Raymond Peat, Ph.D

Danny Roddy: Talking With Ray Peat 2

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(transcribed and verified by Marteagal and Burtlancast)

DR: *Hello everybody. Today I'm talking with painter-philosopher-biologist Raymond Peat. We will talk about the passing of Mae-Wan Ho, Vladimir Vernadsky, carbon dioxide, the NAD+/NADH ratio, new and old hormones, thyroid brands, how Ray makes his coffee, and so much more. As always, please do your own research and come to your own conclusions: in the spirit of William Blake, "The true method of knowledge is experiment".*
Ray, I thought we could start off by talking about Mae-Wan Ho.

RP: Oh. I just ran across her review of "The rainbow and the worm", about 15 years ago, I guess, whenever it came out.

DR: *And did you think of her as an ally in your fight against mainstream science?*

RP: Oh sure. That "coherence" thing is where I've been going since the sixties, anyway.

DR: *Have you ever seen photos like she has in her book? When you see them, you immediately think there's more to the picture than the kind of materialist science we've been sold.*

RP: Yea. I think it was about 1955, when I was in Mexico first, the square in Páatzcuaro, people had laid out the different fish they had caught. And two different kinds of them were transparent, sort of like green jello; I ate them; they called them white fish. So I've had some delicious fried, transparent fish that were just like ordinary white fish when they were cooked, opaque and bones, everything. But I was intrigued by how something with bones and blood and guts and everything hard, all of the standard organs, how it could be perfectly transparent when it was uncooked. And that made me think about the light beam, sort of carried in channels to bypass the bones, effectively making bones, and liver, and everything disappear.

DR: *And that can only happen if the organism was like a liquid crystalline, like she talks about, and you also mention?*

RP: Well, that got me interested in how water works all by itself. In around the same time I was interested in electrical fields in organisms and water. And the idea of light conductivity in special ways in cytoplasm connected to the idea that organisms are sensitive not only to electrical currents and fields, but to magnetic fields, because we have our own electrical currents inside. And so, a moving charge is sensitive to the

magnetic environment. And the first persons researched that I studied in any depth was Yuri Kholodov. And I went to Moscow in 68 to talk to him about his bio-magnetics, or magneto biology approach. And through him, I then got interested in Madeleine Barnothy, and her work on magneto biology. She and her husband applied good physics to study the dowsing phenomenon, and found that organisms could detect extremely weak magnetic fields, for example, caused just by water oozing underground; slow movement of slightly ionized water is enough for an organism like a person to detect. And trying to understand how that works. Then I found Solko Tromp's book. "Psychical physics" was the title of that, published in 1949. And he reviewed the old literature on liquid crystals and argued that the cytoplasm is like liquid crystals. And you know how, [in] the computer monitors, the screen operates on [the] principle that a weak electrical field will re-order the liquid crystals? The biology behind that [existed] before the industry's technology application of it. [Tromp] used that as the argument to explain the extreme sensitivity to electrical fields and magnetic fields.

DR: *Was that post- your discovery of Vernadsky, or pre-? Were you interested in that magnetic biology because of your understanding of ...*

RP: No, no, I've found Vernadsky after that.

DR: *After. And how did that tie in perfectly with what you were interested in?*

RP: Vernadsky?

DR: *Yeah.*

RP: Oh, sure, he just gave the bigger picture of how energy guides these intricate structures in the cells of organisms. He used Le Chatelier's principle to show that when you disturb a system, it finds a new equilibrium by adjusting whatever needs adjusting. Just by thinking, in that context, that the organism is responding to the available energy (with the sun or volcanic chemical energy as the source), he reasoned - with that simple physical-chemical principle - that the complexity and the intensity of energy flow would both tend towards a maximum. And so, he said that big trees develop under big energy flows; big-brained mammals develop when there's an opportunity for high energy flow.

DR: *When you were talking about magnetism, that reminded me of when you said you thought that he was a − or did he call himself a "geo-cosmic realist"?*

RP: Um, yeah, he had various composite names for what he was doing.

DR: *That's a pretty cool title.*

RP: Yeah, Solco Tromp called himself, I think, a "bio-geo-meteorologist".

DR: *Ha ha. That sideways pretty well into the next issue. Last time we talked, we covered a lot of ground on pre-nutrition for women, and then post-nutrition for women, which - I might have got it wrong - but that was in 1975?*

RP: From 1973 to 1975, I guess.

DR: *And then, you re-issued it in 1993, and you wrote "Generative Energy" in 1994.*

RP: Well, yeah; actually, I was writing on "Generative Energy" throughout the eighties; it accumulated. "Mind and Tissue" was the first one I wrote actually. And I gave it to a flaky publisher who lost all the references. And I think the chapter on Pavlov was lost too, so I had to rewrite that; but never bothered to fix the missing references, because the books were all in different libraries.

DR: *We've discussed some of the motivations behind "Nutrition for Women"; was "Mind and tissue" what you were truly interested in at the time, versus some of the things ...*

RP: Yep, that was my intense interest. And the "Nutrition for Women" was just practical things that some women friends told me would make a useful compilation.

DR: *And, then, do you think "Generative Energy" was kind of a marriage of those two things, or not?*

RP: Well, yea, I think it was probably Vernadsky that was the turner for putting those together.

DR: *I'm interested in how − because I've searched your older work for, like, carbon dioxide − and it seems although you're constantly talking about thyroid and the importance of thyroid, it seems that (and I could be wrong) that emphasis on carbon dioxide might be a little less a couple of decades ago, versus more now? And so, I'm curious if things shifted? Or that you became more interested in carbon dioxide as time went on, maybe like in the early 2000's?*

RP: It was sometimes in the late 90s, I think it was.

DR: *And what spurred that interest?*

RP: I think, people asking me about Buteyko. I had read Buteyko's − some of his articles in 1969 or so - but I just didn't really think very much of it, except that it seemed valid. And, I was interested at that time in several gases; the way nitrogen fixation (by chickens, and mammals, and people) from the atmosphere was what got me interested in Buteyko. The Russians were using nitrogen in their space vehicles, with oxygen, where the Americans were using helium. And there were some publications arguing that you should always breathe some helium with your oxygen, because of the fact that it can be fixed. Hemoglobin is apparently a nitrogen fixing molecule in birds and mammals, as well as bacteria. And thinking about how the gases are metabolized…for example, how does a fish keep it's swim bladder inflated…the idea of, in effect, pumping gases, or pumping gases in or out…and the idea of the negative space between the lungs and the pleural membrane (there is, in effect, a vacuum there). The membranes are tightly in contact; but if you get a leak, your lungs collapses. If you punch a hole in the lung, the air goes out into that space in the lung; the lung shrivels up. And so, something is pumping all of the gas, absolutely all of the gas, out of that space between your chest and the lungs. That

idea of creating a vacuum by somehow pulling the oxygen and nitrogen (most of the air volume is nitrogen)…so it's easy to see that you can subtract the oxygen from that space; but that would leave nitrogen bubbles around your lungs. So, something apparently is pulling the nitrogen out of that space constantly. And none of my professors would even talk about that issue. Anyway, that was me thinking about the metabolism of all of the gases. And the idea that you can excrete salts: I was worried about the turtles that have salt glands on their nose or eyes to excrete excess sodium. And the membrane pump people were saying: "See, that proves that there are these marvelous little pumps that shove the ions out of the cells". So, on investigating that, I saw that there's carbonic anhydrase in there, and that just by changing the association of carbon dioxide with water, you affect its solubility. If the acid moves out of the cell, to maintain electric neutrality it takes a positively charged ion with it. So, every time your carbonic acid leaves the cell, so does some sodium. And, then, the carbonic anhydrase, if needed, can liberate the carbon dioxide as gas, leaving just the sodium, which usually becomes sodium chloride (or whatever other ions are available).

DR: *You've said that carbon dioxide is the context for all life processes (I think it was in your article "Mitochondria and mortality"). You've said "Increasing of carbon dioxide in the atmosphere can cause the spontaneous creation of mitochondria". Do you think that an increase in carbon dioxide in the atmosphere is a pivotal thing for higher evolution?*

RP: Well, at the time, [in] the carboniferous [era], geologically, the carbon dioxide in the atmosphere was really intense for those periods, something like 12% . And that really stimulated a great abundance of life. The way I see the ATP synthesis, I don't think it's anything fancier than the fact that if you write out the equation, you'll see H2O and phosphate becoming ATP, rather than the ATP and water becoming phosphate. If you subtract water from the equation, the phosphate turns into ATP. I don't think I've said that right. But anyway, if you look at the equation, and subtract water, it gives you ATP. And, since carbonic anhydrase is in the mitochondrion, closely associated with the formation of ATP, I think its purpose there is partly to turn the newly formed carbon dioxide into carbonic acid, which then leaves, taking away water, and creating ATP by dehydrating the phosphates.

DR: *A lot of people are talking about KETOGENESIS, KETOSIS, diets, and things like that. You have mentioned that carbon dioxide stimulated NADH oxidase. And that, besides supporting mitochondrial respiration in general, it would support the NAD+/NADH ratio?*

RP: Yea. I think it functions as in the Gilbert Ling's sense: an adsorbent that pulls electrons out of the system and makes the proteins more actively acidic. I think it has that effect all throughout the cell. And one of the effects of that is to let the cell release any excess waters. It has an anti-swelling effect. And the retraction of the electrons by that cardinal adsorbent action on the proteins shifts the whole electronic state of the cell, making electrons scarcer. And that ends up shifting the ratio between NAD+ and NADH towards the oxidized NAD+ side. While I was thinking about these processes of electrons in the cell after reading Gilbert Ling, then I've read some Efraim Racker and Albert Szent-Györgyi talking about electrons in cells. One of Györgyi's books was called "Bioelectronics". He was trying to account for

the electronic behavior of cells. And Efraim Racker claimed the phrase “Nothing dehydrogenase”. And Szent-Györgyi, working in England in the 1920’s, studied related things; that there seems to be electrons , or the equivalent of !!! hydrogens !!!, from unidentified sources in living cells. Efraim Racker removed all of the known fuel sources from cells. But his indicators of reductants kept getting reduced. And so, he said that dehydrogenases were causing these chemicals to be reduced, but without a known source. It seemed to be an endless supply of electrons; so he called them the “nothing dehydrogenases”. And Szent-Györgyi theorized that these were some of the mobile electrons in the cytoplasmic protein-lipid systems and nucleic acid systems. With some of his associates [which] were showing semi-conductive properties for both nucleic acids and proteins, based on this mobility of electrons.

DR: *Normally, proteins, fats and carbohydrates are the substrates for the electron flow. And you’re saying that because the electrons were in the cell without any substrates, that led to Szent-Györgyi thinking that there was an electro-conductivity to the cell, that wasn’t previously thought before?*

RP: Yea. That there might be proteins of the cell [which] might be catching electrons from the environment. And in the last 15 years, people are now talking about the trans-plasma membrane oxidases. Many people are experimenting with these indicators of dehydrogenase activity; they turn red or purple when they get reduced. And using chemicals that don’t enter cells (because they’re strongly electrically negatively charged), they show that oxygen is removing electrons from the cell, oxidizing NADH to NAD+, taking electrons out and changing color without entering the cell. So, they are showing that cells don’t need mitochondria for oxidative metabolism. It can happen right at the surface of the cell. Someone designed cells lacking the genes necessary to make mitochondria, and still the cell respired!

DR: *Oh, that's really interesting. Well, in your "Receptors, fields, and therapies" 2014 newsletter, I wanted to talk about the ketone body ratio. And I’ve just realized that some people think that NADH should be increased to* NAD^+*. And so, do you think that's where the confusion about the ketone body ratio is? For example, I think, in “ Ketoacids? Good medicine?” by Veech− he's obviously a pretty smart guy − he says beta-hydroxybutyrate as a substrate increases NADH, relative to* NAD^+*.*

RP: Umm, yah, that's where I absolutely disagree. And it involves everything, bioelectronics and electrophysiology, and everything. But I think Gilbert Ling might be the only person who agrees with me on this. Oh, and Robert Becker's "[The] Body Electric": [I’m] absolutely in agreement with him. But Mae-Wan Ho, in her article "Cancer as a redox disease" makes the common mistake of seeing cancer as not having enough electrons. For I think that's its essential problem: It has too many electrons in the form of too much NADH, and all of the pairs of redox (like too much of lactic acid and not enough pyruvic acid). Everything that is in balance is shifted in cancer heavily towards the lactic acid side. And the hydroxybutyric acid is just one of those redox couples that can, if you get too much of it, shift you in the direction of cancer. One of the experiments that Mae-Wan Ho's article "Cancer as a redox disease" cited [was] a study in which the charge on a tumor was reversed [by] applying, I think…she cited this article saying that they regressed the cancer by applying a negative field. Or, it was measured as having a positive charge, rather than a negative charge. Robert Becker, and my own measurements (and many other’s

peoples) see a tumor or a cancer as an injury and inflammation. And the traditional language for this kind of electric charge is called the "injury potential". If you cut your skin, or any tissue that is damaged, it is increasing inflammation, and lactic acid, and so on. There's a strong shift to electric negativity. And Gilbert Ling explained the so-called "resting electric potential", which is highly negative in a healthy cell, as a battery effect of ... the way you measure it, traditionally, is with a concentrated solution of potassium chloride (3 molar I think it is) . And he said that just this high concentration is enough to account for the potential. And when you measure a cancer cell, you get very little charge when you poke an electrode in. But if you measure outside of the cancer cell, you have this negative field. That's the "injury potential". It's the same as if you cut a healthy area and had an open wound; you would have a shift to the negative electrical charge. And one of my projects in graduate school was a cell electrophoresis. There was a guy at the University of Oregon Medical School, in Portland, doing it on a variety of cells. And so, I built my own apparatus and put in cancer cells in one end of a little glass tube, and a battery mild electric DC potential from one end of the glass tube to the other. And then, with a microscope, you would look at the cancer cells in the tube as you turn on the electric field. And if the cell has a high surface-negative charge, it moves quickly towards the positive pole. And if it's almost neutral, it just sits there. And if it has a positive charge, it moves towards the negative pole. And I got very clear evidence that the cancer cells moved towards the positive pole. And other people with good apparatus (which I didn't have) have measured [either] highly malignant cancer cells, moderately malignant, and mildly malignant (non-metastasizing) cancer cells, and found that the higher their surface-negative charge, the more malignant the cancer is. You don't measure when you stick the electrode in, because your reference electrode is no different (the inside is no different from the outside). Where a healthy cell is oxidizing, subtracting electrons, creating basically a positive, slightly acidic condition. If you poke one electrode into it, you disturb that, and you get a difference between the oxidizing region and the broken, not oxidizing region, which measures as a negative field. And there's 60 (or so) years of good biochemical background for why this happens. Daniel Mazia, for a long time at University of California, Berkeley, and then I think, of the Stanford Marine Biology Station at Monterey ... he, in the 50s, [in order] to understand the cell division process, was staining cells at different stages of growth. And he showed that the sulfhydryl groups, which are normally oxidized to a fair degree, causing proteins to stick to each other by covalent sulfur-sulfur bonds…(which requires that the hydrogens be removed from sulfhydryl groups. [For example,] Glutathione (GSH), if you oxidize two of them (take the hydrogens away), you get GSSG [glutathione disulfide]. And proteins are rich in sulfhydryl groups; if you take away the hydrogens, they stick together. [Then] if you put the hydrogen back (reduce the proteins), they become separated at that point, change their structure, and become more open and mobile)… he and his associates were showing that there is a tremendous increase in the reduced condition of very intense staining of sulfhydryl groups that appears at the beginning of cell division and disappears when the cell division is completed. And Szent-Györgyi was working on cells-like muscles and nerves through the 40’s and 50’s, and showing some very analogous things. His theory of muscle contraction was that it was powered electronically by the conduction of electrons through these semi-conducting proteins. And just by accident, in connection with estrogen metabolism and quinone physiology or biochemistry (that got Szent-Györgyi started on this), I was working along the estrogen side of the system in which estrogen shifts away from quinone

oxidative physiology to a reductive physiology. And, in extracting stuff from liver, I was looking for ubiquinone-related things; and I've found that vitamin E in a very pure form, with its more or less neutral sort of amber pale color, and ubiquinone, or other quinones, with their orange color, when I combined them, they turned instantly inky black. If you diluted it, it was a sort of a greenish black. And when I put dots of this black combination of the quinone and vitamin E on paper chromatography and passed a solvent up the paper, the vitamin E and the quinone moved at different speeds; and so, they separated. It wasn't a covalent bond that was causing this color change: the solvent pulled the vitamin E right away from the quinone, restoring the pale color of the original material. That's called a donor-acceptor bond, in which an electron momentarily leaves the vitamin E and moves over, for a very short time, to the quinone, but then snaps back because the vitamin E has developed a positive charge in the absence. And you get an oscillation of the electron, which acts like a system of double [covalent] bonds within most pigment molecules. And that oscillating electron, if strong enough to have a slight binding influence ... it's much weaker than a covalent bond because the electron isn't really taken up stably by the quinone. And Szent-Györgyi used a variety of these donors and acceptors. In my pair, it was ubiquinone and vitamin E. But he used ... he found many substances ... if they were close enough to each other in their electronegativity, they could form this kind of a colored bond. And he wondered why the liver is dark purple, blackish purple colored, when there's... if you try to extract anything colored from the liver, grinding it up in alcohol, you immediately get a white solid material with a slight tint (from things like vitamin A and ubiquinone). But he would say "here's the living liver in a very dark intensely pigment-like condition. When you kill it, it's immediately colorless". And he was suggesting that it's a donor-acceptor relationship between something and the protein, or maybe the donor and acceptor at different points on the protein, with the electron moving along the protein and being able to accept light and create the darkening effect. And he found that if he put in one of his… for example, a donor in a muscle preparation, nothing would happen. If he put in the acceptor substance in the muscle preparation, nothing happened. If he put in very unrelated electro-negativities, nothing happened. But if he put in a donor and acceptor pair with just the right [electronegativity] relationship to each other, the muscle contracted. And that was his argument that the muscle contraction is essentially an electronic process and that the living state such as in the liver involves this type of conductivity and light-absorbing property (but without contraction in the case of the liver).

DR: *You've written somewhere that a group was using the estrogen myths to verify the nitric oxide myths, then to verify the serotonin myths. They were using a series of myths to substantiate their claims. The whole NADH/NAD+ would go off the rails if you thought that NADH should be higher than NAD+; the whole view would be skewed.*

RP: Yea. And it extends all the way to…if the cancer cell and the nerve cell have this deficit or excess of electrons, then you're making the statement about how your electrometer is working, and even about how your redox measurement and pH measuring meters are working. It involves a misinterpretation all along the line; the electrode is misunderstood; the relationship between pH and redox is misunderstood. So, it's really…I've tried making the argument, a couple of times, to professors. And, for example, I said "If the pH meter is working by protons – hydrogen ions – in

fact diffusing through the piece of glass you call a membrane, why does it work when you fill it with mercury atoms? – Chuckles –

DR: *And they really liked that? Being challenged?*

RP: Not much. – Chuckles -

DR: *Szent-Györgyi wasn't a fringe character saying these things. He was getting a lot of things right. Why wasn't he taken seriously at the time? Was his work not conducive to making products?*

RP: Yea. The commercial level of science just couldn't do anything with him. And pretty much the same with Warburg. And I don't think Warburg really paid enough attention to Szent-Györgyi. He was a more practical, contrite person than Szent-Gyorgyi. But I think Szent-Györgyi was really on the right track: everything that he proposed practically was validated 30 or 40 years later.

DR: *I think in his book "The living state", he said that nature never gets rid of anything; it only builds on top of it. In an old interview, you said that serotonin might be a very old hormone. And then yesterday, Ii was reading that prolactin also was thought to be a pretty old hormone. And I was pretty intrigued when you said that originally about serotonin. Do you think of the hormones as having a layered effect in evolution?*

RP: Oh yea. And that's the problem with therapies: they forget that when they fix one layer, the organism can go above and below it in many other ways. If they're thinking in molecules acting locally on the receptor, they're forgetting the whole big picture of this electric state. An excess of electrons, for example, will activate hormones at all of these levels - the oldest and the newest - in a coordinated way. And so, where conventional drug therapy for any disease, including cancer, becomes infinitely complicated, the fact that the organism is coherent in Mae-Wan Ho's sense, makes the therapy basically, possibly coherent and very simple. Something like changing the environment in a coherent and appropriate direction rather than trying to, in a reductionist way, act on parts of the organism… If you change the polar, outside conditions, [get] the Vernadsky energy source in sync, then you're giving the organism a better opportunity to refine and maintain its coherence.

DR: *Do you look at the growth hormones and the ones that inhibit oxidative metabolism as the oldest? And then the ones that promote differentiation and oxidative metabolism as newer?*

RP: Yea. And I think the hormones are all of them, in a sense, they're used on an ad-hoc basis: whatever the organism has at hand, it will use. So, I think the healthy organism, in a healthy environment - in the Vernadsky sense: something that's making good energy available - in that condition, you hardly need your hormones; the flow of energy is the whole thing. And the way you use the energy, the proper application of your differentiated state, that has all of the functions that the hormones can be used for. And since the hormones all have some harmful side effects… like when the pituitary was removed from animals they lived several times longer, showing that largely their reproductive-related hormones were responsible for aging.

And if you can use the flow of energy as the organizing principle, then the movement of electrons forming water, and of oxygen, and of fuels such as sugars forming carbon dioxide, then the flow of carbon dioxide and water will be having the differentiating, structuring, hormone-like action.

DR: *I think, Karen asked you maybe a while ago in one of the 10 questions ... it was something like: Do you see ... is there like a necessity to aging in your (plight?) that you hadn't seen any evidence of that? Is this kind of Alexis Carrel's, the heart's mitochondria (or the cells) that just kept thumping? Until his lab closed down. Is that along the same lines of what you're talking about?*

RP: Yah. I think it's our particular environment, more specifically the temperature and oxygen pressure of our environment. The [low] temperatures makes many of the organisms produce unsaturated fat; but our brain development, to use the energy that's available, doesn't like polyunsaturated fats, [because] they oxidize and antagonize oxygen. They're contrary to the flow of energy from sugar to carbon dioxide. So, in this environment with relatively high oxygen pressure and very unstable fats, the process of living has a kind of a negative hormonal influence; it's giving the signals to take emergency measures. And those emergency measures don't let us realize the proper Vernadskian organism.

DR: *Do you think there's a time in a person's life that represents that ideal metabolic state? In our past, was this metabolic state realized? (versus this stress-ridden culture of stress and adaptive hormones).*

RP: People have observed that newborn humans and cows − the newborn calf has an essentially saturated fat brain − and have said:"This is dreadful that babies are born with an essential fatty acid deficiency in their brain". [chuckles]. But it happens that when you increase the unsaturated fats in the pregnant animal or human, the brain's smaller and less functional at birth. And in the healthy situations, where you're born with a saturated tissue, as you eat these environmental [unsaturated] fats, they are constantly slowing your metabolism, constantly having an estrogen-like effect, tending to reduce the differentiated cell, eventually turning everything into a sort of a fibrous lump. The ideal estate would be something that could be foreseen from, maybe, an early fetus. If you can keep the environment providing energy and carbon dioxide, and just the right amount of oxygen, but with fuels that weren't contaminated with unsaturated fats and heavy metals, then we could see what the proper trajectory is for a mammal-like [organism].

DR: *A lot of people are super interested in your take on antibiotics (generally the macrolides, the tetracyclines, and penicillin). They seem to cause diarrhea and gaz. How do you even know you might benefit from an antibiotic?*

RP: Experimenting is good. I was prejudiced against medicine; and so, I was reluctant to ever use such things. But once, [when] I was sick, the landlady gave me something; and I had this characteristic penicillin odor in my mouth and nose. And it went with a kind of euphoria. And I've always noticed that just about the time I can smell penicillin on my breath, there's this euphoric sense of well-being. And I think that means that before that, I was always in a slight state of stress and emergency

from whatever bacteria producing irritants and toxins. And just as soon as those stop producing the toxins, I would have this very pleasant, euphoric sensation.

DR: *I think you wrote in an e-mail to somebody that you had [this] sensation. I forget my [own] first few experiences; I was watching for that, as I was taking the penicillin, and it happened. And I was pretty intrigued by it. In the past, you've suggested 2 to 4 days of using penicillin, versus a longer dose of that. What was the rationale behind that?*

RP: I think it was eating a sandwich and mangos in Mexico. I got a very bad intestinal condition and [an] abscess on my jaw. And I realized there was a very quick connection between intestinal inflammation and oral health. Later, I knew a dentist at some of the conferences (orthomolecular meetings, and such), Earl (Clarey?), who no one seemed to pay any attention to it. He gave presentations on various … In his book, he said that he had stopped his very profitable practice treating periodontal disease with surgery. He said, now he just gives them a laxative and he doesn't have to do periodontal surgery [chuckles].

DR: *So, if the bowels aren't right, and there's something wrong with your teeth, that could be a big indicator?*

RP: Yea. And if you have a big intestinal…a massive, putrid material, it can take 2 or 3 days before moderate doses of penicillin can kill that off.

DR: *Do you have any confidence in any other current thyroid brands? Because Cynoplus and Cynomel aren't being sold anymore. Is there a good substitute out there?*

RP: For a while, in Mexico, when I wasn't able to get Cynoplus or Cytomel, I've found other brands that were regularly sold there. One was "Proloid S". And "Proloid" used to be the concentrated thyroglobuline – the colloid material – without the rest of the gland. And it was at least as good as the old Armour product. But then, like Armour created their Thyrolar, as a synthetic equivalent, Proloid created Proloid S. And I think that's still available. At least somewhere in the world. And Novothyral is another of the synthetic imitations, except it has a 5 to 1 ratio of T4 to T3, instead of the more ideal 4 to 1, or 3 to 1.

DR: *Do you know any replacement for Cytomel? T3-Pro (Thyroid T3) is frequently mentioned.*

RP: That's the Profound pharmaceuticals, I think?

DR: *Maybe.*

RP: I think that's what I've used for about a week. And it did feel pretty normal to me. So, I would guess that it's what they advertise it to be.

DR: *Synthetic versus desiccated; you would expect the desiccated version to work much slower than the synthetic one?*

RP: A little slower. 2 or 3 hours to digest.

DR: *Can you explain how you make your coffee? A lot of people are interested.*

RP: [chuckles]. Whatever is convenient. But usually filling a paper filter; sometimes a coffee sack. But currently, the little paper colons. When the water is getting hot, I start and moisten the coffee without really getting it very hot. And then, as the water gets hotter and hotter, I keep adding [coffee]. So, the first coffee that drips through is cool and very mild tasting (very little caffeine in it) but it doesn't evaporate or degrade some of the delicate aldehydes-type flavor molecules (supposedly, they are the most anti-oxidant part, and they are destroyed if you put the boiling water directly on to the grounds). So, I like to get some of the mild, low temperature extract for flavor, and then put a little of the fully boiling water at the very end, to get all the caffeine.

DR: *So you do boil it at the end?*

RP: Yea. Just the last half-cup or so of water.

DR: *At what temperature is the magnesium most readily available?*

RP: I think it comes out all along the way. I think it's loose. So, even if you soak it and make cold coffee, you're getting magnesium and the so-called anti-oxidants.

DR: *What would be the ratio for strong coffee for you? (the grounded one versus water like)*

RP: I've never weighted it. But a pound of coffee doesn't last very long, usually. [chuckles]

DR: *That's a big thing to your approach; you often say you're drinking 5 cups of coffee. It demonstrates you're very pro food, trying to get the most out of the easily accessible ones, versus eating tons of pills.*

RP: Yea. Partly, it's because all of the manufacturing processes. The industry has gone towards profit and cheapness. And Vitamin E is no longer anything like it was 70-80 years ago. The stuff I used in the lab that reacted with the ubiquinone to produce a black color, I've tried that with various more recent types of Vitamin E, and it didn't work. So, we know that they are taking out various different fractions from the vitamin E. And that lacks highly saturated fatty acids . I think [that's] a big part of why the old vitamin E, in the 1930's and 40's, was so much more therapeutic than the more recent vitamin E studies, that showed it's really nothing but an anti-oxidant that doesn't have any of those extremely therapeutic effects that it did 60 years ago.

DR: *Do you use Folgers coffee? Is that what you like?*

RP: No. There's a guy in town who scorches his own beans. And it's just whatever he has that tastes good.

DR: *So, you're not looking for anything specific (how they are grown, for example)?*

RP: Oh, it varies. Aluminum coffee is the worst.[chuckles]

DR: *Awesome, Ray. Could you talk about your newsletter and what you'll be working on?*

RP: Oh, well, [in] the next newsletter, I'll write about cancer. And probably some of this electronic stuff. The cancer industry, I think, is starting to realize some of the problems. There are people still saying "No; it's still the way it always was". But, I think it was last week in JAMA, there was an article on questioning whether so much emphasis on breast mammograms was really productive. And the prostate doctors in the 90's ... someone did a survey and asked these specialists / neurologists what they would do if they had prostate cancer themselves. And a majority of them said they wouldn't do anything. -[Chuckles] -
And there have been other parallel studies. But before that came out, quite a few doctors started letting their patients avoid surgery, radiation, and chemotherapy for the prostate cancer. Before that, in the 80's, the prostate specific antigen (PSA) was just being researched. And at that time, the mortality, I think, was 20 per 100,000 (population, per year). Then, they discovered the PSA and told everyone to have that measured. And they found lots of people with very high PSA and told them to have biopsies. And so, suddenly the diagnostic rate for prostate cancer surged hugely. But that isn't the important thing. By 1992, the death rate from prostate cancer increased 50% (to 30 per 100,000). In just about 10 years. So, the more diagnosis and treatment in that situation, really, very clearly… showed that the more medicine you have, the more deaths you have. And John Gofman, the radiation specialist, he did nationwide statistical studies, and showed that breast cancer and heart disease correspond very closely to the access to medicine. So that the rich area around Marin [County] in California, I think it was at that time, [had] the highest cancer mortality in the US. West Virginia was the lowest. [Chuckles]

DR: *Wasn't it Dr Hardin B. Jones* that went around the world and thought that if you just did nothing [medically], you'll live a longer and healthier life?*

> ***PS:** "Neither the timing nor the extent of treatment of the true malignancies has appreciably altered the average course of the disease. The possibility exists that treatment makes the average situation worse" Hardin B. Jones, PhD
> ("A Report on Cancer." Paper delivered to the ACS's 11th Annual Science Writers Conference, New Orleans, Mar. 7,1969)

RP: Yeah. And currently, Gershom Zajicek is saying something very similar. He has suggested that the tumor itself might be an ad-hoc organ trying to defend the body against whatever is the problem. For example, he showed studies where when a mole, or a melanoma was removed, suddenly it popped up all over his body. And knowing that sort of studies, a couple of times, doctors told me that I definitely had to have a biopsy of a big, ugly mole. And I was happening to be experimenting with DHEA at one time. And just after a doctor had mentioned that, and just two or three days after I had been fooling around with some DHEA, the mole swelled up like a Maraschino cherry and basically, ate itself up. And so, every time after that, when I

would get a diagnosable melanoma, [a] big, ugly, huge…- one thing was as big as a jumbo olive, in front of my ear -... And each time I got one of those, I would just put a little bit of either progesterone or DHEA and vitamin E on the skin near it, not touching it. And within a few days, those things would – sometimes, within hours − they would radically change. For example, a color would change from spotty blue and white to a nice tan color. Or the big black thing would start shrinking. And always, anywhere from one day to disappearing, to two weeks. The biggest, the one like a jumbo olive took almost two weeks. But the last little bit of it was like a gray/green little dried mushroom which fell off, leaving no scar.

DR: *That's it for me, Ray. Thank you so much! It's a total pleasure, thank you. I'll talk to you soon.*

RP: Ok, very good, thank you, bye.