

CRYONICS

December 1983

ISSUE # 41

Contents:

Editorial Matters.....page 1

Berkowitz Removed From Suspension.....page 1

Brain Transplant Imminent?.....page 2

Security for Neuropatients.....page 3

BACS/Trans Time Paperwork.....page 5

Many Questions and Few Answers.....page 7

Tuck Everlasting is Anti-Immortalist.....page 12

The Thirty Minute World.....page 13

Too Much Optimism.....page 16

Science Updates.....page 20

CRYONICS is the newsletter of the Alcor Life Extension Foundation, Inc. Michael Darwin (Federowicz) and Stephen Bridge, Editors. Published monthly. Individual subscriptions \$15.00 per year in the U.S., Canada, and Mexico; \$30.00 per year all others. Group rates available on request. Please address all editorial correspondence to Alcor, 4030 North Palm #304, Fullerton, CA 92635, or phone (714) 738-5569.

Contents copyright 1983 by Alcor Life Extension Foundation, Inc. except where otherwise noted. All rights reserved.

-----  
 (1)

EDITORIAL MATTERS

One of the big challenges of putting out CRYONICS is to contain costs. The Editors of CRYONICS have been trying to move toward putting the newsletter on at least a breakeven basis. With the steady support being shown us from some of our members we are close to being able to do this. One of the problem areas for us in our effort to contain costs is what to do about people who move and do not notify us in advance of their new address. IT IS

IMPORTANT TO POINT OUT THAT CRYONICS IS SENT BY THIRD CLASS MAIL AND IS NOT FORWARDED. If you move, the Postal Service WILL NOT forward the newsletter to you -- instead it ends up in the trash. ALCOR is not even notified that

your old address is invalid. WE DO NOT EVEN KNOW YOU HAVE STOPPED RECEIVING CRYONICS!

This situation in itself does not cost us money, but sending people two, three, six months or, in one case, an entire year's worth of back issues DOES cost us money. Indeed, in the last year we spent nearly \$100 on sending out back issues (first class postage being the major fraction of this expense). IN order to reduce this kind of wasted effort we are going to stop this practice and require that subscribers NOTIFY US AT LEAST ONE MONTH IN ADVANCE OF MOVING IN ORDER TO QUALIFY FOR REPLACEMENT OF BACK ISSUES. Of course, if your address hasn't changed and you fail to get an issue of CRYONICS just let us know and we'll send one off to you promptly. We know OUR reliability hasn't been 100%, but we believe our reliability in fixing our errors when they occur has been 100%! You can continue to count on us for that.

One final note, should you find yourself moving suddenly, or not knowing where you're going to move: call or write and we'll hold your issues for you until you have a permanent address.

#### BERKOWITZ REMOVED FROM SUSPENSION

On October 1st, Samuel Berkowitz, a BACS suspension patient was removed from liquid nitrogen storage at Trans Time, packed in dry ice and transferred to a San Francisco mortician for shipment back to relatives in

New York. We understand that the lawsuit filed by the Berkowitz relatives was dropped in exchanged for the return of the remains and forgiveness of back storage bills owed. From a recent conversation with the Berkowitz family we understand that the elder Mr. Berkowitz was removed from dry ice and placed in a vessel filled with formaldehyde and interred in a concrete vault in a traditional fashion. According to Mr. Berkowitz's son, Joe Berk, he "family remains committed to immortalism" and they plan a similar treatment for themselves at the time of death.

Details of the settlement are rather sketchy since one of the provisions was a "media blackout" and an agreement by Trans Time and BACS to refrain from discussion of the matter. We do know that this entire unfortunate episode has proved very costly to the cryonics movement in California and perhaps around the world. Because Trans Time claimed they were unable to pay for shipping the remains back to the family, as well as pay the legal expenses of the settlement, all of the suspension team members involved in the Berkowitz perfusion were asked to "contribute" money to cover expenses. We use the word "contribute" lightly here, since one of the threats in the earlier litigation was

-----  
(2)

naming all of the suspension team members in action charging fraud over inadequate cryoprotection of Mr. Berkowitz during his perfusion at Cryovita Laboratories in 1978. As we have previously pointed out in the pages of CRYONICS winning a lawsuit, or successfully defending yourself against one can be a Pyrrhic victory. The costs of defenses can be in the many thousands of dollars and possibility of recovering damages following an unjustified suit is vanishingly small: particularly if the objects of such litigation have bankrupted themselves in suing you. Such a contribution becomes paramount to extortion.

Quite predictably all of the above has had a very deleterious effect on the availability of suspension team members and their willingness to participate. A few months ago, shortly before this case was settled and the settlement "contributions" assessed, two long standing Trans Time suspension team members resigned, stating fear of litigation as the sole

reason. Replacing these two people has proven difficult (although possible) and in any event we have lost the services of two seasoned veterans of cryonic suspensions, one of whom has excellent and invaluable training as a medical technologist.

Aside from the loss of these two people, another effect of this litigation has been that the vast majority of the rest of the suspension team has given notice that they will not participate in "last minute" suspension where the individual to be suspended has already deanimated. Some team members have stated they want no part of any arrangement where the member was not signed up in advance of terminal illness or accidental death. We understand this action on the part of the ALCOR team, especially since we have no way to purchase insurance or otherwise protect against the possibility of this kind of litigation happening again. It is a sad commentary on our legal system that should perhaps have learning some time ago: it is not possible to be reasonably sure that someone making arrangements for suspension at the last minute is adequately informed as to the risks and tremendous uncertainties of contemporary cryonics. As Joe Berk, Samuel Berkowitz's son, repeatedly said during the course of the dispute with BACS/Trans Time: "We had no way of knowing what we were getting into. No way of knowing that a Sword of Damocles would be handing over our heads in the form of ever increasing charges for suspension services." The anguish of relatives trapped in such a squeeze is understandable. Under the pressure of grief and/or guilt a family may commit to cryonics without having the time to think about what they are getting into. With cryonics, especially in a situation where death has already occurred, it is not possible for a family to step back and take a day or two for consideration. This greatly increases the risk of a rash of inappropriate decision. What we MUST come to realize is that a good measure of the responsibility for preventing this kind of situation rests with us. What we HAVE come to realize is that failure to take such responsibility can be very costly -- even to people only involved in service capacity far removed from administration.

What all this means is fewer suspensions, but hopefully suspensions that last longer. It also means that it will be a lot more difficult to attract and hold suspension team members, even with the recent change in ALCOR policy, excluding last minute cases, brought about in part by the Berkowitz affair.

#### BRAIN TRANSPLANT IMMINENT?

Robert J. White of Cleveland's Metropolitan General Hospital and Case Western Reserve University recently stated in an interview published in the "Chicago Sun-Times" that "he could develop all the instruments and procedures necessary to perform a head transplant in less than a year." White stated that

-----  
(3)

he has repeatedly performed head transplant operations on a number of primates and that he feels his team is certainly capable of the task of extending this work to humans.

White stated that he is somewhat reluctant to perform this surgery because the patients would be severely disabled -- essentially paralyzed from the neck down. However he also said "body transplant recipients would be comparable to people who have experienced severe injuries high on the spinal cord, a group that technology has helped to lead more normal lives. With the devices available today, these people, by sipping and puffing on special devices, can control their environments, turning on lights, heat and the television and even writing a novel or music on a computer." The

"ultimate transplant" White said, "will be more seriously considered if promising research now being done on regeneration of spinal cords pays off. If you could give someone with a fractured neck control over his body by rejoining the ends of his spinal cord, you could do the same for someone with a transplanted body."

Perhaps most interesting were White's comments about the ethics and "public relations" of such an operation: "Society may one day demand transplants. There may be a stratum of people judged to be so important to the survival, if not the advance, of mankind that we are willing to preserve them in some form or other." We echo Dr. White's sentiments and we know exactly who such people are: us!

One of the striking things about White's remarks many of which he repeated before a distinguished audience of neurosurgeons and neurobiologists attending the Hemphill lecture on frontiers in neuroscience delivered at the Rehabilitation Institute of Chicago, is that they come on the heels of Ettinger's remarks about the "unacceptability" of neuropreservation on public relations grounds. It is truly amazing how fast things can sometimes move. Who would have dreamed that one of the world's most distinguished neurosurgeons would stand before an august body, delivering one of the most prestigious lectures in neurobiology in the

United States and seriously propose the imminent transplantation of human brains? Who would have believed that following such a proposal he would be well accepted by his colleagues and given favorable press as well? If Dr. White is correct, and if his courage matches his skill, within a few years we may very well know the answer to the "public relations question" posed by transplantation of the human central nervous system.

#### INCREASING SECURITY FOR NEUROPATIENTS

Cryonicists are extremely sensitive to the issue of security for themselves during long-term storage. One of the most frequently expressed concerns is protection against fire, earthquake, vandalism, and an unfavorable political climate. We have moved quite aggressively to guard against these things happening in the first place, but this not sufficient. We must also prepare for the possibility that these kinds of disasters might occur in spite of our precautions. Where life and death matters are concerned being careful is not enough, an extra backup in the form of a "fail safe" is required.

Shortly after our acquisition of the Minnesota Valley Engineering A-2542 cephalarium, several of the directors of ALCOR began to discuss the possibility of protecting the dewar against the above mentioned disasters. Early on we turned to the idea of constructing a heavy vault to protect against collapse of the laboratory in an earthquake. As the discussion proceeded, it became apparent that more global protection was needed which would leave us with not only security against fire, earthquake and vandalism, but security against adverse political and social climates as well. After a slow evolution over many months, we believe we have come up with a solution offering a good measure of protection against all these risks.

-----  
(4)

What we propose doing is constructing a vault to house the A-2542 which would consist of heavily steel reinforced concrete six inches thick on each side. The vault would have an access port in the top which would allow us to remove or add patients to the dewar, as well as to service and examine it. This access tube would be covered with a heavy steel plate and the "necktube" plugged with lightweight magnesium oxide fire brick. The inside

of the vault would be lined with sections of PVC water pipe 3 to 4 inches in diameter be capped on both ends, equipped with a wax plug on the top cap and filled with approximately 36 liters of water. The remaining space would be stuff with fiberglass building insulation to act as cushioning material and to provide some insulation in the event of fire. The large

reservoir of water contained in the PVC pipe (we estimate 360 liters total) would act as a heat sink and in boiling off during a fire would insure that the temperature inside the vault never rises above 100 degrees centigrade as long as some water remains. We know from field experiments conducted by Trans Time that superinsulation can tolerate exposure to at least 150 degrees centigrade without vaporizing or decomposing. Preliminary calculations indicate that 360 liters of water should provide a sufficient heat sink to protect the dewar against a complete burn and collapse of the lab structure.

We propose to construct this vault on a custom built trailer which would be ready to be attach to any pick-up truck with a standard ball hitch at a moments notice. Such trailers, utilizing at inertial "surge hydraulic braking system" are available on a custom-built basis for \$1785. We estimate vault construction to cost approximately \$1200 putting the complete price for this project at around \$3000. We are highly confident of these cost estimates. We have obtained estimates for trailers from several local manufacturers and have selected a bidder (who did NOT have the lowest estimate) with a good reputation for quality workmanship.

Should we decide to proceed with this system we would have the flexibility to rapidly change storage facilities and be on the road and on our way out of California or the U.S.A. in less than thirty minutes. We might add, on the road with a dewar heavily armored and protected against mechanical injury and fire. Needless to say, such a heavily constructed vault would offer excellent protection against earthquake damage and should allow the ALCOR cephalarium to withstand even a massive earthquake with impunity.

The question now to be decided is, can we afford such security? It will, as we pointed out earlier, cost about \$3000 to construct such a vault. Before work on the vault can begin, we will need to take delivery on a custom trailer which alone will cost almost \$2000. If we are to proceed with this project we will need financial support from YOU our members. ALCOR's treasury is simply not able to take such an expenditure.

The directors of ALCOR feel that this project is of the utmost priority. We KNOW we are facing the risk of an earthquake sometime in the foreseeable future. We also KNOW that unless suspension patients are extremely well protected they will be lost in the long run. We cannot apply conventional "reasonable and prudent" standards to the long term security of suspension patients. Over long periods of storage time we must be prepared to confront the unusual and the infrequent hazards as well as the more mundane ones. Unless we plan for the risks that attend such extended storage, we will lose our suspension patients to some disaster or another. In terms of dollars and cents this is a relatively small project compared to the immense benefits in security it offers. We urge ALL of you to give careful consideration to financial support for this project.

-----  
(5)

Bay Area Cryonics Society Inc.

THE BACS/TRANS TIME PAPERWORK -- SOME THOUGHTS

Elsewhere in this issue Thomas Donaldson, President of the Cryonics Society of Australia, offers an excellent review of the legal forms for

cryonic suspension recently prepared for the Bay Area Cryonics Society and Trans Time by attorney James Bianchi. We urge all of our readers to review Dr. Donaldson's commentary carefully. We would also like to add a few remarks of our own.

The paperwork represents a tremendous effort to clarify legal waters muddied by the Attorney General's opinion that cryonics groups do not constitute an acceptable donee under the Uniform Anatomical Gift Act. They are also the most serious effort to date that we know to circumvent the law against perpetuities -- in other words to find a way to "take it with you when you go." By creating what is supposed to be a charitable trust, Bianchi hopes to avoid problems with the law against perpetuities. Unfortunately, as has been previously pointed out in these pages, it is necessary to have a clause present in such a trust which states essentially that when it is determined that our continued cryonic suspension ceases to (or is determined not to) provide an educational or scientific return to the community such suspension shall cease. Obviously, damn few of us cryonicists are gong to pin our hopes on that standard of value.

A second problem with the trust arrangement Bianchi has conceived is its obvious transparency of intent. Only someone very gullible or of subnormal intelligence could mistake this arrangement for anything but what it is: the efforts of someone to hang on to his financial resources beyond death to provide for HIS continued care in a project that is to benefit HIM. If the community at large benefits too, well that's fine, even desirable, but the bottom line is that WE want to benefit personally, selfishly. WE want to survive. Judges were not born yesterday and in reaching decisions on such cases they are wise enough to look at the WHOLE PICTURE not just the facet presented to them. All of us at ALCOR think it bordering on the preposterous that a judicial system with centuries of intense hostility to perpetuities is going to be swayed by the pittance of charitable rhetoric which appears in the Bianchi trust. In short, we don't think it is going to work, and apparently Bianchi has anticipated some problems along these lines since he has incorporated a perpetuities savings clause into the document which allows it to be converted over to a standard trust. Readers should note that standard trusts are limited to "life in being plus 21 years." In other words such trusts last only the lifetime of the longest lived trustee or class of person alive at the time the trust was created (thus you can have a trust which "lasts as long as the life of any actor in the motion picture "Star Wars" plus 21 years). There are of course other restrictions, but these basic ones apply and what it amounts to is that the average trust is only likely to last for 50 to 100 years. As far as cryonics is concerned that is NOT a long period of time.

Another problem with the Bianchi arrangements is their attempt to be all things to all people. This simply will not work, and as some ALCOR members who are using this trust have discovered, cobbled modifications come high. So far, the average legal bill for implementing some or all of the Bianchi paperwork has been in the \$900 range! One of our members has paid over \$1500 for a will and trust. The Bianchi documents do provide good boilerplate, but in any complicated situation (the presence of a spouse, children, or other dependents)

-----  
(6)

they require expensive modification by a lawyer skilled in the area of estate planning. Most of all, what these documents require is a lot of time and a tremendous amount of hassle. One of our members, after much local difficulty gave up and flew to San Francisco bringing his business manager along in order to have Bianchi complete the arrangements personally. this kind of problem will severely restrict involvement of new

people in the future and cost us some of those already involved.

What we need is a system of paperwork which is quite simple and basic and requires only a few signatures. I think everyone would agree that if buying a car or life insurance involved the nightmare of legal paperwork that cryonics represents, neither of those products would be available on a large scale. We must move to separate cryonics from the rest of the mire of estate planning and streamline the documents we require for suspension. Seeking specific legislation to accommodate us is one way to achieve this end. There are undoubtedly others.

The Bianchi paperwork assumes that BACS acts only as the trustee for the money and the human remains and that it does not engage in the provision of any cryonics services. Indeed, Bianchi has argued repeatedly that BACS should sever all ties between itself and the provider of cryonics services (i.e., Trans Time). If this advice were really followed, it would leave BACS in a position of being a truly independent overseer of its suspension monies. Unfortunately BACS is hardly in this situation and is unlikely to be able to achieve such a separation of interests in the near future. Because of the interlock of relating to management of suspension patients is more difficult.

In situations where a for-profit company is directly or indirectly overseeing the care of suspension patients (in the absence of a commitment to long term care) and controlling the trust funds it is in their financial interest to consume the trust money at a high rate rather than at a low rate in order to extract the most value from it before it is ravaged by inflation and "trust management fees." Unless additional checks and balances are built into this kind of system it is likely to fail over the long haul. Before the Bianchi paperwork can be used it is first of all necessary to have an impartial trustee who truly will act to defend the interests of the patient and conserve his trust. This is a requirement which we see as yet unfulfilled and is perhaps the biggest stumbling block to implementation of the paperwork where a for-profit service company is involved.

#### NEW NEUROPATIENT PACKAGING SYSTEM OUTPERFORMS EXPECTATIONS

It is nice every one in a while to report that we misguessed for the better rather than for the worse! In the past we have reported that the ALCOR cephalarium could hold 8 neuropatients. Thanks to a repackaging operation we recently carried out, the cephalarium will hold at least nine and probably ten neuropatients! This means significantly greater economy of scale and lower rates of charge against the donor account when the dewar is filled.

---

"Can it be that we have so often been told that force is not the answer to everything . . . that we have come to believe that it is the solution to nothing?"

-----  
(7)

#### MANY QUESTIONS AND FEW ANSWERS: JIM BIANCHI'S LEGAL FORMS

by Thomas Donaldson

Cryonicists would almost have to be already in suspension, not to have noticed that the legal arrangements underpinning cryonic suspension have been for some time in question. The major event causing this problem is the determination of the then California Attorney General that cryonics

organizations were not acceptable donees under the Uniform Anatomical Gift Act. Since cryonics organizations have used this Act as a major legal structure upholding their right to possession of the bodies of their members, Deukmejian's decision causes us to make a LOT of changes.

One prominent effort to deal with this problem is the program funded by BACS TRANS TIME, INC to pay a lawyer, Jim Bianchi, to prepare a legal report on the proper legal forms we can follow to ensure our cryonic suspension. I have received a copy of this document and present a review of it here. At this distance from California it simply isn't possible for me to question Jim Bianchi directly; possibly some of my comments have very easy answers. I hope that this article, and the replies I expect to it, will give readers of CRYONICS who might not be able to attend BACS meetings a better understanding of what is involved.

I want to first say that in some respects Bianchi's report is a big advance. Bianchi devotes most of his report to the FINANCIAL side of our arrangements. He proposes that each person arranging their own suspension create a Trust to pay for it. This Trust MAY, but need not, be a CHARITABLE Trust. There is a lot of discussion of the benefits of each of these modes; which discussion sums up by saying that charitable trusts aren't taxable, AND CAN EXIST IN PERPETUITY, but carry a larger risk that the storage might fail due to attack on the charitable nature of the Trust, while a noncharitable Trust is taxable and will definitely fail due to attack on the charitable nature of the Trust, while a noncharitable Trust is taxable and will definitely fail after expiration of time involved in the Perpetuity Rules. A cryonics society may but need not be the Trustee of the Trust. There is very little discussion of the issue of funding cryonic suspension from the standpoint of the cryonics society; for instance, what arrangements the society could make to fund suspension with money donated to it.

Bianchi has included a lot of commentary very important for someone who wants to make their own legal arrangements for suspension. He has comments on the Perpetuity Rules, on how we should set up our Trusts or other arrangements, on how we should formulate our Will. He also has comments on how our cryonics society can protect itself from lawsuit; among this is commentary on how to prevent a similar imbroglio to the Chatsworth disaster. I believe that his report should get a close reading by every cryonicist who has made arrangements for suspension.

However upon reading it I am left with some quite severe questions. They do not concern matters which Bianchi has discussed; those points he discusses he discusses thoroughly and

-----  
(8)

helpfully. They concern questions which he does not seem to have addressed at all, but which he or someone else SHOULD address, as soon as possible.

The very first of these concerns indefinite possession of the BODY. In order for our cryonic suspension to continue, the agency overseeing our suspension must first have effective legal control over our body. This need is logically prior even to the problem of funding, since without a body no amount of funds will be of any use. Bianchi proposes that we use H and S Code 7009, which provides that any directions made by an individual in their Will be immediately carried out. The case that this section will

allow the actual physical act of freezing and storage at the time of death



seems pretty strong, even though no legal case actually establishes that point. What we have to be concerned with, though, is whether or not it provides to the Trustee or to anyone else the indefinite and continuing right to control disposition of our bodies. This point seems far less clear. Jim Bianchi devotes very little attention to the legal status of the bodies whose storage has thus been arranged.

For instance, Bianchi's forms do provide that (4.6.3) "If traditional interment becomes necessary before revival techniques have been perfected, Trustee may donate the remains for scientific research to be completed prior to interment." This is fine so far as it stands, since we all know how our arrangements might fail; what is left out is exactly the most important thing, ideas as to what we might do about it, either now or at the time. In particular, Bianchi DOES NOT DISCUSS WHETHER under these arrangements the failure of the Trust will imply that THE BODY MUST LEGALLY BE THEN BURIED. In fact, he leaves this whole question quite open.

Let's not be forgetful on this point. Upon reading Bianchi's report, it becomes clear that POSSESSION OF THE BODY is the major problem. It is essentially the problem Bianchi was asked to solve, the problem raised by the Attorney General's Report about the UAGA. HOW CAN WE GET THE BODY? Bianchi in no way solves this problem. He does not even make any serious attempt or suggestions about how to solve it; in fact, he barely mentions it. He proceeds to PUT OFF ITS SOLUTION to a time perhaps 100 years from now.

I will be quite ad hominem here. According to all reports, Bianchi has not himself made any arrangements for his cryonic suspension. He's not going to be around in any form when this period of 100 years is exhausted. Just what are WE going to do about it?

Of course, some people may say that the only thing we can really do is to delay the issue. That may be true, but if so Bianchi certainly provides no evidence to prove it. Has he investigated any OTHER proposals on how we can get possession of a body? He doesn't say. Certainly the legal methods our successors can use to promote our continued suspension can't be specified 100 years

-----  
(9)

ahead of time. But does he really intend to say that we presently have no means at all? He makes no comment. But here is a more fundamental point. Let's suppose that the period of the Perpetuity Rules has run out and we were faced with this problem NOW. If we have no way to get possession of a body NOW, what reason do we have to think that our successors will be in any better position? If we can't solve this problem NOW, where is the solution in the future?

Bianchi urges that we try to get the UAGA amended. That is totally visionary! The Senator who was supposed to take up our case abandoned us so he could run for Governor. We can expect further such conduct. We desperately need some legal arrangements which are PRESENTLY viable and do not depend on politicians. What are we supposed to say to someone interested in cryonic suspension when he asks us what we'll do? If we can't answer NOW, what could we say for the future?

I am not familiar with California law. I will say, though, that legal foundations do exist in other jurisdictions (specifically in Australia) for

indefinite control over the disposition of a body. These means don't always work: just as in California, for instance, the Coroner has great power. However in Australia the Executor of the Will:

1. Can be a corporation, and therefore can have perpetual existence.
2. Has a final say, prevailing even over that of the relatives, on disposition of the body.
3. Can transfer his, her, or its powers to someone else if the Will specifically authorizes transferral, thus allowing for failure of the cryonics society or its fusion with another.

These facts in no way affect the problme of funding suspension. Nor, for Australia, do they deal with our real present problem, which is lack of manpower and resources to attempt indefinite care. But of course without a body, neither funding nor care have any point, and it IS a structure by which an Australian cryonics society could gain permanent possession and care of a body, not in 100 years but NOW.

I want to emphasize here that I am not a lawyer. However if I were to make a suggestion on how to proceed in California it would go along the following lines. Instead of specifically directing (in Bianchi's forms, page 12-1, TESTAMENTARY DIRECTIONS REGARDING THE DISPOSITION OF MY HUMAN REMAINS) that we be cryonically suspended, we might appoint OUR CRYONICS SOCIETY as the agency which is to decide the disposition of our remains, and further grant to our cryonics society the right to delegate or transfer this right of decision. A possible wording would be:

"If direct that after death my human remains be indefinitely preserved by that treatment known as Cryonic Suspension, and if

-----  
(10)

this direction should fail for any reasons whatsoever, I direct that after death my human remains should be preserved in the manner directed by the Cryonics Society of ----- or their duly appointed agents or successors."

A critical point in such an arrangement as I have just suggested consists of the fact that our body is not property and we cannot BEQUEATH it by Will. However there does appear to be a right to control the disposition of our body. Since the clause above specifically grant this right to our Cryonics Society, and does NOT attempt to prescribe what will be done into the indefinite future, it's hard to see how Perpetuity Rules would cause it to fail. I point out, though, that Bianchi's forms give this right to the Trustee, and the Trust involved will probably not last longer than 100 years.

It would be very important here to find suitable legal precedents within uS or Californian law regarding such a disposition. For what it is worth, there are such precedents in Commonwealth Law. There is a case of an Executor in New Zealand who was sued by the wife of the deceased who disagreed with the manner of disposition of the remains; the Executors determination was upheld. There are also many precedents in which corporations were appointed Executor. Furthermore, there is no specific requirement to BURY or CREMATE human remains, although there is a requirement of "public decency." Without access to a lot of US and Californian lawbooks, I can't easily say exactly how to hunt up

precedents. My suggestion would be to look for cases involving family graveyards or other such arrangements, in which someone ends up controlling the disposition of a body many years after death. Graveyards, for instance, often have to be moved.

A second deficiency of Bianchi's proposals consists of its focus on our individual arrangements. Cryonicists more than anyone else tend to be individuals. This should be so; I'm an individualist myself. But it takes very little intelligence to see that there is NO WAY AT ALL we can ensure our own suspensions are a strictly individual arrangement. Of course, we can set up a Trust until the Perpetuity Rules force its termination. WE KNEW THAT ALREADY. So, realizing this, we have all banded together to form a cryonics society which is supposed to look after our interests. Some of us are officers of that society, and all of us have a very personal interest in its continuation. Bianchi's report barely gives a nod to existence of cryonics societies and their critical importance to continuing suspension past 100 years.

Well, alright. What can our CRYONICS SOCIETY do to help our suspension, and gain control over the disposition of our bodies? Bianchi has nothing to say on this point at all. It is vital. Who EVER believed that they could make any personal arrangements in the first place? Without a cryonics society you are LOST. The only point at which Bianchi brings in the cryonics society and what it might do about our problems is to describe provisions so that it won't get sued, and observe that the cryonics society COULD BE the Trustee.

-----  
(11)

I am very disappointed at the tone of Bianchi's report, which is far too legalistic. True, it is supposed to be a legal report. However I would have wanted much more attention to how we can strengthen our cryonics societies through legal means, rather than how we can attempt to guarantee our suspensions within the the legal system. I am often asked by reporters how we can guarantee our continued storage; these questioners seem to somehow envision that we would give them a paper written in gold ink declaring that storage will last FOREVER, and that will settle the matter. Laws will change. Public feeling will change. THERE IS NO SECURITY IN THE LAW. What we CAN do to protect our continued storage is to try to choose our successors, who will have control over our storage to the extent they are able. Speaking in terms of centuries, none of Bianchi's documents are worth the paper they are written on. There has to be an organization in being at the time and willing and able to take care of us. I have myself known, and feel sure that every other cryonicist has known, that I could if I wished create a Trust which would control the disposition of my assets and my body at least until the Perpetuity Rules run out on me. I haven't thought seriously of doing so for this reason, that since I will ultimately be cast on the mercy of the cryonics society, with no LEGAL power to control what is done to me, I may as well grasp this particular nettle right off and let them take over completely upon my suspension.

Bianchi's report really says nothing at all about what we can do when our period of 100 years runs out. That is the really important problem of suspension. If we can't solve this problem NOW we have little reason to believe that our successors can solve it 100 years down the line. Nor do we have any answers to the serious questions which people can ask about cryonics. Indeed, left only with Bianchi's report, right now we could give a better account of the medical means by which someone could be revived than the legal means by which we could keep them in storage for long

enough.

---

Crumbling is not an instant's Act  
A fundamental pause  
Dilapidation's processes  
Are organized Decays.

"Faith" is a fine invention  
When Gentlemen can see --  
But Microscopes are prudent  
In an Emergency.

'Tis first a Cobweb on the Soul  
A Cuticle of Dust  
A Borer in the Axis  
An Elemental Rust --

-- Emily Dickinson

Ruin is formal -- Devil's work  
Consecutive and slow --  
Fail in an instant, no man did  
Slipping -- is Crash's law.

-----  
(12)

### "TUCK EVERLASTING" IS ANTI-IMMORTALIST

By Steve Bridge

In the October, 1983 issue of CRYONICS Robert Brakeman wrote about "Tuck Everlasting," a film on the subject of immortality which will be shown on a cable network soon. Unless Bob has actually seen the film, he should not be so quick to praise it. The book on which it is based, a very well-written children's novel by Natalie Babbitt, is actually anti-immortalist in its point of view.

The Tuck family becomes immortal accidentally by drinking from a magic fountain. Unfortunately, there is a mighty big catch to Babbitt's version of living forever. Each member of the family is stuck at their current age and development forever. What is life without the chance for growth? Who would want to stay eight years old forever? Of course, after a couple of hundred years, the family is both bored and miserable and would love to die. But they have to continue to wander all over the United States, never staying too long in one place, so that no one will notice that they never change. The real main character in the story is another young girl who discovers their secret and is offered the "opportunity" to join their existence. Not surprisingly, under that sharply limited definition of immortality, she finally decides to remain normal and mortal.

Unless the film produces major changes in philosophy, this will be just another story in the tradition of "The Wandering Jew," which gives shallow philosophers the chance to nod knowingly and say, "Ah, just as I always thought. Immortality would be boring and painful." What makes the book even more harmful, from our point of view, is that Babbitt is such a fine writer that it is easy for most readers to believe her point without critically examining it. This is especially a problem for its intended audience, grades 5-7, who are not used to reading anything critically, but instead are willing to believe that if it is in print or on television it must be true. In another circumstance, I had warned a high school student about the possible untruth of a particular "non-fiction" book and got the astounded question, "They wouldn't let people publish things that weren't true, would they?" A diet of television programs and commercials has obviously not taught today's youth to carefully examine the knowledge and

opinions presented to them. With such an audience, this film can only strengthen the public's misunderstanding of immortalism.

---

(13)

THE  
THIRTY MINUTE  
WORLD

by

Mike Darwin

The average age of cryonicists is about 40. This means that most of us have grown up surrounded by television and highly visual print media. Cryonicists and noncryonicists who are younger than 40 have grown up in a world saturated by the media, a world where the maximum attention span required is an hour and the average just thirty minutes. Birth, life, death, heroism, stupidity, error, genius, breakthrough, and failure, all must be compressed to fit in the thirty minute world. Regardless of how complicated and subtle an issue or event may be, it can always be, it must always be "packaged" to fit in the realm of the thirty minute world.

We draw our opinions of ourselves as well as people and things outside ourselves from our community, from those we communicate with. Our time scales: our expectations of what constitutes a reasonable investment of time and effort for gratification are also based on our community, on our peers, on our parents, and on our loved ones. In the United States and in a large portion of the Western World the slick print and the electronic media (as opposed to journals and so called educational television) have increasingly come to replace these traditional sources of values and opinion shaping information. Indeed, all recent studies indicate that Americans spend more time watching television than in any other form of communication -- even with each other! One effect of this massive exposure to the media is that while many issues are presented, due to the limited attention span of a large percentage of the population, few if any ideas are explored in depth. The networks, newsmen, and other media people understand quite well that a story must move along quickly, be presented in the simplest terms possible, and preferably have some human interest or shock value (or both) in order to get "ratings."

Like it or not, most of us, cryonicists and noncryonicists alike, find ourselves attracted to the media -- anxious to be used by them in order to spread the word about cryonics. Many of us see the media as a legitimization of our own activities. "We were on the 'Today Show'" or "There was an article about us in the 'Los Angeles Times.'" Unfortunately, cryonics is an idea which does not fit well into the thirty minute world. It doesn't provide gratification and a tidy, complication-free ending in half an hour. More to the point, it is a complex and subtle idea requiring acquaintance with many "givens" which are not at all obvious. Without the background information on the nature of death (which we cryonicists take for granted), the future control of the genome, the explosion of wealth and biological technology in ways even we cryonicists can now only begin to imagine, cryonics seems as absurd and out of place as a lecture by Wilbur Wright in 1895 on the Boeing 747. Straight line extrapolation does NOT work with cryonics. Just as a Boeing 747 assumes radar, vast personal wealth (by 1890's standards), the automobile, telecommunications, plastics, large scale aluminum production and so on, so too, cryonics presumes many other analogous advances in biotechnology. Without these assumptions cryonics would seem weird, out of place and discontinuous with our world-

view (which is precisely how most people view it).

---

(14)

The print and electronic media and the race of semi-morons they have created are not geared to anything but linear extrapolation. The current debates in these media about animal experimentation, nuclear weapons, and nuclear power are all sad illustrations of the lack of depth, and dominance of oversimplification and "skeletonization" of issues the media requires. Coverage of cryonics has been limited so far by precisely the same kind of treatment by the media. It is important to understand that such treatment doesn't do us any good and in fact harms us.

Historically cryonicists have had a love affair with the media. We have bent over backwards to accommodate press people, smiling all the while inside, sure and confident that the results of this happy symbiosis will be MORE MEMBERS. After all, we (most of us) first heard about cryonics via the media. We got involved because of that, so why shouldn't others. Well, here are some grim facts. The vast majority of people now involved in cryonics became involved before, at, or shortly after 1968-69. This was a time when media exposure could best be described as tentative and/or favorable. They hadn't pigeon-holed us yet, and the verdict was still out from the scientific community. At very least there was not the tremendous anger and hatred of cryonics now evinced by the scientific establishment. Since that time the verdict from the scientific community has come in loud and clear, and we have been around long enough without impressive gains in numbers or financial resources to now be regarded as a handful of kooks or eccentrics by the media. THE MEDIA IS NOT CURRENTLY A SIGNIFICANT SOURCE OF SUSPENSION MEMBERS. In the last three years NOT ONE OF THE EIGHT PEOPLE WHO HAVE JOINED ALCOR'S SUSPENSION PROGRAM HAVE BEEN RECRUITED AS A RESULT OF MEDIA CONTACT.

The recent spate of stories about the suspended patients which were allowed to thaw out in a Chatsworth, California cemetery has resulted in approximately a 50% reduction in inquiries received by Trans Time in San Francisco. Here in Los Angeles the number of inquiries has dwindled even more dwindled even more dramatically to 15% to 20% of the pre-Chatsworth level. The media has done us no favors here with their one-sided and even malicious reporting.

It is important to discuss not just the number of inquiries generated by the media but the quality of inquiries as well. Most inquiries are by students who are doing term papers or school related research. They are not interested in cryonics for itself but rather as a tool for a grade or completion of a class. Better than 85% of all ALCOR inquiries are of such a nature. In past conversations with Art Quaife, president of Trans Time, he has confirmed that a similar high percentage of their inquiries are from relatively disinterested students.

What all this implies is that the media seems to be able to hurt us, but is powerless to help us. This information should act to shape our understanding and interaction with the media. We must come to regard the media as a tool to be used by US at our discretion. We should stop letting the average vulture interested in a quick and grisly story, or the average hyena interested in a grim laugh, exploit us. Such media people consume immense amounts of time. Prior to ALCOR's adopting a policy of not altering our schedule or otherwise inconveniencing ourselves to accommodate the media these parasites were sucking up to 20 of this author's time -- time which was totally wasted in terms of production return and which may in fact have been spent actually prejudicing people against cryonics. Progress in cryonics has historically come from hard work, discipline, and concentration of our own resources. Recruitment has come from interpersonal contacts and one-on-one, face-to-face communication, not as a

result of some plasticized dolls squirting a laundered version of our message out of the Glass Teat. We have grown by simple, unglamorous things. We have recruited not by giving someone a quick-thrill-instant-gratification-package,

-----  
(15)

but by exposing the importance, subtlety, complexity and thus the beauty of what we are trying to do. No one is motivated to love life or to fight for it by reading "People" magazine.

While we may partake of the media ourselves, we must not be seduced by its omnipresence or its power to create fads. Cryonics is not a fad, as anyone who has put in a good day's work at Cryovita can readily attest. Anyone who believes that reading about or watching football will motivate the average armchair sedent to rush out and actually play the game needs to have his head examined. The same is doubly true for cryonics -- it isn't even an accepted social institution.

So where does this leave us with regard to the media? Should we refuse interviews altogether? Withdraw behind a wall of Garboesque silence? No. Absolutely not. First of all we should be discriminating. Talking to a reporter is like making love. A wise individual chooses a partner carefully making sure the person is someone who can be trusted and who has the sensitivity and depth of spirit to make the experience satisfying. Going to bed with a street walker or picking up some backseat encounter is often its own punishment. So too with the media. How can we separate which is which? The answers to that question are simple and straightforward, but must be applied to be successful. The first rule is patience. Is this person in a hurry to get the story? Is it me, my deadline, my editor, my next project? A good way to find this out is to NEVER alter your schedule to meet with a media person. Tell them up front that "our monthly meetings are open an they are held on such and such a day. Coming to a meeting would be a good opportunity for you to meet some of the people active in this area and to get a number of different perspectives on cryonics." IF the reporter shows up at the meeting you will have a chance to get to know him or her. Ask to see a folio of articles the reporter has done, find out how the material you give him/her will be used and where it will be used. ALCOR never deals with freelancers who won't commit to where the story will go, or to photo agencies who will sell to the highest and frequently sleaziest bidder. After the first date, you can begin to assess how you will be treated. If it looks like the treatment will still be a backseat quickie -- WALK AWAY. We don't need them, they need us.

Needless to say, most reporters will never show up at that monthly meeting. They are in a hurry and there are lots of cheap tricks out there waiting to be used. Cryonics deserves better than that. At ALCOR we have decided to GIVE CRYONICS THE KIND OF MEDIA TREATMENT IT DESERVES. We feel fairly sure that we're not going to lose any members because of this. We also feel good about leaving the thirty minute world behind as a standard to measure success by. Progress in research, growth in skill and physical capability, and slow recruitment of quality new members are the kinds of milestones we now measure progress by.

For some cryonicists accustomed to measuring progress by the length of their shadow in the limelight, this realization is going to be a very bitter pill to swallow. It means sacrificing the "celebrity" and sense of importance that come with being a "media star" or being a part of an organization that's "making news." Nevertheless, until it can be shown that such media exposure results in concrete benefits to US we are wasting our valuable time. Wasting our time on damaging media encounters simply because they feed our egos or make us feel important are the things of

childhood. Believing the media hype that the "exposure does us good" is believing the lies of the "sophisticated" to the simpleminded. It is time for us to grow up and realize that there is no Santa Claus. We will be stronger and better for the realization.

-----

(16)

TOO MUCH OPTIMISM: REFLECTION ON  
THE WORK OF PAUL MARIAS MALISOFF

by Thomas Donaldson

This is an article about history and change; there will be quite a lot of immortalists, though I suspect very few cryonicists, who will not like what it has to say at all. Nevertheless I feel that some things and people deserve remembering even if doing so makes us uncomfortable.

A couple years ago, interested by Friend Stuart's citation of Malisoff's book THE SPAN OF LIFE, I spent some time trying to find a copy. None of the local libraries had one. I finally approached a book search firm, which after quite minimal delay offered me a copy for the (relatively) trivial price of US\$25. I accepted this offer with alacrity and soon possessed what may well be the only copy of William Marias Malisoff's book THE SPAN OF LIFE in all of Australia.

Malisoff was a chemist at the University of Pennsylvania. He published his book in 1937, 7 years before I was born (that will certainly place ME quite precisely!). It is a fascinating and also a very sobering book. It is both fascinating and sobering because it is an IMMORTALIST book, quite explicitly, and written 30 YEARS before Harrington. Not only that, but it is even far superior to Harrington. Not only that, but it is even far superior to Harrington in everything which matters. While Harrington begins with ringing declarations, Malisoff is very low-key; but Harrington concludes from all his ringing declarations that we should be patient and cherish little children, while Malisoff presents an explicit PLAN OF ACTION. Here is Malisoff:

"Mark you, how different is the prophesying scientist. His argument runs somewhat as follows. The practical aim of science is the control of nature and ourselves. We set up our goals and study nature for the means. Of course, we wish to prolong life indefinitely. We look for clues. We expect repeated failures, and keep on bravely. Occasionally a clue turns up. We dwell on its possible consequences. How else can we pick our way? We do not know whether we are right, but we want to make every effort to trace the secret. Come, help us."

The chapter from which I take this quotation begins: "Thesis: the hope of prolonging life indefinitely is the proper faith for science. All research should be organized with that as the supreme goal."

It is very sobering to learn that these radical and deep goals, the most modern and advanced, were already clearly set out by people 30 years before us. Not only that, but Malisoff can even describe the psychological reactions involved:

"Alas, very few of us can quite avert ourselves from this civilized mess. We who are about to die, oh, so soon, salute the prophets of longevity. No longer do we scorn them, for what can we gain thereby? We let them speak in strange tongues, we gladden



their hearts by rounds of warm applause, and . . . we let the matter rest."

If we look a little farther into this book, we discover other facts too. A lot of people have taken note of the chemical experiments of Harman and others. Their interest comes from experiments in which rats or mice turn out to live a bit longer than controls when fed a particular drug or food. And we find out that such experiments have quite a long history. Malisoff describes the experiments of H.C. Sherman, who found a 10% gain in the lifespan of rats fed more milk than controls and the normal diet for rats. And Sherman also found that the "active, productive period of rats" also lengthened. We are still very early; after all, it is only 1937. But Malisoff describes the work of McCay, notes that study of hormones may prove ultimately a major means of lengthening life, and describes the possible importance of "macrophages" and the immune system to our longevity. A close reading of Malisoff will in fact reveal, in embryo, most of the ideas now getting research attention. Low temperature to lower metabolic rate and increase lifespans? He mentions that too. He also speculates that tobacco might prolong life (well, we know better now!).

Certainly by this time we can discuss all these subjects with far greater "sophistication." Malisoff wrote before the significance of DNA was known, just after scientists had discovered and described the Vitamins (and even synthesized a few!), before our body hormones were nearly as well understood as they are now. A great deal more can now be said about the problem: the degenerations which attend upon aging both in people and in animals.

In Chapter I, much like Comfort he presents a summary of what scientists then knew about lifespans of animals and plants, that is, the comparative theory of lifespans. You will have heard this all before, too. We know a little more now, too: our comparative data is more precise. Malisoff quotes a Dr. Raymond Pearl, of Johns Hopkins, who finds that reptiles live up to 175 years, mammals have lifespans from 1.5 years to 100 years.

In his Chapter II Malisoff presents a capsule summary of all of these conditions as seen from 1937. Parts of these chapters read very much like an earlier precursor of Comfort. Most of Malisoff's characterizations, though, depend less than ours would upon a knowledge of fine physiological detail. The bones become weaker. The aged tend to arteriosclerosis. But there were certainly attempts at measurement and specification in Malisoff's day: Malisoff quotes a study of blood pressure in army officers and its changes with age. It seems that studies of possible health-promoting effects of alcohol have a long history, for Malisoff cites one which discovers that moderate alcohol prolongs lifespans. By 1937 they knew the correlation between relative brain weights and longevity; Malisoff presents a table from Brody and Ragsdale.

Seen from this distance, we can begin to see just how much progress has taken place and perhaps even more important how much has NOT taken place. In Malisoff's terms, McCay's experiments should have met with close study. They did NOT; it is only now, 30 years after the event, that gerontologists have started to look at this work as a serious clue. This neglect may quite possibly mean that everyone reading this will either be

suspended or buried; it is a scandal, but nevertheless it happened. It is not as if the problem, and the urgency, didn't exist 30 years ago.

Many popular commentators claim that our times are times of very rapid scientific change and discovery. I do not believe that is so. What we do have is a vast expansion of the PUBLICITY APPARATUS of science, the opportunity for scientists to puff themselves up and strut about telling us their many wonderful discoveries. GOSH WOW! BLACK HOLES! RECOMBINANT DNA! When we scrutinize these advances more closely what we find is that our REAL ABILITIES haven't increased nearly as much as the hype would suggest. The POSSIBILITIES raised by the discovery are identified with ACTUALITIES. A handful of man walk on the Moon, and suddenly every child on the block has a rocket toy and computer space games abound. We can expect that someday when the public decides that cryonic suspension is POSSIBLE they will also decide that it is ACTUAL, and believe all the problems are solved. Meanwhile cryonicists will continue their struggles.

Has there been any REAL progress toward immortalism and immortality over the last 30 years? Yes. We know of a larger number of drugs which can prolong lifespan in animals. Some of these do much better than a 10% increase; L-Dopa can produce an increase of as much as 50%. Second, and far less important (but still real) we can specify what goes wrong in aging much more precisely than before: our disease is much better characterized. These are REAL changes, even though when we look at them coldly they seem very small.

Perhaps the biggest change since Malisoff's time hasn't consisted of actual achievements but of the simple growth of an immortalist movement. I would myself say seriously that the growth or even the simple existence of a CRYONICS movement is probably the most fundamental change since Malisoff's time. Thirty years ago there were gerontologists, gerontological societies, and people specializing in the problems of the aged; what did not exist was a body people, however small, who were explicitly immortalist and organized. Malisoff was only a voice in the wilderness; after more than 30 years, people who believe as he did have actually got together, they exchange ideas, think, and plan. However we should have to be clear about it; that change is not a change in real scientific knowledge, but an increased appreciation of the PROBLEM. Furthermore, cryonicists or even immortalists are hardly a dominant voice, or even only an audible voice.

-----  
(19)

Many people have also pointed out the widespread public interest in antiaging therapies. I am not heartened by this interest, because on reading old books such as Malisoff it becomes quite clear that this interest ("we gladden their hearts by rounds of warm applause, and . . . we let the matter rest . . .") has gone on for a VERY LONG TIME INDEED. That most doctors refuse to listen to this interest, and spend all their time arguing for the forces of death, constitutes another scandal: but it is a very old scandal hallowed by tradition. It really isn't enough to see that smart people are "interested" in longevity and immortalism; we have to reason to believe that attitudes have fundamentally changed until these people actually start reaching into their pockets and funding a March of Dimes against aging.

HOWEVER work on the problem has become more sophisticated; people won't put up with old nostrums. (Perhaps it is only that they want NEW nostrums!). Still, it is sufficient to look at the reference list of books like the LIFE EXTENSION HANDBOOK to see that many people now want their

antiaging to have some scientific merit. Unfortunately most people still "let the matter rest," and we've seen no indication at all of change on that most essential point.

I know a woman now aged over 50. She says that she has always believed that SOMETHING WOULD BE DISCOVERED to prevent her from aging and give her immortality. She still believes this; when she was in her teens weren't they talking about the discoveries which were to come? Things happen slowly. If you want to live forever, it is better to look to suspension.

-----  
"The future is better than the past. Despite the crepe-hangers, romanticists, and anti-intellectuals, the world steadily grows better because the human mind, applying itself to the environment, makes it better. With hands . . . with tools . . . with horse sense and science and engineering."

-- Robert Heinlein

"On the plans of hesitation,

lie the bones of countless millions,

who sat does to rest in sight of victory,

and while resting:

died."

-----  
(20)

#### SCIENCE UPDATES

by

Thomas Donaldson

#### CHRONIC VERSUS ACUTE EFFECTS OF MEMORY DRUGS

I report this news here because I feel sure that it will interest most immortalists. It has little relevance to longevity or cryonics.

Many immortalists have shown interest in drugs which may improve our memory. Some may even take such drugs. As anyone observing the scene will recognize, however, people seem far less interested in memory drugs than they do in drugs which may increase longevity, certainly so to judge by the degree to which proponents of these different drugs are vocal organized.

Among such drugs is physostigmine, and among other related drugs which DECREASE our ability to remember is scopolamine. Naturally if we want to increase our memory we don't merely want to have a better memory for a few hours: we want to permanently increase our capabilities. People interested in memory drugs would therefore want to take them continuously for years.

A recent experiment by R.T. Bartus and others of Ledrle Laboratories, American Cyanamid Co, reported in PHARMACOLOGY BIOCHEM BEHAV (18 (1983) 601-

604) should evoke great interest among anyone taking memory drugs or contemplating doing so. What these researchers have done is to study the effects on memory of chronic treatment with either physostigmine, a memory enhancing drug, or scopolamine, a memory disturbing drug.

The question at issue is whether or not prolonged treatment with either of these drugs might not cause adaptation, so that the drug ceases to have the same good (or bad) effects as before. An excellent chance existed that adaptation would occur; the major way it could happen would be for our bodies to either increase or decrease the number or sensitivity of the receptors which respond to the effects of either of these drugs. Some previous experiments had suggested that adaptation was exactly what would happen; in particular, several papers have already described changes in the number of receptors following treatments with these drugs (J. Ben Barak et al BRAIN RES 193 (1980) 309; M. McKinney et al J NEUROSCI 2 (1982) 97). Naturally Bartus et al studied the effects of the drugs on rats.

(Continued on page 22.)

-----  
(21)

#### FREEZING THE ISLETS OF LANGERHANS

The islets of Langerhans are associations of several cells of different kinds all involved in production of insulin in the pancreas. Although they don't compare to a whole complex organ in the difficulty of freezing them and recovering them intact, they do provide an intermediate step between freezing of single cells and the freezing of a whole organ. Furthermore transplanting islets of Langerhans would provide, if the problem of immune rejection could be solved, a much more effective treatment for diabetes. Work on the problem of freezing the islets of Langerhans therefore has considerable interest for cryonicists and not just diabetics.

Recently CRYOBIOLOGY published a symposium on the freezing of islets of Langerhans (19th Annual Meeting, Society for Cryobiology, 1982. CRYOBIOLOGY 20 (1983) 119ff) and we present a summary here.

By now cryobiologists have attained a modest success at preserving whole islets of Langerhans. Preservation, however, still means successful assays of viability rather than routine transplantation. At least two methods have produced islets of Langerhans which could synthesize insulin and prevent diabetes after transplant in animals. One, due to Rajotte et al (R>V. Rajotte et al CRYOBIOLOGY 18 (1981) 357-369) involves slow freezing to -196°C followed by rapid warming, with DMSO as the cryoprotectant. The second, due to H.L. Bank and his co-workers, involves rapid cooling, or cooling by a two-step procedure, in DMSO solution, with much less time for equilibration of DMSO. Both methods produce significant percentages of survival.

At the symposium itself Taylor presented some evidence that slow freezing in high (2 molar or above) concentrations of DMSO would produce better survival and physiological response of the islets of Langerhans. Toledo-Pereyra et al used 3 different drugs in dogs to deal with the immune

reactions of transplanted tissue, and reported that frozen islets of Langerhans, given with antilymphocyte globulin for immune response, successfully prevented the dogs which receiving them from developing diabetes even after removal of their pancreas. Rajotte reported successful transplant of rat islets of Langerhans, but also that the same technique,

applied to dogs, didn't work. Finally Banks reported of his studies of freezing as a way of getting pure preparations of islets of Langerhans: the islets resist freezing more than other pancreas cells, so that Banks could actually use freezing to make a preparation of islets suitable for transplant.

A lot of work needs doing before transplant of islets of Langerhans becomes a routine procedure in humans. Better methods of isolating the islets for transplant are needed. DMSO is toxic, so that studies of other cryoprotectants, or better methods for

-----  
(22)

introducing and removing the present cryoprotectants, need doing. Present freezing methods optimize survival of beta cells, which secrete insulin; the islets normally function as integrated units, with other types of cells involved also, so that much more needs doing on preserving this integrated structure.

Most cryonicists will recognize that successful freezing a whole organ (brain or otherwise) stands several orders of difficulty above the problem of freezing cells, and even above the problem of freezing a relatively small cooperatively working set of cells like the islets of Langerhans. On our side, of course, lies the fact that our problem is one of increasing the degree of survival, while transplant studies need a very high order of survival without which preserved organs are worthless.

Continued from page 20.

As it turned out, animals receiving chronic physostigmine, removed from the drug and then tested on a memory task 24 hours later performed WORSE than controls. Similarly animals which had received chronic scopolamine performed BETTER.

Unfortunately the team did not study the effect of physostigmine on memory while the animals still received the drug; some chance exists that the animals adapted to the drug, but still performed better than controls. However this experiment does suggest that the memory drugs may initially act far more powerfully than they do when taken over a long period.

Effects of physostigmine decay particularly fast; the drug is experimentally useful because its effect on memory has been well-established, but physostigmine isn't the most useful candidate for a memory drug. The experimenters had to use a special continuous-infusion pump on their test animals. Furthermore a doctor's prescription may be needed. However many people attempting to improve memory with simple substances which are freely available use such nutrients as lecithin or choline. If these substances affect memory by acting on the same receptors as physostigmine, as hope those who take them, then we would expect that our bodies would show the same kind of adaptation to their effects. Prolonged taking of lecithin may make you intellectually dependent on it, with NO INCREASE in memory capacity.

#### GODZILLA'S LAW:

"If you wait, it will go away . . . after having done its damage. If it was really bad, it will be back."