-to-hang-a-lawsuit if the individual had been advised only by an attorney for a cryonics group—the relevant court might very well see a gross conflict of interest in such a relationship and might therefore sustain the challenge to a will drawn without the advice of independent counsel.

Because all of those reasons make the advantage of outside counsel obvious, we searched carefully through the three states which have the most active cryonics groups—Michigan, California and Florida. After trying out any number of attorneys, by far the best we've found has been professor Ronald Trosty of the Cooley Law School in Lansing, Michigan. He has worked diligently on cryonics related wills/trusts at reasonable cost, and he has approached cryonics oriented projects as quite "reasonable" ones, not as something odd or especially unorthodox. There are endless good ways to double-check/confirm the advice that one is given by an attorney (going directly to the statutes yourself, checking the case-law in court reports at law libraries, checking with a cross-section of other attorneys, checking with the Bar Association, checking with law professors, checking—where the matter is one with financial/tax ramifications—with prominent/Big Eight accounting firms), and in applying all of those tests in the Trosty case his advice has proven to be uniformly sound. Furthermore, it has also proven, very often, to be imaginative, in the sense of helping to break-new-ground and devise-new-solutions in this untested area. On procedural/technical points about his dealing with us: He answers correspondence quickly and with extreme clarity (the latter is especially important when one is dealing with matters which are A) life-or-death in their importance and B) unorthodox in their content.) Finally on the matter of reputational standing: Trosty is extremely-highly-regarded within the Michigan legal community—we found him in the first place because 95% of the people we first contacted recommended him (for almost any and all purposes, by the way, not just cryonics). So I can now speak from a good deal of cryonics-experience in suggesting that Professor Trosty would be an excellent person to contact for

cryonics legal needs (and other legal needs as well for that matter).

Professor Trosty may be reached at 217 South Capitol, Lansing, Michigan 48933, (517) 371-5140 / 351-3725. I should perhaps note that this testimonial is entirely unsolicited on Professor Trosty's part, that as this is written he is unaware that we are making it, and that neither now nor in the future will we accept any financial or other benefits from him as a result of having made it. Our sole goal is to assist the cryonics community (especially those who don't think they need a lawyer for cryonics matters; that could prove to be a lethal mistake).

Robert Brakeman
Hollywood, California

Dear Bob,

Your general advice about the need for an objective attorney is good. I must however question the recommendation of an attorney out of the state where the individual resides. Most good attorneys will only prepare wills, trusts and other documents for the state in which they reside or have recently practiced in. The law on such matters varies greatly from state to state. Also, I cannot emphasize enough the importance of having an attorney who is able to meet with a client on a face-to-face basis and communicate inexpensively by phone. We here in Southern California are slowly building up a pool of good "objective" attorneys who we can refer members to. We are planning to produce a referral list in the near future, and, with Mr. Trosty's permission we would like to include him on that list. A wide choice of attorneys is definitely going to be the best thing we can offer—after all, no matter how competent or personable any one individual is—he is, after all, only one person. What we need are several competent attorneys and a variety of approaches to choose from.— MD

NEW EMERGENCY HOSPITAL INSTRUCTIONS ISSUED

At the end of this issue of CRYONICS you will find an updated set of instructions to hospital personnel for stabilization of cryonic suspension patients. ALCOR suspension members should tear these two pages out, photocopy them or otherwise keep them handily available for an emergency. If you would like a copy of these recommendations to give to your physician or Health Maintenance Organization now to be put in your medical file for use in the event of an emergency please let us know and we'll send you a copy free of charge. The space for an emergency phone number has been left blank on this form because it is soon to change for ALCOR members. For the time being ALCOR emergency services are being provided via Trans Time. This number is on the suspension member's bracelets. For those of you who are BACS suspension members, this number will not be changing.

We would like to emphasize to ALCOR suspension members that if you are going to be hospitalized for any reason, please let ALCOR know about it. It is also important to point out that the transport protocol recommended in the updated version of the emergency instructions is not the one ALCOR would use in the event of an emergency with adequate notice. We are now to the point that we will probably be using extracorporeal membrane oxygenation (ECMO) for transport of suspension patients as opposed to a heart-lung resuscitator due to the superiority of ECMO. ECMO transport requires a considerable amount of advanced notice and preparation on ALCOR's part. Only you can give us that notice.

THE LAKE TAHOE LIFE EXTENSION FESTIVAL

June 3-6, 1983

A Report by Steve Bridge

There are few better ways to combine a vacation, a love of life, and an interest in life extension and cryonics than the trip I took to Lake Tahoe for this festival. Anything good you have ever heard about the beauties of this mountain lake and valley on the border of Nevada and California may be accepted as true. Exaggerations are not possible. It is truly a setting in which the idea of living forever seems possible.

Hosts Fred and Linda Chamberlain are the kind of people who make living forever seem desirable. They were almost totally responsible for Festival planning, and they managed to maintain their good humor and personal warmth in the face of the inevitable minor and major irritations that arose during the weekend. Those of you who have not yet met the Chamberlains have at least one major pleasure remaining in your lives.

Thirty-five people attended the conference, some from as far away as Pennsylvania, Indiana, and Florida. (A list of attendees is at the end of this article.) This was quite a difficult trip for many in the California area, since three of the main highways into South Lake Tahoe had been blocked by recent mudslides and floods.

One surprise visitor was Robert Prehoda, who had described cryonicists as the "lunatic fringe" in his book, Suspended Animation (Chilton, 1969). While not yet a supporter of cryonics, Prehoda is still interested in life extension and suspended animation, and he appears to have accepted current cryonics research as at least sincere and honest. He said that he now regrets some of the statements in his book and suggested they should have been directed more at specific individuals and less at the movement as a whole.

Jerry Leaf's van load of Southern California people (plus my Hoosier self and Dr. Corey Noble) arrived in South Lake Tahoe about 7:00 Friday morning after an all-night drive. We all went to sleep immediately, only to be awakened three or four hours later by Fred Chamberlain's cheerful call for river rafting. Only one of our party had the necessary wakefulness and courage to accept this invitation; but I was told that those who went had a wonderful time. Friday evening twenty-one Festival participants went on the M.S. Dixie dinner cruise of Lake Tahoe. Chilly, rainy weather at the beginning of the voyage only dampened the enthusiasm for a few minutes until the conversation and spirits (both kinds) started to flow. At docking time, they had to practically force us off the boat.

Saturday programs at the Condor Lodge consisted mostly of technical presentations from five different speakers. This included four talks from Jerry Leaf alone, who seemed to spend the entire conference preparing for his next talk. I was impressed with how careful the speakers were to present their material clearly enough for the non-technical listeners (myself included) to understand it. Hugh Hixon and Fred Chamberlain taped the various talks, so we will try to transcribe and publish a few of them in future issues of CRYONICS, with permission of the individual speakers, of course.

Most of the presentations were preliminary reports or reports of work in progress and will be printed only in the present article.

The first speaker was Chadd Everone, PhD., President of the Foundation for Infinite Survival in Berkeley, California. Everone talked about the life-extension health clinic run by F.I.S. and staffed by three physicians. The F.I.S. Clinic administers a battery of tests to patients and attempts to work toward optimal health through an approach of medical treatment, nutrition, exercise, stress reduction, and protection from life-shortening agents. F.I.S. is reluctant to prescribe unproven drugs which may be claimed to extend life or prevent aging. Everone has also spent the last three years carefully preparing to do life extension drug research on small mammals. Much of the preliminary work involved learning proper animal care techniques to establish a control base. Everone and his associates are now beginning a pilot study to test several unspecified substances.

Jerry Leaf, President of Cryovita Laboratories, described work he was doing to determine if a pulsatile (i.e., pulse-like, rhythmic flow) pump will provide more complete and physiologically correct perfusion than the currently used continuous flow pumps. It seems logical that mammalian evolution would cause the body to be dependent on pulsatile flow in a number of ways, and human clinical studies in hospitals have shown this to be true. Based on the clinical use of pulsatile pumps on living humans, Leaf has predicted these pumps would also have several advantages in human suspensions. Pulsatile flow should increase lymph and capillary flow, decrease peripheral vascular resistance, increase cryoprotective distribution, decrease perfusion time, and increase brain metabolism. Leaf will be adding radioactive microspheres to the perfusate to precisely measure the amount of perfusion with both pulsatile and continuous flow. This system will allow him for the first time accurately to measure how well different parts of the body are perfused under a variety of conditions, such as:

- (1) Subject is surface-cooled with ice packs.
- (2) Subject is surface-cooled by lowering the ambient air temperature.
- (3) Different rates of flow and pressure.
- (4) Different rates in increase of cryoprotectant concentration.

Leaf then changed hats to President of the Institute for Cryobiological Extension (I.C.E.) to report on the beginnings of a project to test for survival of memory in frozen brains. Leaf is devising a system to freeze individual animal heads, and then to thaw and support them by blood flow from a second animal. Eventually the project will work up to freezing and reviving whole animals. I.C.E. is soliciting contributions for this research. Send to 13152 Blodgett Avenue, Downey, CA 90242.

Mike Darwin, President of Alcor, gave an overview of current Alcor research, which is designed to rapidly improve current suspension techniques through testing animal subjects treated under the same conditions as many human patients. The project, using cats, is only about half completed, but Darwin gave some preliminary observations. Brains can still be perfused fairly well after as

long as 24 hours of ischemia (if packed in ice), with documented biological activity still present. Researchers continued to note severe dehydration of the animals when glycerol was used as main cryoprotectant. Overall dehydration was as high as 30% in some subjects and as high as 45% in some parts of the body, including the eye, which shrinks so much it collapses. It has been suggested that future perfusates may require some combination of glycerol, DMSO, propylene glycol, and other cryoprotective agents to minimize the problems which each creates. Darwin also noted that PVP appears to destroy the liver of subject animals and should not be used in suspension perfusates.

Jerry Leaf again took the floor to describe a method which he and Mike Darwin had devised to use Hollow-Fiber Artificial Kidneys (HFAK) as oxygenators for small research animals. Regular Membrane Oxygenators or even the new Hollow-Fiber Oxygenators cost from \$280 to \$325 each and are not re-usable. HFAK's (designed for use in human kidney dialysis) are only \$30 each and are re-usable several times, making for considerable savings. Leaf said that the output on the HFAK's is not sufficient for use in whole body human perfusions, although it might be usable for neuro-perfusions.

Paul Segall, PhD., a researcher for Trans Time and for Biophysical Research and Development, spoke about the current state of life extension research. There is still no drug or chemical that has been proven to extend the maximum lifespan of laboratory animals. To date, the best technique devised to extend lifespans is still general dietary restriction begun in the infancy of the animal, as discussed several times in the pages of CRYONICS and other publications. Diets specifically deficient in the nutrient tryptophan or high in selenium have produced a very few long-lived individuals; but unfortunately 3/4 of the subject animals die very quickly from such treatment. This is certainly not a recommendation for people to use these methods on themselves; but it is intriguing for researchers--why did a few animals live so long on a diet which killed most of their companions? Segall also spoke about further steps his team will be taking in regard to suspended animation of the hamster (CRYONICS, July, 1982), and spoke of the need to establish a presence in the field of cloning for future applications to cryonics and suspended animation.

Dr. Corey Noble (pseudonym), President of the Lifespan Company, discussed a series of life extension experiments recently concluded in Florida. Several substances were tested on mice to see if lifespans were extended. Results were mixed and difficult to interpret, partly because results seemed to vary widely between male and female mice. For instance, a combination of pantothenic acid, cysteine, DMAE (Deanol), and L-dopa appeared to have no significant effect on the lifespans of the experimental animals; yet when Coenzyme Q10 was added to the mix, there was a significant lifespan extension for females and a slight shortening of lifespan for males. Noble plans to do more experiments with CoQ10 alone. He also announced that the Lifespan Company is interested in accepting contracts to test "life-extension" substances. You may write to him c/o this magazine.

Mike Darwin talked about "Practical Cryonics"--new technical developments which have been added recently. Contributions to

these developments were made by Darwin, Hugh Hixon, John Day, and Frank Rothaker, among others. Developments included:

- (1) A new system for adding glycerol to perfusate at a fixed rate.
- (2) A cryogenic pump for transferring liquid nitrogen from one unit to another.
- (3) Discovery of safety and biological problems with alcohol cooling of suspension patients and the suggestion that air cooling might be safer and more practical.
- (4) Modifications made to lids of whole-body dewars can prevent problems with ice formation which can make lid removal difficult. One of the modifications involved use of a bicycle inner tube as a liner for the lid.
- (5) The discovery that zinc bolts and nuts are fragile at cryogenic temperatures.
- (6) Dacron wool holds liquid nitrogen well and is a good choice for packing patients.
- (7) New liquid sensors for the alarm system on the patient storage dewars.
- (8) New storage containers for neuropatients will allow the patients to be stored more efficiently and will provide better protection in case of future moves.

Jerry Leaf returned for another talk, this one on the various current methods and drugs for protecting the central nervous system from damage from ischemia. The methods included CPR, hypothermia, and maintenance of appropriate pH. New drugs include mannitol, blood substitutes such as Flusol-DA, calcium channel blockers such as Verapamil, Aspartate and Glutamate, and AICAR (more details in a future issue). Leaf emphasized that there are a number of fairly effective treatments to prevent brain damage from ischemia, although not all hospitals are using each of them.

Dr. Noble reported on current work on vitrification--a process which involves lowering the freezing point of water (through addition of cryoprotectants) to the point where the solution solidifies without a crystalline structure. Most of the damage done by freezing is because of ice crystal formation, either through physical damage done by the crystals or through the effects of water being pulled out of the cells. In vitrification neither of these phenomena occur. It appears to be more and more likely that vitrification will eventually become a practical alternative to freezing. Researchers have now vitrified an entire kidney, although rewarming is still a major stumbling block. As the kidney is warmed up, it will actually freeze briefly, creating damaging ice crystals. Noble thought that adjustments in the pressure and in the warming rate would eventually counteract the problems.

James Bianchi, attorney for Bay Area Cryonics Society, finished up the Saturday session with a less technical talk on "Cryonics and the Law." Bianchi has recently completed a re-structuring of the BACS suspension paperwork, necessitated in part by the California Attorney General's opinion (CRYONICS, March, 1981, etc.) that cryonics organizations did not qualify as legal acceptors of human bodies under the Uniform Anatomical Gift Act. Bianchi emphasized that in most ways cryonics is not covered by present laws, so suspension members need to take special precautions.

1. A will is of #1 importance. Of course you need the other documents, too; but the will is the ultimate documentation of your intent if there is a challenge to the will following your suspension.
2. Having the relatives sign an affidavit that they understand and acede to your desire to be frozen will give a strong defense against those relatives trying to break the will later. (These affidavits should be available from your cryonics organization.)
3. Have someone you trust in charge as your executor.
4. If you want restrictions on how much publicity is given to your suspension, put that in your suspension documents and discuss it with your relatives. They will be the ones who might be inconvenienced by publicity.
5. Make sure your life insurance policies do not give the company the right to autopsy. You may need to get a written waiver.
6. Add a clause to your will which states that any attempt by a relative to break the terms of the will shall result in loss of any inheritance to that relative. Of course, you have to leave them something worthwhile, or you won't have a sword to hold over them, and they have nothing to lose by suing.

Saul Kent, President of the Life Extension Foundation and publisher of Anti-Aging News, was the dinner speaker Saturday evening. He spoke about progress with the Florida groups and speculated on the near future of cryonics. Kent said that the life-extension field is at the beginning of a major boom, as evidenced by the immense success of the Pearson-Shaw book, Life Extension, and by the rapid growth in sales by Life Extension Products, the merchandising arm of the Florida operation. He feels that cryonics may be the last thing to catch on--a final step in "consciousness raising" for many people. He said that for most people the problem with cryonics is the delayed gratification--they cannot see a short-term benefit. That is why the Florida groups (including the Cryonics Society of South Florida --CSSF) are trying to place cryonics into an integrated program of life extension. Kent stated his belief that this was the most effective way to promote cryonics. In CSSF progress, Kent said that they have released their former perfusionist and are now negotiating with other cryonics organizations to help them complete their suspension capabilities, with assistance in equipment purchase and staff training.

Current Life Extension Foundation developments include a daily 90 second radio show, "Dr. Bill Cole Talks about Life Extension," now running on CNN Radio (a Ted Turner network). A similar 90 second television show is in production.

As part of a co-operative venture between Kent, Durk Pearson, and Sandy Shaw, the new Pearson-Shaw book (The Life Extension Companion, due out in November) will promote a new life extension project--a computerized data base on volunteers who are taking experimental life extension and anti-aging drugs. The data base will be administered by the Life Extension Foundation. Kent himself will have a new book, Designing your own Life Extension Program, out in spring, 1984. It will also promote the data base, and it will include a chapter on cryonics.

The Life Extension Foundation will be granting its first research funds at the end of 1983. These will be primarily for life extension research, but some will be set aside for cryonics.

Another possible business venture has several doctors who are interested in starting Life Extension clinics in co-operation with Life Extension Foundation or Life Extension Products. Any-one having suggestions or wishing further information on these projects should contact Saul Kent, the Life Extension Foundation, 2835 Hollywood Blvd., Hollywood, Florida 33020.

Following Kent's speech, the entire gathering had a lively discussion on how to promote cryonics and life extension. Considerable good feelings were generated here, leaving everyone in an excited and positive mood at the end of the evening.

Sunday morning arrived very early, as the Chamberlains persuaded seven of us (even me!) to arise at 6:00 a.m. for a hike up Twin Peaks. The climb was invigorating and the view from the summit was breath-taking. It was worth the missed sleep, and I hope that more of you will take advantage of the opportunity if it comes again.

David Stodolsky of BACS led off Sunday's talks with a discussion of a possible interactive personal computer system whereby individuals could identify themselves as disease carriers. The idea elicited vigorous disagreements.

Mike Darwin gave his opinions on current "life extension" drugs and their effectiveness. Basically, Darwin said that there is little research to substantiate any claims of a life-extending substance being available. Based on what little evidence is in existence, any potential life-extending drug is probably just as likely to decrease your life span as it is to increase it. Even less data is available on the interactions of several drugs taken together. Darwin cautioned that moderation is the only currently safe course.

Jerry Leaf gave advice on how to better treat one's cardiovascular system, including regular medical exams, proper diet, exercise, and not smoking. He then scared us all with descriptions of the various nasty things hospitals could do to you after your cardio-vascular system has closed down.

Leaf continued with a detailed account of a new clinical condition--Multiple Systems Organ Failure (MSOF). MSOF occurs because humans can be kept "alive" on respirators for many days after they have any hope of recovery, up until the time that several of the major body systems just collapse. This can also include complete destruction of the patient's upper brain--you know, the part that includes the "self." Leaf called this "maximum technology to achieve minimum viability." Obviously, a cryonicist cannot let this happen. As we've said before (CRYONICS, May 1982 and May, 1983) and we will say again in more detail in future issues, you must draw up guidelines for physicians as to the limits of your medical care, and you must appoint a trustworthy friend to act as your "medical surrogate" in helping the physicians to interpret your wishes.

After lunch, the afternoon was devoted to the business of the California cryonics groups. Mike Darwin gave an introduction to Alcor Life Extension Foundation, and Paul Segall (BACS Secretary) gave an introduction to the Bay Area Cryonics Society. These talks were followed by a long discussion on the need for better understanding and co-operation between Alcor and BACS. Linda and Fred

Chamberlain presented a proposal for a co-operative venture between Alcor and BACS which might create publicity and bring in income for both. There did not seem to be agreement on the current suitability of the proposal, so it was dropped, at least for the time being. Early in the evening the session was adjourned and twenty-one conferees went to Harrah's Casino across the Nevada line for a magnificent smorgasboard supper.

Monday morning most people left for home, but seven celebrants stayed for a longer hike. Fred Chamberlain reports that the group left the Condor Lodge about 10:00 a.m. and got up to Eagle Lake about 2:00 p.m. There they cooked hamburgers, practiced their ice-axe techniques, drank too much of Ron Viner's wine, and had to take a nap before starting the climb down. The walk down took about an hour and a half. Apparently going down is a lot faster than going up. (Now there's a lesson in life for you all!) By then everyone was tuckered out and the Festival was at an end.

HOWEVER-----plans are already underway for the 1984 Festival, which will be held on Memorial Day weekend, May 25-28. That gives most people an extra day for a weekend trip, so we hope for a larger attendance. (But plane flights will be more crowded, so plan your reservations well in advance.) Rooms are already reserved for next year at Timbercove Lodge (a Best Western motel), which is right on the beach. Recreation will include a horseback outing and barbeque (not the horses) on Friday and a possible catamaran trip on the lake Monday. If you have other ideas, please contact Fred and Linda Chamberlain at P.O. Box 16589, South Lake Tahoe, CA 95706, or phone (916) 542-1329. Watch for registration information coming out soon.

If you have never been to one of the Life Extension Festivals, I especially want to encourage you to save your money and plan a vacation in Lake Tahoe next Memorial Day. Living in Indianapolis, I often feel out of touch with the rest of the cryonicists and immortalists in the country. This trip made me feel much more a part of things, meeting new people and hearing new ideas. To our readers who are scattered from New York and Florida to Colorado and Oregon: I want to meet you next year. Then if we meet again in a few hundred years, it won't be such a big surprise.

Thank you to everyone who worked to make this Festival a success, especially the Chamberlains and Hugh Hixon. I'm looking forward to many more in my future.

ATTENDANCE: James Bianchi, Stephen Bridge, Fred Chamberlain, Linda Chamberlain, Michael Darwin (Federowicz), John Day, Pay Yin Day, Dana Dye, Chadd Everone, Arlene Fried, Lee Gabriel, Laurence Gale, Paul Genteman, Hugh Hixon, Jr., Nora Kalliel, Saul Kent, Jerry Leaf, Norm Lewis, Dick Marsh, Arthur McCombs, Carlos Mondragon, Ann Morrison, Dr. Corey Noble, Robert Prehoda, Art Quaife, Frank Rothaker, Geri Rothaker, Dr. Sidney Sament, Paul Segall, Matthew Spitzer, David Stodolsky, Frank Ujlaki, Ron Viner, Harold Waitz, and Jack Zinn.

My apologies if I have missed anyone.

SCIENCE UPDATE by Thmoas Donaldson

ICE FORMATION AND ICE DAMAGE IN FROZEN TISSUE

One of the common ideas about how freezing injures cells is that ice causes mechanical damage. For a long time cryobiologists tended to minimize this mechanical damage as a source of injury, with some reason especially since in many frozen cell systems the ice forms outside rather than inside the cell. However there have been rumblings that perhaps the ice could indeed cause injury, particularly in whole organ systems.

Recently in a paper in CRYOBIOLOGY (20 (1983) 36-40) MJ Taylor and DE Pegg have produced some valuable empirical information on the question of injury from ice formation. The major technical problem anyone who studies this question must solve is to distinguish the effects of ice formation from other effects of low temperatures. In particular, one cause of injury is the increase in concentration of salts in solution as the water surrounding and inside the cells progressively freezes. To solve these problems Taylor and Pegg made two observations: first, when water freezes the concentration of salts in the remaining unfrozen water increases, and solutes with that same concentration will not freeze at the temperature which produces that concentration. Secondly, Pegg and Taylor had already studied how the speed of freezing influences the location of ice in tissues (Pegg, DE et al J MICROS 125 (1982) 177). They could therefore use these relations to work out relations between ice formation and mechanical injury.

Taylor particularly has already studied the freezing of smooth muscle, particularly smooth muscle from the guinea pig intestines. We have earlier reported work by MJ Taylor on the proper pH for frozen tissues and how to assess the survival of smooth muscle tissue.

Pegg and Taylor report strong evidence that ice formation really does cause mechanical damage to the muscle tissue, preventing it from contracting normally. They froze strips of guinea pig smooth muscle at different rates and in two different concentrations of solvent; these solutions differed by a factor of two in concentration of both DMSO (the cryoprotectant) and salts, to imitate the effect of freezing on concentration in the remaining unfrozen water. After freezing they tested the ability of their muscle tissue to contract when bathed in histamine. Their results clearly show a damage due to freezing independent of damage due to solute concentration. Furthermore, slower rates of freezing, at .3 C/min, which caused ice deposits outside the muscle bundles, caused less damage than a faster rate of 2 C/min, which caused ice deposits in the muscle bundles themselves, probably destroying their ability to contract.

As work on the problem of freezing whole organs continues, the case that we should really try not for freezing but for vitrification gets stronger and stronger. Smooth muscle tissue is

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RESEARCH FUNDS FROM THE 1983 LAKE TAHOE LIFE EXTENSION FESTIVAL

by Fred and Linda Chamberlain

One objective of the 1983 Lake Tahoe Life Extension Festival was to produce funds for research. As a goal, \$10.00 of each registration fee was earmarked for this purpose. Each registrant was requested to designate the disposition of his portion; any undesignated portions were to be distributed in proportion to portions which were designated.

In some instances, extra funds were donated, and these were treated as additional registration portions (for the purpose of designating recipients). We would like to extend a special thank you to those who gave additional research donations. On the basis of these extra funds, the equivalent of 48.7 full registrations were received, meaning that \$487.00 total is available for distribution. Of these, 2.7 were "undesignated", thus this \$27.00 is distributed in a proportional way among the other recipients.

Although the Alcor Life Extension Foundation did not submit a research proposal, the equivalent of 6.45 registrants insisted that their portions be designated for Alcor. One individual donated an additional \$50.00 to support the Life Extension Festival itself. We appreciate this help in getting the Festival off the ground. Slightly over eight registration donation portions were directed to a privately owned research corporation, and several smaller portions were directed to organizations which did not submit research proposals, and whose tax exempt status is unknown.

Attendees were cautioned that the Lake Tahoe Life Extension Festival did not have formal verification of tax exempt status on any of the recipients. Any registrants wishing to deduct the \$10 portion of their fees, for income tax purposes, need to inquire directly of the organization they designated to receive the funds.

Dollar amounts transmitted to designated organizations are shown below, in order of the size of the donation amounts. Each organization received slightly more than the actual amounts designated, due to the proportional distribution of undesignated funds.

Bay Area Cryonics Society	\$153.84
Institute for Cryobiological Extension	100.92
Cryovita Laboratories	85.03
Alcor Life Extension Foundation	68.27
Lake Tahoe Life Extension Festival	52.99
American Longevity Foundation	21.18
Life Extension Foundation	<u>4.77</u>
Total Research Donations	\$487.00

During the coming year, the Lake Tahoe Life Extension Festival will be incorporated as a tax exempt organization. The question of Tax deductibility

of registration fees will be given careful attention; perhaps at future Festivals a larger amount than that *designated for research* can be deducted from the attendee's taxes. Perhaps speakers can deduct part or all of their travel and lodging expenses. There may be substantial benefits of this kind which can be realized by a more formal level of organization, and we will keep you up to date by subsequent articles as we learn more.

The Festival is grateful to the speakers who provided a fascinating program, and especially to Hugh Hixon of Alcor who coordinated and served as Chairman for the Saturday and Sunday technical sessions. We are equally grateful to all the attendees who made a forum of this kind possible. The speakers demonstrated clearly that a little bit of research funding can go a long way! The attendees provided the donations to support more work of this kind. We hope that everyone will enjoy next year's meeting to an even greater extent, and that the funding for research will grow steadily, year by year, as a result.

(Continued from page 14.)

very important, since it lines the inside of our arteries and capillaries; Taylor and Pegg have therefore worked on a system with direct application to problems of freezing whole organs. Moreover, if mechanical damage from ice formation causes injury in smooth muscle we have good reason to believe that it does the same for other tissues too.

Although his work is incomplete, Fahy has done significant and partially successful work on the problem of vitrifying organs for freezing; our suspensions may well be vitrifications. This work also gives us a good idea of how we might someday repair current freezings: although repair would need artificially engineered microorganisms ("anabolocytes") repair of mechanical injury ought ultimately to be a relatively simple problem. After all, our cells do this often already: they could easily cope with local damage similar to that of freezing, and enhancing a process which already happens should be much easier than causing one which never normally happens at all.

"THE REASONABLE MAN ADAPTS HIMSELF TO THE CONDITIONS. THE UNREASONABLE MAN ADAPTS CONDITIONS TO HIMSELF. ALL PROGRESS DEPENDS ON THE UNREASONABLE MAN."

—George Bernard Shaw

EMERGENCY INSTRUCTIONS FOR STABILIZATION OF CRYONIC SUSPENSION PATIENTS

Revised 4/17/83

If the patient dies, we request that you undertake the following steps:

1. Cardiopulmonary resuscitation (CPR): Immediately begin administration of 100% oxygen through a face mask, or preferably via an endotracheal tube using positive pressure ventilation. Begin sternal compression.

If a mechanical heart-lung resuscitator (thumper) is available, install it. Our resuscitation equipment will be substituted for yours (using appropriate five second criteria) before removal of the patient from your facility.

Continue CPR during the administration of all medications prescribed below.

Note: all dosages are for an average 160 lb. (72 kg.) patient.

2. Establish and maintain a patent intravenous line (preferably a subclavian or peripheral cut-down) for administration of all medications. Patency of the I.V. should be maintained following completion of drug administration by filling the catheter with heparinized saline, 2,500 units of heparin per cc.

3. Administer 500 cc. of 0.3 molar THAM (Tromethamine), a powerful buffer to combat acidosis. THAM will usually be available from the Thoracic Surgery or Perfusion Department of the hospital. If THAM is unavailable administer 500 cc. of 5% sodium bicarbonate.

4. Administer 30,000 I.U. heparin for anticoagulation.

5. Administer 2 gm./kg. mannitol to minimize cerebral edema.

6. Administer 0.15 mg./kg. of Verapamil (Isoptin) to prevent cerebral vasospasm and protect against post-ischemic "no-reflow."

7. Administer 2 mg./kg. naloxone (Narcan) to support blood pressure.

8. Begin surface cooling of the patient by placing bags of crushed or small cubed ice all over the body. Particular attention should be given to packing the head, neck, axillary and femoral areas in ice. Where the supply of ice is limited, concentrate on cooling the head and neck.

9. Administer 5 mg. Metubine Iodide or 60 mg. Anectine to relax the muscles and prevent shivering.

10. Administer 300 mg. cimetidine HCl (Tagamet) to inhibit gastric hydrochloric acid secretion.

11. Administer 250 mg. methylprednisolone (Solu-Medrol) for membrane stabilization.

12. Support blood pressure by administration of phenylephrine HCl (Neo-syn-ephrine HCl) in 2 mg. boluses as required to maintain a minimum perfusion

pressure of 60 to 80 mm Hg. If Neo-syneprine is unavailable dopamine (Intropin) may be administered instead with dosage titrated to achieve adequate perfusion.

13. Administer 1 gm. of erythromycin (Erythrocin) to inhibit microbial overgrowth.

14. Continue CPR for at least 5 minutes after injection of the last medication. If adequate circulation is not being obtained, continue sternal compression for 15 to 20 minutes.

15. It is highly desirable to continue cardiopulmonary support until the esophageal temperature has reached at least 15 degrees Centigrade. It is most desirable to continue circulation until the esophageal temperature is 10 to 12 degrees Centigrade. This should present no problem if a heart-lung resuscitator is available, but will require relief personnel if manual sternal compression is being employed.

16. If a nasogastric tube is in position it should be used to lavage the stomach with 400 to 500 cc. of Riopan or Titralac in order to neutralize gastric hydrochloric acid and reduce the risk of subsequent G.I. ulceration and hemorrhage.

17. A Foley catheter should be put in place to drain the bladder where this is practical and does not interfere with other resuscitation efforts.

18. The eyelids should be closed with tape or suture if required in order to prevent corneal dehydration.

19. Completely pack the patient in ice for transport to the perfusion facility where cryoprotective introduction will be carried out.

20. It is of extreme importance that the patient not be exposed to subfreezing temperatures at any time. This includes but is not limited to storage in a hospital morgue "cooler" at a temperature below 35 degrees Fahrenheit, temporary storage in an unheated ambulance, hearse or aircraft during transport when the ambient temperature is below freezing or the use of refrigerants such as dry ice or ice and salt for cooling or transport. It is of CRITICAL IMPORTANCE that the patient not be subjected to freezing temperatures (i.e., those below 0 degrees Centigrade, 32 degrees Fahrenheit) prior to cryoprotective perfusion. If there is any question about the accuracy or reliability of mechanical refrigeration equipment it should be checked frequently on a manual basis with an accurate thermometer.

21. If you need further information call the emergency number listed below and ask to be connected with the Emergency Rescue Technician on Call.

Emergency # () _____

Thank you for your cooperation.

ALCOR LIFE EXTENSION FOUNDATION

4030 NORTH PALM #304
FULLERTON, CALIFORNIA 92635
(714) 736-5569

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