

CRYONICS

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Contents:

Editorial Matters.....page 1
Cryonics News Briefs.....page 1
Making Charity Do Good Work.....page 3
The Nature of the Problem.....page 5
When You Can't Even Give It Away.....page 6
Cryonics Science Reports.....page 10
Tahoe Research Proposals.....page 13
American Longevity Association Meeting.....page 16
Why We Are Cryonicists.....page 25

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(1)

EDITORIAL MATTERS

A number of our readers have written or called, concerned about not receiving their copies of CRYONICS or receiving them late. The problem is not with us. Actually, we've been going to press and mailing out earlier than ever before. What has changed is that in the interest of economics we are now using third class, nonprofit organization bulk mail. This has meant a big compromise in the rapidity of service and in the quality of service as well. Some people are not receiving their issues at all. Frankly, there just isn't much we can do about this other than to ask you to be patient and to supply people who didn't get an issue with a replacement copy. Please, don't hesitate to write and let us know if you are not receiving the magazine or missing an issue or two.

For those of our readers who may be wondering just how much we saved by going to bulk mail the answer is that our monthly postage bill decline from nearly \$100 to less than \$30. Impressive savings for an organization our size. Indeed, we can say quite honestly that this cost savings is the only thing that's kept CRYONICS in print.

CRYONICS NEWS BRIEFS

ALCOR RECEIVES COMPUTER

Due to the generosity of Lawrence Gale, long time member and past president of Alcor, that organization has received a truly magnificent general purpose computer. As some of our readers probably remember, the editorial staff of CRYONICS magazine has been complaining bitterly about failing typewriters and heavy workload. Thanks to Lawrence Gale, we have the answer to both those problems well in hand. Hopefully, this will be the last issue of CRYONICS produced the old pre-microprocessor way. For, just a few days ago, Alcor delivery on a brand new TEC letter-quality printer. This, in addition to the software we have recently acquired, means that Alcor can do word processing and manage our mailing lists more effectively. We have the opportunity to use a very high quality general purpose computer for research data manipulation, as well.

Some of our readers have expressed concern or dismay at Alcor's obtaining a computer. What these people fail to realize is the time saving and productivity gain this machine will mean for us. The word processing program means no more paste-ups, no more retyping, just drop the extra line or paragraph into the existing text. The spelling check program means fewer spelling and typographical errors. The data management program means we can easily and efficiently handle research results. All we can say is, Wow, it's great to be in the computer age, and thank you Lawrence Gale.

For those of you who are wondering what exactly we got, the details are as follows: Our hardware is a QT Computer mainframe, a Teletek CPU with 64K of memory, a 12 slot motherboard, using an S-100 communications bus and two Qume 5-1/2 inch double density disk drives. Our terminal is a Hazeltine model 1510. The printer was recently purchased by Alcor as a result of another generation donation from an individual who wishes to remain anonymous. Due to this individual's generosity, and still more input, financial and personal, from Lawrence Gale, we have acquired a TEC F-1044 printer. Thank you one and all!

(2)

AUSTRALIA RECEIVES LARGE SHIPMENT OF CRYONICS SUPPLIES

Due to the efforts of Cryovita Laboratories and the Alcor Life Extension Foundation, a huge "care package" of basic cryonics equipment was recently dispatched to the Cryonics Society of Australia. The equipment was made available to CSA at cost by Cryovita, and Alcor volunteers constructed a specialized crate, packed the equipment up, and even donated a few items of equipment no longer needed for rescue capability in Southern California.

The shipment of supplies left by boat on the 9th of December and was due to arrive at Sydney Harbor on the 24th -- just in time for Christmas! It is anticipated that CSA should take delivery on the shipment by the middle of January 1983. To our knowledge, this is the first time that such a large and complete package of supplies has ever been assembled. While it is not possible to detail a complete roster of supplies sent, it would probably be of interest to hit the high points.

This Australian group received basically a complete resuscitation capability including a Travenol HLR 50-90 heart-lung resuscitator, oxygen regulators for large and small cylinders, Manual bag ventilator, complete set of endotracheal tubes and disposable laryngoscopes, and a variety of masks and adaptive fittings. They received a large selection of intravenous administration tubing sets, connectors and needles, as well as a complete and comprehensive selection of disposable plastic and reusable

glass syringes. A large number of other disposable supplies was included such as sterile gowns, gloves, masks, and drapes. They were also provided with a modest but adequate selection of basic laboratory equipment and disposables including a Physician's Compact centrifuge, pipettes, blood and effluent collection tubes, and related analytical equipment. Perfusion equipment consisted of two Travenol blood pumps and accompanying sterile tubing pack. Equipment for pressure and flow monitoring was also included. Many, many useful miscellaneous items such as disaster pouches (used for iced patient transport) and a resuscitation practice mannequin were also included.

It is expected that these supplies and equipment, in addition to the supplies of chemical and water which were already present in Australia will add up to a pretty complete physical capability. The Australian group is still very short on manpower and so they will continue to rely on state-side people for perfusion personnel. Still, the presence of this physical capability means a faster response time and the opportunity for the Australian people to have most of the equipment in place and ready before the Americans arrive. The presence of the heart-lung resuscitator also means that CSA has the capability to stabilize and cool a patient while trained personnel are en route from the United States.

SOCIETY FOR CRYOBIOLOGY -- THE VOTE IS IN

It's a good thing we cryonicists are a little like Timex -- we can take a lickin' and keep on tickin'. The Society for Cryobiology recently announced the results of the membership's vote on the cryonics policy statement and approval of the new bylaws. Despite the valiant efforts of Jerry Leaf and Mike Darwin, as expected, the vote went heavily against us. For those interested in the exact statistics of morbidity and mortality, they are as follows:

(3)

Adopt the policy statement of cryonics as approved by the Society's Board of Governors	In favor ----- 93%	Opposed ----- 7%
Approve the adoption of proposed bylaws	92%	8%

The turnout for the vote was judged very good with 46% of the Society's approximately 395 members voting. It should be pointed out that while the vote went against us in a direct sense, in an indirect sense we tasted victory. Due to the efforts of IABS (now Alcor) and Jerry Leaf and Mike Darwin, the Society's Board of Governors generated and ultimately adopted a much milder policy statement than was originally put forth. Indeed, the policy statement they adopted has almost no teeth at all. Perhaps more importantly, students and others who call or write the Society or members of its Board of Governors for information or opinions about cryonics are no longer told it is nothing but a "fraud or a rip-off, something you should forget about." Due to legal counsel, largely as a result of Mike Darwin's "ominous" letters, the Society has been advised by their expensive Washington law firm that they may safely do NOTHING but read that toothless policy statement they have adopted. While no unadulterated triumph, we feel very satisfied with our role as little Davids who at least managed to kick some sand in their faces. In short, it was worth it.

MAKING CHARITY DO GOOD WORK

Charity isn't something you often see among cryonicists. Indeed, about

the only charity commonly seen is the kind one sparrow is likely to give another when he puts his neighbor's eyes out fighting for a crumb -- at least the poor beast won't suffer the indignity of being able to see himself starve to death. Oddly enough, or perhaps not so oddly, many of the people who are most able to give such "charity" are the least willing to do it.

A year ago Mike Darwin was desperately trying to find some way to maintain two people who he knew and cared about in liquid nitrogen. Their son had died without making plans for their long-term care, and they were now without funding and in real danger of being removed from cryogenic care and cremated. This was an especially unfortunate case. These individuals were among the first people placed into suspension by Trans Time and their efforts and the efforts of their son resulted in no small amount of growth for California cryonics and for cryonics as a whole.

But, perhaps more importantly, their plight offered an opportunity for some real clarification of the muddy waters surrounding the legality of cryonics operations and the right of cryonics societies to have title to the bodies of the so-called "dead" patients they are caring for. Clearly, if these patients were to be converted to neuropreservation, or just maintained indefinitely as whole-body donors, then the issue of who has right, title, and/or control of them is of paramount importance. A good way to either get such title directly from the next of kin, or to have the matter settled by judicial decree would be to file suit against the estate of these two patients for back bills owed as well as for money for future maintenance. Both Trans Time and Bay Area Cryonics Society have done this.

The question was, in the meantime would anyone be willing to contribute money for their continued care until the matter could be resolved. Mike Darwin and Jerry Leaf stood willing to pay for cryogenics needed to maintain the patients, and they were willing to take on the burden of these people's long-term care as neuropreservation patients, if it came to that.

(4)

The trouble was, these patients were in a leased dewar owned by Trans Time and were being charged for storage at a little under Trans Time's commercial rates. If they could be placed in a dewar owned by Alcor and allocated specifically for them, then volunteer help and free floor space were available to reduce the cost of their care and allow their suspension to continue. The problem boiled down to where to get money for a new dewar and how to persuade a reliable company to build one.

Due to the efforts of Mike Darwin the latter problem was eventually solved. Now, where to come up with the \$7,500 the cryogenic company was asking to build an MVE-type dewar. The usual list of millionaires was investigated and phone calls were made. It was pointed out that title to the dewar could rest with the contributor (with loss of tax advantage, of course) and that collateral was available (Mike Darwin's 1981 Rabbit pick-up truck). Also, perhaps the best selling point was that this was an opportunity to find out if we could still get a dewar as reliable and of as good quality as MVE once made for us. No small matter, since whole-body patients will soon have nothing to be stored in if this little problem can't be resolved. Would any of these whole-body millionaires help? The responses varied, but the message was always the same; "charity" was a word which might as well have lost three letters and been added to the list of other four letter words which aren't included in the children's dictionaries. No one would help these people -- not even if it meant helping themselves.

Finally, we started on a list of people who weren't millionaires. These were people who, while they could still benefit, could probably lead afford to give. It wasn't long before the ball was rolling. Dick Jones,

again generously and at great personal pain and expense, contributed \$7,900 to the Alcor general fund -- this was money which helped to purchase a dewar. Mike Darwin kicked in another \$2,000, and Hugh Hixon, Jerry Leaf, and a variety of other people near and far brought additional modest sums of money to the effort. Hugh Hixon, Jerry Leaf, Anna Schoppenhorst, Mike Darwin, Arthur McCombs, and Lawrence Gale contributed astronomical amounts of time and labor to prepare for taking over these people's care and keep them frozen LONG TERM.

The net effect of all this outpouring of effort has been that Alcor now has a dual patient dewar very like the ones previously made for cryonics use by MVE, and this dewar is performing reasonably well with an average boiloff rate of about 12 liters per day. The problem of where to get whole-body dewars has been more or less solved as a byproduct. As far as Alcor is concerned there were a few other "minor" benefits. Alcor now owns a rocker capable of moving dewars about and setting them upright, as well as many, many other items required for carrying on whole-body storage operations. In short, Alcor now has the capability to pursue both whole-body and neuro storage in-house, thus reducing our dependence on costly commercial operations by allowing us to utilize volunteer labor. Alcor also has gained the incredibly valuable know-how required to move patients about at liquid nitrogen temperature. Another advantage is that Alcor now has a system of placing patients in the dewar which allows a patient whose girth is greater than one-half of the neck tube opening due to obesity or disease to be placed in the dewar. Hugh Hixon designed and developed a "rocking" stretcher assembly which allows one patient to be tilted away from the center of the neck tube, allowing a larger space for the other patient to slide in through.

What all this means is that, as usual, if you want something done, go to people who understand what a struggle is all about. It probably pays

(5)

to keep in mind that when survival seems assured it's difficult to remember what hardship is about, and consequently just as easy to say no as to say yes. Hopefully this exercise will help to clarify legal matters in the long run. It will certainly help to reduce storage costs to Alcor members in the future, and it has already managed to keep two people frozen a little longer. If you think this is the end of the story you're wrong, maybe dead wrong. We still need your help, and we can still use contributions. We're still struggling and only you can make it easier. As for all those millionaires; well, it's not too late for them to take a shot at giving the effort a little more get-up-and-go, either. There is always the tax advantage and we sure can be moved to say a few good words about folks who take checkbook and pen in hand. After all, it's a funny thing we've discovered about charity, goodwill, and all those other "four letter" words; you just never know when you're likely to need them from someone else. Life sure is funny that way sometimes. That what makes it so interesting.

THE NATURE OF THE PROBLEM

ROBERT BRAKEMAN

Overconfidence isn't the kind of vice that'll get you kicked out of polite society, but it's still serious enough to be worth guarding against. Any members of the cryonics/life extension movement(s) tempted to let overconfidence get the better of them (overconfidence prompted certain positive strides made by the movement in recent years) would have benefited immensely by viewing a recent edition of William F. Buckley's FIRING LINE on PBS. It featured Buckley as host, English critic/theorist Malcolm

Muggeridge as guest, and attorney/political-activist Harriet Pilpel as guest questioner. The subject was death.

During the show's sixty minutes, every conceivable phase of the death-issue was examined, and in some detail. The discussion ranged over capital punishment and euthanasia and abortion and war and the hospice movement; it debated the pros and cons of all of those -- and when that was finished the discussants thought up new pros and cons. Logic and history and theory and Biblical allusions were dragged out to prove every imaginable point and a bunch of unimaginable ones. There were polite exchanges and impolite ones, high points and low point, intelligible exchanges and unintelligible ones. The discussion was, in sum, as varied and exhaustive as it could have been, given the length limitation. But its variety and its exhaustiveness stopped short of including any reference to the anti-death movement, to the question of the elimination of death as opposed to how to handle various facets of its inevitability. If the single greatest problem facing the immortalist movement could be isolated, it would surely not be resistance to it -- it would be lack of knowledge that it even exists. So talk it up.

(6)

WHEN YOU CAN'T EVEN GIVE IT AWAY -- CRYONICS AND FRED POHL

by Mike Darwin (with assistance from Steve Bridge)

"You know, son, if someone needs a load of cow shit they'll pay good money for it. But if they ain't interested in cow shit, you won't be able to give it to 'em for free."

-- Grandfather Rorhman's advice

The truth of my grandfather's advice was lost on me for many years. Simple as it seems, people who don't have rosebushes don't need manure. And the fact is, if they don't need it and don't want it, they won't even take it for free. How I came to understand this simple truth is a story worth sharing.

In 1978, the Board of Directors of the Institute for Advanced Biological Studies (IABS), then headquartered in Indianapolis, began developing a plan to promote cryonics by persuading some important person to sign up for suspension. It was important that this persona have an intellectual or emotional following who might be asked for research donations and who might spread the word about this individual's suspension. As the plan evolved we realized there was only one thing which a small organization could offer to impress such a celebrity. Our offer would be that we would make the arrangements for and carry out the cryonic suspension of the person for FREE, with only one string attached: that he allow us to use his name after his suspension to promote cryonics. We would also ask for a simple statement of affirmation from the individual, which would be used with the public announcement of the suspension. The type of use and publicity would be carefully detailed before the agreement was final. As a minimum, we would certainly agree not to involve the individual's family (unless they volunteered themselves) and no family member would be asked to contribute money.

We soon decided that it would make the most sense to approach someone who had already expressed a firm interest in the idea and who further had done something to support it. We hoped for someone who was in favor of cryonics but who had not signed up because of primarily practical reasons: poor cost to benefit ratio, lack of confidence in the financial stability

of the organizations, or the wish not to deprive surviving family members of a large part of their inheritance. We originally thought of the idea in connection with science fiction author Robert Heinlein. He has a large and emotional following and he is the author of "The Door into Summer," a positive and powerful book about suspended animation which has become something of a classic with cryonicists and non-cryonicists alike. However, we quickly ran into great difficulties in contacting Heinlein and, in any event, we weren't sure of his commitment to the idea.

But there was another popular author we were sure of -- a man who had written several supportive articles about cryonics and who had made literally hundreds of TV and radio appearances to promote the idea in the middle and late 1960's. In "Playboy" magazine in June, 1964 this man wrote:

"It's hard to gainsay Ettinger's basic propositions. For it is not merely a question of John Doe, cancer victim age 35,

(7)

being tucked away in the deep freeze and then a century later being brought out and repaired to live the rest of his life. If the thing works at all, it works indefinitely. And unless John Doe consciously decides along about the year 4,000 AD that enough is really enough and please don't bother next time, it is hard to see any point at which he really will permanently die."

"Real motivation will be there. If you can spend a decade on the Great Barrier Reef and six months on the Grand Prix circuit, a year composing motets and a lifetime (our present lifetime) out past Mars; if you can tour the future centuries and sample the cultures of Aldebaran and have ample time for romance and mere loafing in between -- there's motivation for a long, long time."

"While there is work and pleasure and novelty and creative effort, and you have the mind and body to respond, you will be motivated -- to ends no one now can possibly imagine."

The author of these visionary remarks is Frederik Pohl, one of the most popular and accomplished of the modern science fiction writers, and the author of the cryonics-related novel, "The Age of the Pussyfoot." In 1978 in his autobiography, "The Way the Future Was," Pohl discussed his previous involvement with cryonics, his belief that it might work, and his reasons for not being signed up. One was financial: he did not wish to sacrifice quality in his life for the gamble of a future life. The other reason was philosophical: "What makes my life desirable to me is the network of relationships and the endless iterative series of projects that I am always involved in. Stop them and restart them at some future time, and they are no longer the same." It was also obvious throughout the book that Pohl has a deep commitment to his children, so we suspected that he wished to make sure they were well provided for after his death. While we could do nothing directly to overcome his philosophic problem, we certainly could offer to eliminate the financial considerations. Perhaps Pohl was our man.

Then, in early 1978, we discovered that Fred Pohl was to be the Guest of Honor at the North American Science Fiction Convention to be held the following Labor Day weekend in Louisville -- easy driving distance from Indianapolis. We decided definitely to make our offer to Pohl at that time. Who could be more deserving? Who more likely to accept? We made

arrangements with the convention committee for us to take Pohl to dinner on September 1st, 1979.

Reservations had been made at a good local restaurant, and a group of IABS members (and three non-IABS people who interceded with the convention committee to come along) escorted Pohl on foot from the Galt House hotel (Randroids and former Randroids may chuckle here) to the eatery. It was a pleasant meal, punctuated by Pohl's warm remembrances of the early days of

"Ettinger's idea." He had many interesting anecdotes to tell, from the perspective of a man who was there at the beginning. During the course of the evening Pohl was asked about his current stand on cryonics. He repeated his previously given reasons

(8)

for not joining and confirmed our impression of his feelings about his family. He also stated that he still felt it was basically a sound idea. Yes, he said, if things were different he certainly would have considered it for himself. As the meal drew to a close, I asked him if he would be willing to meet with several of us in order to hear about a rather unusual offer we wished to make him. He paused only a second before graciously accepting the invitation. I believe all of us in that little party were tensed with excitement. We were excited because we felt we were doing something important and because we were repaying a debt of gratitude long owed.

When we arrived back at the Galt House, we escorted Pohl to my room, with a small core of IABS officers, including Steve Bridge, then president of IABS. Slowly and carefully we told Frederik Pohl what we had in mind, presenting him with a brief but comprehensive slide show documenting our physical capabilities before making him the offer. When we completed our presentation there was a moment of stunned silence from Pohl. This witty and articular man was momentarily at a loss for words. He recovered himself and said that it was the largest price ever offered for any commodity a human being could give -- immortality in exchange for the mere use of his name. He also said, with some shock in his voice, that his previous excuses were no longer relevant and that he would have to rethink his position.

Our readers might wish to consider that people with far larger egos than Fred Pohl have traded their names, even for degrading use, for much, much less. Just close your eyes and picture Joe Namath in panty hose or Bruce Jenner huckstering Wheaties. Human beings will do pretty cheap and tasteless things for mere money -- and for not even very much of it. By comparison, the offer we made to Fred Pohl was on a silver platter.

Fred Pohl didn't take our offer that night in the Galt House. He said he needed time to think about it. We never heard from him again. He didn't answer the two letters we sent. He has been on the complimentary mailing list for CRYONICS for two years. In short, Fred Pohl turned us down.

At first I was very surprised that we had been mistaken about Pohl. How could we have been? How could the man who wrote "The Age of the Pussyfoot" have not taken such an offer? Did he not believe us? Were we too technically unsophisticated? Too unimpressive as business people? Would he not have investigated if he was getting his service for free? Ah, but perhaps there is another way to look at this? Would these things have mattered to Charles Forrester, the central character in "Pussyfoot"? There, you see, is the rub. As Thomas Donaldson pointed out to me some months ago, Charles Forrester didn't want to be frozen. He didn't work, and scrimp, and save to be frozen. Charles Forrester the volunteer fireman never gave a thought to the possibility of dying. He got frozen simply

because he happened to know someone who was rich. And herein lies a central problem with much of science fiction. The adventures of many SF heroes are things that just HAPPEN to someone. They are adventures which befall a basically average person or even a loser. They are not things that happen because the individual worked for them or wanted them. If you reread "The Age of the Pussyfoot" it becomes crystal clear that Forrester had no idea of what being alive was all about. He just muddles through

(9)

without ever really deciding that HE WANT TO LIVE AND IS WILLING TO FIGHT FOR THAT DESIRE. Perhaps in this respect Heinlein would have been a better choice. Dan Davis, the hero of "The Door into Summer," like many other Heinlein characters knew what he wanted and planned carefully how to get it. Perhaps Frederik Pohl was too much like his character, Charles Forrester, to be able to respond to the offer.

What can we learn from Fred Pohl's refusal? First and foremost, we must rid ourselves of the notion that high cost is the most significant reason for the slow growth of cryonics. Pohl turned down the chance even though it was free. Few rich men have signed up, although many have been contacted. Of the non-suspension respondents to our recent cryonics poll, thirteen mentioned "financial" as one of the reasons why they had not arranged for suspension. Three of those people had incomes between \$15,000-\$25,000; three were \$25,000-\$50,000; and one made over \$50,000. Yet of the 41 respondents who are signed up to be frozen, thirteen listed incomes of less than \$15,000. If people want it, they will find a way to pay for it. The problem is getting people to want it. There are more important factors than money operating here.

All we can assume is that Pohl didn't want a future life. And at least in Pohl's case, this cannot be because he is not happy with this life. By all accounts and by our personal observation, Fred Pohl is at the height of his creativity as a writer, at the peak of his popularity, extremely active in all ways, and relatively content with his life -- perhaps too content. He has the "work and pleasure and novelty and creative effort," and he has "the mind and body to respond." Yet somehow he is unable or unwilling to make that jump in logic to acknowledge that this can again take place in the future and be even better. He is unable to accept the thought of again "leaving home," that is, breaking with the relationships and conditions of today to start again at a future time. He would rather cease to exist.

This is a hard lesson for a cryonicist to learn. A person may have money, he may have happiness, he may have vision; but if he doesn't have that one desire to be part of the future, then he doesn't want anything to do with cryonics, even for free. To extend our original metaphor -- people may have beautiful gardens, but if they don't have roses, they don't want the manure. It is even harder to understand the lesson in this particular case, for we know that Frederik Pohl is certainly wise enough to realize that if you don't have the roses and don't buy the manure, then you end up as fertilizer yourself.

In his "Author's Note" to the "Age of the Pussyfoot," Pohl questions why so few people have been frozen and then states, "It strikes me that we are all, from birth, so often reminded that we are inevitably going to die that we cannot accept an offer of immortality when it is presented, until and unless it is shown to work. Demonstrate that it works one time, and we'll grab for it as we've grabbed for few things before." Perhaps that is true. But Pohl himself has shown us that, for many people, a lot more changers will be necessary. And some, unfortunately, will no longer be around to "grab for it" when it happens.

CRYONICS SCIENCE REPORTS

EXPERIMENTAL SPECULATIONS ON THE CHRONOBIOLOGY OF AGING

As all cryonicists know, gerontologists frequently speak about "aging clocks" despite little real attempt to draw connections between chronobiology (or circadian rhythms) and the rate of aging. Within chronobiology itself scientists have spent a lot of effort on elucidating the effects of circadian rhythms upon metabolism of various drugs; since our own purpose is to slow the rate of aging, we are much more interested in finding the effects of drugs or other treatments upon circadian rhythms. We can find tantalizing indications that digoxin and lithium may affect rhythmicity, and therefore perhaps even the rate of aging, but no one yet has actually done a lifespan experiment.

However a recent item in CHRONOBIOLOGY should awake interest, even though it doesn't go nearly far enough from an immortalist viewpoint. A team from Harvard and the University of Minnesota headed by Edmond Yunis have reported (INT J CHRONOBIOLOGY 7 (4) (1981) 154) that one particular forced alteration in circadian rhythm will actually cause an INCREASE in lifespan.

Their experiment involved 47 control mice and 49 experimental mice; the sole difference between the controls and the experimentals was that control mice always had food available, while the access to food of the experimental mice varied upon a 48 hour cycle, 24 hours on and 24 hours off. This difference in cycling caused considerable decrease in breast cancer (50% of the control mice had breast cancer at age 377 days, while it took 86 days longer for 50% of the experimental mice to develop cancer) and also in LONGEVITY: 50% survival time for the control mice was 431 days, versus 490 days for the experimental mice.

Unfortunately, perhaps through ignorance of calorie restriction experiments, Yunis et al did not attempt to exclude one obvious explanation, that the experimental mice somehow got a diet lower in calories than the control mice. However the experimental mice DID have full access to food during their "feeding day," so any explanation in terms of calorie restriction seems a contrived one.

Of course this paper is only a beginning and we couldn't draw any other than speculative conclusions from it. I would very much like to know whether calorie restriction affects circadian rhythms, either on the level of the whole body or on the level of individual cells from calorie-restricted animals kept in vitro; we also need many more experiments relating other antiaging drugs to body rhythms, and more drugs which affect the length of our body cycles.

MEMORY AND CELLULAR CHANGES

A recent conference in St. Louis on the possible brain mechanisms involved in learning has given us a good summary of recent work on this problem (NATURE 300 (1982) 219), reporting the First McDonnell Conference on Higher Brain Function, 23-24 September 1982.

I do not think it will surprise cryonicists to hear that we still lack a

good theory of longterm memory or survival of personal identity. However I shall summarize some of the new ideas on the subject which the conference has brought out.

Perhaps the most interesting new finding concerns the memory for song in canaries. As it turns out, the ability of a canary to learn a new song depends on a special center of their brain, the caudal-ventral hyperstriatum (HVC), and Fernando Nottebohm of Rockefeller University has shown that new neurons continually form in the HVC (BRAIN RESEARCH 189 (1980) 429). The suggestion is that at least for canaries and their HVC the acquisition of a new memory involves the acquisition of a new neuron. If brain researchers were to show that memory acquisition in general involved formation of new neurons it would not only disturb ancient dogmas but also give us a totally new and different mechanism for encoding memory. The consensus of the conference was, however, that this method would not turn out to be a common one. Perhaps most interesting from a general standpoint, Nottebohm also found an increase in the number of dendritic spines with growth of the HVC and learning of new songs. This discovery strengthens the case that growth of dendritic spines may be involved in memory (cf. CRYONICS, "Why Personality Survives"). The dendritic spines are short projections on the dendrites; their multiplication and the corresponding multiplication of connections between neurons which are already connected MIGHT have something to do with learning.

Another interesting discovery concerns the role of temporal lobe in humans and the kinds of memory activate it. For some time scientists have known that injury to the temporal lobes will cause an inability to acquire new memories. However two different scientists, with different experiments, have brought out a lot more specialization. Brenda Miller of McGill University has shown that injuries to the left or right temporal lobes will affect different kinds of memory differently; the left lobe controls verbal memory and the right lobe controls memory for spatial position. An even more interesting discovery has come out of UCSD: there is now an anatomical distinction between "knowing how" and "knowing that." Neal Cohen, of UCSD, has been able to show that patients whose temporal lobes were damaged could learn new skills quite easily, even though they had lost their verbal memory or memory for events or statements (SCIENCE 210 (1980) 207). For instance, they could learn to read mirror-reversed writing, even though they would not remember afterward how,

(12)

whether, or under what circumstances they had acquired that skill. Does this memory depend also on a specific brain region? Is it really only a consequence of the large number of neural circuits involved? Nobody knows. For cryonicists it does however evoke speculation that if frozen after 24 hours of warm ischemia we might lose all our memory of our past lives, but somehow still be able to play the piano, ride a bicycle, differentiate and integrate complex algebraic expressions. . . everything we have learned to do in this life, including even our mannerisms of personal expression. Is that survival of personality or not?

At the conference William Quinn of Princeton also reported on his work with fruit flies. He has attempted to show that the changes in calcium and AMP metabolism which Kandel has shown are involved in conditioned learning in the sea hare also take place in fruit flies. At present his evidence is inconclusive, though he hopes for more in future. This work and the work

of Kandel may tell us more about the steps by which a recent memory finally becomes coded into longterm store, but as yet gives suggestions rather than real answers. The major suggestion is that at some stage of this process the memories code in terms of attachment of phosphate groups to a membrane protein.

Although we still haven't any answers, scientists have clearly made some progress in piecing out part of the processes involved and uncovering many more subtleties to memory than previously known. Even though we lack answers, we might be starting to find the questions.

ALCOR LIFE EXTENSION FOUNDATION
4030 NORTH PALM #403
FULLERTON, CALIFORNIA 92635
(714) 738-5569

ALCOR meetings are usually held on the first Sunday of the month. Guests are welcome. Unless otherwise noted, the time of day for meetings is 1:00 P.M.

The FEBRUARY meeting will be at the home of:

(SUN, 6 FEB, 1983) Bernie and Sondra Krakower
 13121 Garden Land Road
 Los Angeles, CA 90049
 Tel: (213) 472-9200

DIRECTIONS: Take Interstate 405 (San Diego Fwy) to Sunset exit, go West on Sunset approx. 3 miles to Mandeville Canyon Rd. Go North on Mandeville Canyon Rd. approx. 5+ miles to Garden Land rd. Turn left (West) on Garden Land Rd. 13121 is approx. 1 block on the right side of the road.

(13)

RESEARCH PROPOSAL

Lake Tahoe Life Extension
Festival

REVERSIBLE CRYOPROTECTIVE PERFUSION OF THE HYPOTHERMIC HAMSTER

Bio Physical Research and Development, Berkeley, California
Paul E. Segall, Ph.D., and Harold D. Waitz, Ph.D.

We are developing techniques for the total body washout of hypothermic hamsters using an asanguineous perfusate to replace the blood volume. We then replace the blood substitute with whole blood, and revive the animal. We intend to use this system, once it's reliability is increased, to examine the effects of cryoprotective additives on hamsters lowered to temperatures below the ice-point. Since hamsters have been known to survive extensive body water freezing, and since glycerolated frogs can over-winter for months partially frozen, we feel glycerol perfusion of blood substituted hamsters is presently the best approach to cryonics experimentation.

(14)

CRYOPROTECTIVE PERFUSION AND FREEZING OF THE ISCHEMIC
AND NON-ISCHEMIC CAT

One of the major problems confronting cryonics is the lack of understanding of the physiological and ultrastructural effects of currently used human cryoprotective perfusion and freezing procedures. During the past 18 months, the Alcor Life Extension Foundation has been engaged in a vigorous program of research to improve understanding of the biological impact of suspension procedures using a feline model.

The research approach employed involves total body washout, cryoprotective perfusion to 3 molar glycerol and controlled rate cooling to -196°C. Perfusion procedures have been state of the art, incorporating aortic root the right atrial cannulation, membrane oxygenation, linear gradual addition of glycerol and extensive physiological monitoring. Both fresh preparations and preparations exposed to 24 hours of ischemia with external cooling to 1°C have been employed. Ischemic animals have been included in order to evaluate the effect of unstabilized deanimation with simple external cooling simulating commonly encountered clinical situations.

A significant finding with this model is the demonstration that feline brains subjected to 24 hours of cold ischemia can be equilibrated with 3 molar glycerol. We have also documented widespread destruction of the gastric and intestinal mucosa due to osmotic and enzymatic degradation in the ischemic animal and failure of the skeletal muscles to equilibrate with glycerol in either the ischemic or non-ischemic animal. This model has also allowed for quantification of water shifts in both vascular and non-vascular tissues as a result of glycerol perfusion. Critical temperatures for successful blood washout without cold agglutination and for introduction of glycerol without massive dehydration have also been established the critical importance of oxygenation in pH control and has demonstrated the superiority of Hydroxyethyl Starch over previously used PVP as a colloid for cryoprotective perfusion.

At this time Alcor has conducted four non-ischemic and three ischemic feline perfusion and freezing experiments at an average cost of \$254.00 per experiment. Three additional experiments are required to complete this series. Funding will be required to complete the animal preparation (perfusion and freezing) phase of these experiments and to subject frozen thawed animals to evaluation by light and electron microscopy.

In our estimation nothing is of more importance in cryonics research than establishing as precisely as possible how much structure remains after the application of existing preparation and freezing techniques. Your contribution to the Alcor Research Fund via the Tahoe Life Extension Festival will directly support this valuable research. We emphasize that this research already has had and will continue to have an effect on the nature and quality of cryonic suspension techniques. All of your contributed money goes for the purchase of research materials. NO ALCOR PERSONNEL OR RESEARCHERS ARE PAID IN ANY WAY FOR TIME OR SERVICES.

BRAIN PERFUSION STUDIES

Institute for Cryobiological Extension, Downey, California
Jerry D. Leaf

Basic research conducted by Cryovita Laboratories, the Alcor Life Extension Foundation and G.M. Fahy of the Red Cross have demonstrated that current base and cryoprotective perfusate designs are adequate perfusion media for the central nervous system in terms of washout capabilities and cryoprotective agent (CPA) equilibration. It is now desirable to extend this work to evaluate brain function after blood reperfusion at normothermia in order to provide necessary control data and model development to test viability after freezing or vitrification at cryogenic temperatures.

Control electroencephalography (EEG) will be made in vivo at normothermia using the rabbit as the test animal. The brain circulation will be isolated, the head perfused with CPAs to terminal concentrations adequate for vitrification and the head will surgically excised. CPAs will then be washed out and the cephalic circulation will be connected to a support animal in the manner of R.L. Swank, et al, ("Archives of Neurology," Vol. 13, p. 93-100, July, 1965). EEG recording will then be made and compared to control. Visual and auditory stimuli will be applied to evoke specific EEG responses. Arterial and venous O₂ differences and lactate production will be monitored to determine the metabolic status of the head during reperfusion at normothermia.

(16)

THE AMERICAN LONGEVITY ASSOCIATION: FIRST ANNUAL MEETING

The first annual meeting of the American Longevity Association (ALA) and the inauguration of its National Director took place on Oct. 1-3, 1982 at the Beverly Hilton Hotel in Los Angeles. The meeting was jointly sponsored by UCLA's Department of Continuing Education and was entitled "Frontiers of Medicine: Implications for the Future."

The meeting itself was devoted to reviewing a number of advances in the treatment of diseases of aging or diseases that might be associated with aging, and indeed, the stated purpose of the ALA is to "conquer aging in our lifetime." For this purpose the primary mover of the ALA, Dr. Robert Morin, a professor of pathology at the UCLA-Harbor Medical Center and an expert on atherosclerosis, assembled a virtually unbelievable group of both scientific and show-business luminaries. The scientists included several Nobel prize winners, heart surgeon Michael DeBakey, the inventor of the leading artificial heart (Robert Jarvik), several top name gerontologists including the former head of the NIA (Robert Butler), Robert Good (perhaps the leading immunologist in the country), and a few other, less well known speakers. The permanent National Director of the ALA is none other than Milton Berle, who was inaugurated in an incredible bash on Saturday night, Oct. 2, which featured not only pleas for support of the ALA from Morin, Good, U.S. von Euler, and others, but also excellent comedy routines from Dick Shaw and Red Buttons, all orchestrated with great finesse by Art Linkletter. In the audience were Victoria Principle, Betty White, Phil Silvers, Tom Bosley (Richie's father on "Happy Days"), and other celebrities plus high placed executives from Thrifty Drug Stores and Mattel Corporation and immortalists such as Roy Walford and even Robert Prehoda. Without a doubt this meeting was the single most impressive effort to

launch an attack on aging ever mounted.

But before we get carried away to the point of predicting that the ALA will succeed where no other group has to date, a few apparent problems with this organization must also be noted perhaps the most shocking thing I noticed during the first day of the meeting was the apparent total unanimity of the ALA's big name speakers on the notion that the genetically programmed lifespan should not be altered, but instead that the mission of gerontology should be to "rectangularize the mortality curve," that is, to keep us all alive to the limit of the genetically determined length of life we have allotted to us so that we can then abruptly drop dead in relatively good health. In essence, the ALA speakers don't want an extension of maximum longevity, they just want more people to reach the existing maximum. Apparently Robert Morin, who quite clearly does want to extend the maximum lifespan (but who all but denied that during the formal scientific portion of the meeting), has very cleverly enlisted these rectangularizers (dare I call them "squares"?) to serve his own purpose. This is a cunning strategy and may work,

(17)

but the lackluster goals of these big names showed up in a deficiency of luster in some of their talks, and their function for the ALA in the future may be as much to be used as attention getters as to be used for new ideas.

Another problem with the ALA's fund-raising efforts may be that the people who are attracted by celebrities are not particularly attracted to the idea of life extension. Despite heroic efforts by Morin to squeeze money out of the glittering audience who turned out to watch Milton Berle, it appeared that very very few pledge cards were filled out by these people.

In any event, the jury is still out on the ALA's future effectiveness, and the sheer wonder of what Morin was able to pull together does offer some hope that this time something big may really be happening. One advantage the ALA will have is the true grass-roots interest in life extension, which was evident at the layman's portion of the meeting on Sunday, Oct. 3rd, which drew in perhaps 300 people despite the unorthodoxy involved in scheduling an all-day meeting on Sunday.

The first speaker on Friday was Andrew Schally, whose work on hypothalamic releasing factors for pituitary hormones won him the Nobel prize. He has gone on to show that cancers of such hormonally responsive tissues as the prostate, breast, pituitary, and pancreas can be treated, sometimes very successfully, by controlling pituitary hormone release with releasing factors or antagonists to the releasing factors. For example, one antagonist reduced prostatic carcinoma volume by 96% without any toxicity. This type of approach to cancer seems to dovetail nicely with the neuroendocrine theory of the control of aging.

The next speaker was B. Blumberg, who received the Nobel prize for developing the first vaccine shown to be safe and effective for preventing cancer. His vaccine is for liver cancer, and it works by preventing infection with hepatitis B, an event which is apparently required for eventually developing liver cancer. Once you have the cancer or once you have been infected with the virus for hepatitis B, the vaccine will not work. His vaccine is approved by the FDA and available for use.

At this point the chairman of the morning session felt obliged to

declare that death is a biological necessity and that Jonathan Swift had demonstrated this quite clearly in "Gulliver's Travels." He likened the idea that you could extend life to the idea that you could freeze people for future reanimation, two obviously absurd propositions in his view. Naturally, nobody asked him what relevance his brainless blatherings contained.

The next speaker was U.S. von Euler, whose discovery of the prostaglandins won him the Nobel prize. The tie-ins between aging and prostaglandins are not clear at this point, but he did point out that stress of all kinds can result in the release of these and related substances which might, in turn, cause platelet

(18)

aggregation, vasoconstriction, and, therefore, heart attacks. He suggested that the high uterine levels of the clot-inhibiting prostaglandins PGI-2 might account for women's lower risk of heart attacks, while PGEs may have a general membrane protecting effect.

The next speaker discussed diabetes mellitus, which may be caused by an autoimmune attack against pancreatic cells, perhaps triggered in some susceptible people by Coxsackie virus. Susceptible individuals may be detected by looking for autoantibodies in the blood. Also, individuals who get fat eating few calories tend to be susceptible. Despite the many damaging effects of diabetes, tight control of glucose concentration over a short time can reverse many of the effects and complications of the disease.

Next up to bat was Robert Good, who spoke on nutrition, immune function, and aging. Regarding nutrients, he recommended vitamins A, B-6, C, and E and the minerals zinc and selenium to stimulate immunity to cancer. He was particularly impressed with zinc, which is frequently deficient in older people as well as in people who have cancer and other diseases, and which is depleted by stress. From the standpoint of aging clocks, it was particularly interesting that zinc can delay and reduce the ultimate extent of normal, programmed thymus involution in mice. He also endorsed Walford's idea of "undernutrition without malnutrition" and pointed out the benefits of caloric restriction and DHEA. He concluded with a peanuts cartoon in which Linus, asked why he was sucking his thumb, replied that it had no calories. Unfortunately, Good was quite definite about his desire to square the curve but not the extend the lifespan, and Morin said that this was also the position of the ALA.

The next speaker was a Dr. Glasscock, who suggested that squaring the curve would be a good motto for the ALA. His bag was organ transplants for the treatment of many diseases, and he gave a run-down of the history of transplantation and immune suppression, including many very recent developments in the latter area which may soon remove most barriers to organ transplants.

The afternoon session focused more directly on aging per se and was chaired by Nathan Shock, whom most immortalists will know of for his longitudinal studies of human aging. The first speaker was Caleb Finch, who discussed mechanisms of aging. He pointed out that aging is under a high degree of genetic control (involving both neuroendocrine/immune controls and controlled losses of irreplaceable cells), and that because of this, extensive manipulation is possible. He backed this up with some studies showing that reproductive aging can be prevent and even reversed,

without using drugs or brain stimulation. Apparently the cessation of ovarian cycling causes a drop in progesterone and a rise in estrogen, and this "damages" the hypothalamus, so that a young ovary will not cycle if

(19)

transplanted into a post-reproductive host. This damage can be prevented if the young ovary is transplanted before cycling ceases, in which case the young ovary will do just fine and the overall reproductive lifetime is doubled. The damage can be reversed if the old, noncycling ovaries are removed two months prior to transplantation of the young ovaries: after this time, the young ovary will do fine in the previously postreproductive host. Experiments like these show that Finch is still the master when it comes to unravelling aging mechanisms in mammals. He also reviewed much fascinating data pertaining to human brain aging.

The following speaker was T. Makinodan, who considered immunological rejuvenation. Apparently, the loss of responsiveness of T cells with aging is due to a lack of circulating T cells growth factor, known as interleukin-II, whose production by the thymus is shut down in youth by an aging clock. A plot of T cell function vs. age for both mice and humans shows an identical pattern, so this probably also happens in man. But when old T cells are treated with interleukin-II, or with the simple chemical mercaptoethanol, their responsiveness is equal to that of young controls. The same effect can also be obtained by transplanting tissue that make interleukin-II (thymus plus bone marrow).

Nathan Shock spoke next, describing a few age changes and pointing out the enormous variation from person to person. He said that simple life prolongation was not a worthy goal for research and that efforts should concentrate instead on improving the quality of life (by buying nicer wheelchairs perhaps?!). He also said investigators are "gun shy" about using drugs to modify aging and that little progress could be expected in that department for this reason, but that a good thing to study would be the effect of exercise on the quality of life.

IN a general question and answer session that followed, it came out that Japanese centenarians have super immune systems. One physician asked the speakers what he should say to patients who come to him wanting prescriptions for Hydergine and the like, in response to Durk Pearson and Sandy Shaw's advice. Finch said that these agents do not affect the maximum lifespan and therefore one must be cautious about claiming that they truly extend life. He said that it is an emotional issue and that one pretty much has to follow his own heart. Makinodan just said that we have a long way to go.

The meeting resumed Saturday morning with another session focusing on aging. The first speaker was Leonard Hayflick, with whom every immortalist is probably familiar. He said most people now feel that aging starts at the time of maturity. He tried to debunk the idea that anything can live for 4,000 years (such as the Bristlecone pine or the redwoods) by saying that the cells in the trees are only 30 years old, and that only the cell lineage is 4,000 years old; this is compared to the human lineage, which

(20)

is of course far longer. (Of course, this is like comparing apples and oranges. The tree cells are body cells, not germ cells, and what we care

about is the proliferative capacity of body cells.) He soon went on to say that "our conscious attention is being focused on rectangularizing the curve, not resetting the aging clock, because the latter would hemorrhage our society." He concluded with a cartoon taken from the New Yorker showing an old Russian on his death bed with relatives gathered around. The caption read, in small letters (corresponding to the feebleness of the old man's voice), ". . . to . . . Hell . . . with . . . yogurt . . ."

The next speaker was Robert Butler, speaking on the subject of "Living Long and Well." He said the goal of gerontology should be to provide the body with the maximum integrity and efficiency over time, i.e., to develop life extension technology with the programmed lifespan, and mentioned that NIA had a commitment to prolong "the prime years of life." Butler challenged the fear that longer lives must decrease quality of life, asserting that society and the quality of life will be better if life is prolonged. He cited Gerald Gruman's introduction of the word "prolongevity," meaning significant extension of human life and belief in the possibility and desirability. He said that acceptance of aging is not necessary and pointed out that between 1965 and 1975 the number of people older than 85 years had increased by 25%. He listed some current goals of the NIA. One was to develop biological markers of aging so that intervention strategies such as DHEA and thymosin could be studied. Another goal was to get a better notion of aging by studying such things as superoxide dismutase induction, transplantation of brain cells to correct brain aging, the use of hormones to retard brain aging, and study of the genetic determinants of aging. He even mentioned the word "suspended animation," referring to the freezing of cells. He said a goal also must be more research support, and mentioned the ALA, the American Federation of Aging Research, and a group devoted to eradicating Alzheimer's disease. He said the prospects for eradication of senility almost justify an Apollo type project. He concluded by pointing out that the "gloomy gusses" of 1900 might have tried to stop our successful raising of life expectancy from 47 in 1900 to 73 today, based on their fears of an aging population, yet that would have been a terrible mistake. By the same token, it is now time to celebrate our longer lives and push on with the job of making them still longer and better.

When the meeting next reconvened, it was for a session on arteriosclerosis. Dr. Wissler described the structure and origins of atheromas or atherosclerotic plaques and the special importance of specific subpopulation of LDL and HDL lipids. Most importantly, he mentioned convincing evidence for the regression of atherosclerosis under the influence of a "prudent" diet (low in fat and cholesterol but not to an extreme) plus cholestyramine. Probucol also shows great promise for reversing atherosclerosis.

(21)

Robert Morin then discussed the role of platelets (blood clotting cells) in atherosclerosis, showing how their action is correlated with atherosclerotic risk factors and mentioning the clots. Another factor which may be of help is dietary supplementation with eicosapentaenoic acid (EPA), or fish oil, which inhibits clotting in humans. In addition to reducing the number and size of clots, EPA also reduces plasma triglycerides and cholesterol. You can get EPA by eating half a pound of salmon a day or taking 4-6 grams per day in capsules which are now available. However, you should also take vitamin E with the EPA.

The final speaker for the session further implicated platelets in the

genesis of atherosclerosis. Platelets make substances called thromboxanes which help them form clots. However, as a byproduct of the synthesis of thromboxanes, the potent cross-linking agent malondialdehyde (MDA) is procured which alters LDL so as to make it able to enter immune cells and convert them into foam cells, which constitute part of the atherosclerotic plaque. Knowing this may lead to additional treatments for prevention or reversal of atherosclerosis.

A rather extensive question and answer session followed this group of papers. Among the results of this session are the following items. 1) Supplemental oxygen (not hyperbaria but just hyperoxia) may accelerate reversal of atherosclerosis. 2) The recent MRFIT clinical trial for cardiovascular disease showed largely negative results, but this may be because the controls were amazing more healthy than the general population. 3) Beer raised HDL levels and may reduce heart attacks.

The final afternoon session began with a discussion of the effect of dietary protein on blood cholesterol levels and on atherogenesis. Protein can be more hypercholesterolemic than cholesterol itself, particularly animal protein. The Old Testament notwithstanding, pork is one of the least atherogenic animal proteins, while milk protein is the most atherogenic. Soy protein, however, can block the induction of atherosclerosis by milk protein when the two proteins are mixed in a 1:1 ratio. (Unfortunately, it apparently tastes terrible.) In trying to decide what makes proteins atherogenic, it was found that the ratio of lysine to arginine in the protein correlated with the degree of atherosclerosis produced and, in fact, giving lysine plus soy protein led to atherosclerosis while giving arginine plus milk protein did not lead to atherosclerosis! Unfortunately, this type of approach is complicated by other factors. For example, if the carbohydrate source is potato starch, then soy protein elevates serum cholesterol more than milk protein!

The next talk was given by Blankenhorn, who discussed the "plumbing" perspective of atherosclerosis. Atherosclerosis kills

(22)

only when the thickness of the plaque in the coronary artery reaches 0.6 mm or when the percentage of artery surface affected reaches 60%. He suggested that all we have to do is slow down the rate of increase of plaque thickness and distribution so that by the time they become lethal we will already have died from something else (sort of a Ronald Reagan approach). He then went on to discuss some methods for monitoring the progression of the disease which should tell us if we are succeeding at slowing it.

In the following question and answer period, it came out that 20% of atherosclerosis is explained by cholesterol, 20% by smoking, and 20% by high blood pressure, leaving 40% unexplained. Another point of interest:

vitamin C is needed for conversion of cholesterol to bile.

The next speaker discussed new cardiac drugs and the prevention of second heart attacks. Between 1968 and 1978, the rate of heart attack deaths dropped worldwide 25% due to control of blood pressure, cholesterol, and smoking. But of those who do have a heart attack and survive, 50% die in 30 days. Fortunately, beta blockers, which reduce the work load on the damaged heart, look very good for preventing this secondary death. Also discussed were 7-ketocholesterol, which prevents cholesterol from entering

the artery wall; amrinone, which reverses experimental heart failure; amiodarone, which safely strengthens the damaged heart and blocks arrhythmias; streptokinase, which dissolves blood clots; and calcium blockers, which keep heart cells alive.

Michael DeBakey spoke next, primarily about using Dacron grafts to repair aneurysms and replace occluded arteries and veins in old folks. He finds that the mortality rate for elderly people is only slightly greater than that for younger people. These artificial blood vessels last at least 25 years.

The last speaker of the meeting was Robert Jarvik. His artificial heart is powered by compressed air which is sent into the chest through tubes. The heart has supported animals for 1 year and, he feels, should last 2-3 years in a human, which is long enough to be ethical to use. His heart will respond to exercise by putting out more blood, even though the heart rate is constant. The heart can also be monitored for signs of failure and removed before failure if necessary. The heart is now approved by the FDA and ready for use. The cost? \$55,000 for initial installment plus about \$5,000 per year thereafter.

The meeting concluded with a good summary by Morin in which he began and concluded by stressing the "remarkable progress" which has been made toward "the solution of aging and the diseases of aging" and made a plea for funds to keep research going in the face of federal budget cutbacks.

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(23)

After the two-day scientific part of the meeting and the Saturday night bash for Milton Berle, there was a Sunday meeting for laymen in which much of what had been said before was restated (although not with complete success) for a lay audience. This meeting is worthy of note because of what it reveals about the way controversial matters were handled by the authorities present. Certain parallels with the handling of cryonics by cryobiologists are evident and, perhaps, all too predictable.

When asking about the role of RNA and DNA, Hayflick said their use for aging has "no scientific basis whatsoever," despite evidence that RNA improves memory and that RNA or DNA may extend life. (Evidence for the latter may be minimal, but it is far from "no evidence whatsoever.") He pointed out that ingested nucleic acid is broken down in the stomach, but there is little reason to think that this matters.

Cellular theory was called "totally invalid" by Hayflick, but what is the evidence one way or the other? (There is actually a paper on cellular therapy in J. Gerontol. showing many benefits.)

Hayflick also strongly denounced gerovital (GH-3), stating that no study had ever been done to support it. This despite a good paper by Aslan in none other than the Journal of Gerontology, showing life extension and other benefits of the drug. One has the impression that Hayflick is the Meryman of gerontology, dogmatically issuing absolutist denunciations without really knowing all the facts.

Contrast this behavior to that of some of the other participants. When asked about chelation therapy, Kritchevsky said he had not seen a study giving a clear cut result and that he would like to see papers in referred

scientific journals. Altogether a pretty level-headed response to a question about a pretty fringy subject.

There were also two papers presented at the lay meeting that were not presented previously. One was by L.M. Morrison of Loma Linda University on retardation of aging with nutrition. For example, 13 years of low fat diets cut the human death rate by 38%; 3 years of lecithin supplementation cut the death rate by 60% (230 people studied); 6 years of mucopolysaccharide supplementation cut the death rate by 70% (120 people studied); and 3 years of combined therapy cut the human death rate by 80% (118 people studied)! Two grams per day of mucopolysaccharide (1 gram at a time) is recommended and can be obtained through health food stores. He estimates that healthy men and women could have their lifespans extended by 8.5-9.0 years using his treatments.

As the clean-up crew began to disassemble the walls and the people who had the meeting room reserved next began to press forward inexorably, Robert Morin gave a rushed overview of tips

(24)

for staying alive. They are as follows. Don't eat much fat; eat plenty of fruits and vegetables to get beta carotene and vitamin A. Avoid bacon, ham, and hot dogs because they contain nitrite which is converted into cancer-causing nitrosamine in the stomach. (Your body also naturally synthesizes nitrosamines in the gut; this can be prevented by taking vitamin C.) Eat fiber. Get enough selenium. It is better to get vitamins and minerals from foods than by supplements, and he does not recommend megadoses of vitamins as recommended by Pearson and Shaw. Use an activated charcoal filter to purify your drinking water (chlorine is carcinogenic). Don't smoke, don't overdo it with alcohol. If you are prone to diabetes, the only way to prevent it is to avoid obesity. If your cholesterol level is below 200, don't lower it further. (Very low cholesterol levels may be associated with cancer.) If you have a history of heart disease, decrease your cholesterol as much as you can. (At a level of 150, atherosclerosis will start to reverse.) High density lipoproteins (HDL) are increased by exercise and by alcohol (perhaps you should jog from bar to bar!) as well as by vitamin E. Zinc will decrease HDL if more than 10-15 mg per day is taken. Avoid smoked foods, which contain oxidized cholesterol. If you are

normal weight, reducing your caloric intake may not do much good. For antioxidants, you should take E, C, and selenium, but only in 1-2 times the recommended daily allowance (100-200 mg for E and C, 50-100 micrograms for selenium) because higher doses may be harmful. Avoid taking BHT and BHA: these are synthetic substances which could be dangerous. Do take 10-15 mg/day of zinc. Also consider taking the fish oil EPA if you have cardiovascular problems.

So ended the first meeting of the ALA. Just where it is headed and just how far it will get remain to be seen, but it should certainly be interesting to monitor its progress. For those readers who would like more information about the ALA, a free brochure can be obtained by writing to American Longevity Association, Inc.; 1000 West Carson Street; Torrance, California 90509.

Tape recordings of the talks presented at the ALA meeting are available for \$20 each; each tape covers about 3 lectures and the question and

answer session for them. All tapes are of professional quality. Anyone interested in obtaining these tapes should contact CRYONICS.

(25)

WHY WE ARE CRYONICISTS

We are cryonicists because we choose to be optimistic rather than pessimistic about the future. We believe that human knowledge and medical technology will continue to expand and that even people who are considered "dead" today will someday be able to be restored to life, health, and youth. We understand that the state of "death" is nothing more than a physician admitting he is unable to restore a person to life; that this decision as to when a person dies will vary from doctor to doctor, place to place and most important from time to time. A person suffering a cardiac arrest in a hospital cafeteria will have a radically different prognosis than the same person with the same condition on the crowded streets of Bombay: in a hospital he might be resuscitated and live, but on the streets of Bombay a physician would pronounce him dead. We understand that as progress in our understanding of physiology and medicine is made and translated into improved medical technology we are able to recover more and more people from so-called "death." We believe an explosion of biological technology is coming that will transform the world even more radically than the changes brought by the explosion of engineering and physical technology in this century. We believe that mankind will soon have control over living systems, allowing us to end all human illness, reverse and control the aging process, and solve the thorny ecological problems which seem so overwhelming to us today. We believe that this coming control over living systems will also allow us to fabricate new organisms for use in food and industrial production as well as for the repair and regeneration of patients currently waiting in cryonic suspension.

We are cryonicists because we know what we are doing is right. We don't know if what we are doing will work but we know that it is the right action to take. When someone discovers a person laying on the ground with an apparent cardiac arrest, he does not enter into a debate with himself or other bystanders about whether or not his application of cardiopulmonary resuscitation will work for this particular individual, whether the victim will suffer brain damage, has another terminal illness, would have wanted CPR to be applied, or whether or not doctors will be able to treat the cause of his heart arrest successfully. Rather, the rescuer immediately applies CPR in order to stabilize the victim's condition and prevent any further deterioration from occurring until the victim can reach trained medical personnel who can make those decisions. It is not the rescuer's place to second guess medical capability. As

(26)

cryonicists we feel that it is not our place to second guess future medical capabilities either. We know that the right thing for us to do is to move immediately to prevent the patient's condition from deteriorating further and to continue to exert maximum effort to get that patient to a time when it may be possible to treat him effectively. So just as the CPR rescuer seeks to stabilize his heart attack victim and move him over distance to medical assistance, the cryonics rescuer seeks to stabilize his patient and move him through time to an era when effective medical help will be

available.

We are cryonicists because we love being alive and do not want our lives to ever end. We know that the most important thing we have the only thing that really matters are our lives and health. Where we differ from others is in our unwillingness to admit defeat because contemporary medical and social authority tells us that we should. We believe in fighting even when the odds against us may be very high and the certainty of success non-existent. We believe we should fight because some chance to hold on to our precious lives, even a minuscule chance, is better than no chance at all and certain death.

We are cryonicists because we refuse to let go of those we love and lose them forever. We are through closing black cuts in the earth and living with deeper ones in our hearts. We know that taking action to save the people we cherish, even if there is little chance that it will succeed, is infinitely superior to helpless inaction and smothering our grief and loss with worthless tears and dying flowers. We believe that action is better than inaction and that the psychological advantage to the dying person and his loved ones is reason enough to undertake cryonic suspension. We believe that it is better to fight than to surrender and we will not give up solely on the basis of someone else admitting their impotence.

Finally we are cryonicists because we know that each of us is responsible for our own lives and survival; that if we do not take action to defend our lives, no one else will. Being cryonicists puts us back in control of our lives: no longer are we under an absolute, inescapable death sentence. We are taking action to fight death and achieve indefinite extension of our lives. We are not helpless cattle being led to slaughter by an indifferent universe. This realization transforms us and lets us take joy in our lives because it frees us from the draining certainty that we are going to grow weak and disappear forever. We know that we have a chance because we are cryonicists and this awareness motivates us to be productive and to strive to maximize this chance that cryonics represents. If you would like learn more about cryonics, please write or call us at:

ALCOR LIFE EXTENSION FOUNDATION
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