

Empiricism vs. Rationalism in Medicine

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This paper discusses something that seems a bit on the abstract or theoretical side, but I think that the best fact is a good theory. If you are familiar with the theoretical basis of what you're doing, that is better than a lot of facts, some of which may not be facts at all.

I have to work in the theoretical area because I am not a physician. I don't treat patients, so I talk or write about what others are doing.

I became interested in the theory of medicine about 30 years ago when I first came into contact with homeopathy — because of sickness in my family, serious illness. The results seemed to be extremely good, but when I tried to present this information to my allopathic physician friends, they pooh-poohed it and laughed at me. I was curious why they were so dismissive of homeopathy, and that is what got me started on a lifetime research project.

I have written on the homeopathic-allopathic conflict, the meaning of "scientific method" in medicine, on AIDS and its relationship to syphilis, on the controlled clinical trial, on childhood vaccinations, and on medical history generally. My research led ultimately to the production of *Divided Legacy*, a four-volume history of medical ideas. The first three volumes were published in the 1970s, and the fourth volume, which deals with modern medical history, is in press now and will be coming out late this summer or early in the autumn.

What I want to discuss today is the relevance of this historical or theoretical research to nutritional medicine. I think that my ideas on the course of medical history and the nature of therapeutic theory will be of some value to those of you who work in nutritional medicine.

Fundamentally, what I have discovered — or rediscovered — is the existence of a conflict in therapeutics between what are called

the Empirical and the Rationalist philosophies.

I use the word "rediscovered" because, in fact, physicians were aware of this conflict up until the year 1800 or thereabouts, and medical histories written before that time discuss this conflict which dates back to Roman and Greek times.

But after the mid-nineteenth century, when medicine was taken over by technology, this primordial conflict was forgotten.

However, the opposition between these two ways of thinking about medicine continued, even though underground.

The Empirical and the Rationalist philosophies are two logical and consistent thought structures which are in all respects entirely antagonistic to one another. The great medical thinkers have belonged to one or the other of these two traditions. Minor thinkers, who are by definition less rigorous in their theorizing, have usually represented eclectic combinations of the two major traditions.

The greatest Empirical thinker was Samuel Hahnemann, the founder of homeopathy. He established a system which, as we know, continues to this day. However, since Hahnemann there have been others who are perhaps better known to you, such as, for instance, Louis Pasteur, Emil von Behring, or Elie Metchnikoff, the founders of bacteriology. These thinkers are also to be classified in the Empirical tradition.

The Empirical and Rationalist approaches to therapeutics can be exemplified in various therapeutic modalities. The thinkers I have just mentioned are well known for their contributions to pharmacological medicine and to immunology. But it is perfectly possible to practice nutritional medicine or osteopathy or chiropractic in an Empirical or a Rationalist way. These are basic thought-patterns in the human mind which are applicable to all human activities, not just to pharmacological medicine.

Some of the major Rationalist thinkers of modern times were: the French physiologist, Claude Bernard, who died in 1878; Robert

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Koch, a founder of bacteriology, and Paul Ehrlich, the founder of modern pharmacology. The medicine we today call "scientific" and which the homeopaths call "allopathic" represents Rationalism in a relatively pure form, whereas such "alternative" medical disciplines as homeopathy, classical osteopathy, chiropractic, acupuncture in its classical form, and undoubtedly Orthomolecular medicine, represent an Empirical way of going about therapeutics.

What is the difference between the two doctrines?

There are two particular factors which distinguish them from one another. Empiricism is vitalistic, whereas Rationalism is mechanistic in its approach to the living organism. And the Empirical doctrine tends always to individualization of treatment, whereas the Rationalist doctrine invariably views the individual patient as a member of a disease group, class, or entity and veers away from individualization.

The primordial relationship in medicine is the doctor sitting on one side of the desk and the patient on the other side of the desk, or the doctor standing by the bed and the patient lying in the bed, or whatever. The patient tells the doctor a lot of things, and the doctor can see more with his (or her) own eyes. Also various tests can be done to develop data from and about the patient. The question is: What does the physician do with these data once they are available?

The Empirical physicians viewed these data as possessing ultimate value in and for themselves. They did not attempt to penetrate beneath the surface, did not attempt to speculate about what was going on inside the patient's body, but used the symptoms as the data upon which to base diagnosis and treatment. In other words, they mistrusted anatomy and physiology as sources of medical knowledge — because anatomy and physiology are *general* and, as such, run counter to the Empirical principle of individualization. Whereas certain physiological and pathological processes occur in humans as a class, the individual presenting patient may or may not represent that particular class of patients. Every person is different from the average. The average is an abstraction. Every patient is different and is unique — this was always the strong con-

viction of the Empirical physicians.

Thus, the only truly reliable information is that developed about this individual patient. The physician is not allowed to say: You represent "Disease X," and we will treat you the way we always treat "Disease X."

This is simply a basic philosophical point of departure in the Empirical therapeutic doctrine.

A second philosophical conviction was (and is) the following: the living body, whether sick or healthy, is always reacting to whatever stresses impinge upon it from the environment.

Hence the Empirical school has always been vitalistic.

Furthermore, the mode of reaction is not predetermined. The organism will react in a purposive way to overcome the stress impinging upon it from the outside, and this reactive capacity is not determined by the physical structure of the body as expressed in its anatomy and its physiology. The body creates new modes of reaction in function of the challenge impinging upon it from the outside. In fact, the body can, as it were, create out of nothing (*ex nihilo*) a way of dealing with such an external stress.

This very dispute exists in immunology today. Antibodies are produced in function of the antigenic stress impinging from the environment. Modern medicine cannot explain how the organism can synthesize antibodies against millions of antigenic stimuli in the environment. Attempts have been made to explain this capacity in evolutionary terms, but the organism is seen to produce antibodies against antigens which have just been synthesized, i.e., which never existed in history. Hence the evolutionary explanation is inadequate.

The Empirical approach would be that the body is capable of responding creatively to any antigenic stress impinging upon it from the outside.

The evidence of this reaction is seen in the patient's symptoms. Hence they have to be regarded as beneficial phenomena, as signs of reaction, signs of an effort by the body to cure itself. The symptoms are not to be suppressed, but to be supported, strengthened, or promoted, because they represent a curative response. Hippocratic medicine had a theory — "coction," meaning "cooking" — to explain

these phenomena. The body copes with a disease stress or morbid influence by "cooking" it in order to make it, as it were, palatable, just as grain must first be cooked and rendered soft and edible before it can be consumed. The "coction" process ended in a "crisis" after which the patient either recovered or died.

This was their general theory of the meaning of illness.

The Greek and Roman Empirics treated patients with medicines which promoted the coction process — i.e., with a kind of "similar" medicine. For coughs they gave medicines which intensified the cough. For nausea they gave emetics. Diarrhea was treated with laxatives, etc. etc.

If we turn now to the Rationalist School, we see that these physicians regarded the patient's symptoms not as signs of reaction or as ultimate data of diagnosis, but rather as data which had to be further analyzed. The physician was not to limit himself merely to the observation of symptoms but had to apply logic to determine their "meaning," to know what was happening inside the body to produce these symptoms. Specifically, they wanted to determine and define the disease "cause" inside the body producing these symptoms.

So Rationalist physicians rejected the idea that the body is a reactive entity. Denying vitalism, they espoused a determinist and reductionist view of the body, seeing its material structure as determining its possible modes of behavior in sickness and health. In particular, they rejected the possibility that the body can react creatively to stress. They saw the patient's body as a passive object, the recipient of insults from the external environment. In a way which was never actually explained the external stress was seen as giving rise to an entity within the patient's body which they called the disease "cause." The patient's symptoms were interpreted as emanations of this disease "cause." Instead of viewing symptoms as signs of reaction, the Rationalist physicians adopted the opposite view. To them the symptoms were signs of a harmful morbid cause inside the body. Hence they thought it perfectly natural for the physician to eliminate or suppress these symptoms. They were much opposed to the Empirical "similar" remedy and instead used the concept of the "contrary" medicine, which nullified the symptoms and thus supposedly cured

the patient.

A very important point of difference between the two schools was over the classification of symptoms and diseases. Here, again, we run up against the Empirical stress on individualization of treatment vs. the Rationalist stress on treating the patient as a member of a disease class.

Every sick person presents a variety of different symptoms. Some of them resemble the symptoms of other patients (with this same, or a similar, condition). These were traditionally called "common" symptoms. Other symptoms of the individual patient will differ from those of every other patient with that same or similar condition, and these were traditionally called "peculiar" symptoms.

Rationalism and Empiricism took quite different approaches to the meaning and significance of "common" or "peculiar" symptoms. The Empirics stressed the "peculiar" symptoms of the patient as the most significant. They said: the fundamental coction process (manifested by the "common" symptoms) is the same in all patients; therefore the differences in the way coction is accomplished, how different patients go through the process of "cooking" the disease cause, as manifested by the "peculiar" symptoms, are significant for treatment.

I found a quotation, in an Empirical writing from about the second century A.D. (which has been overlooked by all other researchers), which illustrates this idea. The physician wrote: "What is seen in all cases is less significant than what is seen in a few cases. And what is seen in a few cases is less significant than what is found in a single case."

This, of course, is the opposite of how the Rationalists viewed the symptoms, or how the symptoms are viewed by "scientific medicine" today.

This approach to symptom analysis makes it very difficult to classify diseases into categories. If the "peculiar" symptoms of a given patient differ from those of all other patients, the concept of disease "class" loses its meaning altogether.

In fact, the Empirical School has always held that the number of "diseases" in the world is infinite. The homeopathic school states the same, as does classical acupuncture.

What the Empirical School discovered was the meaning of what we today call "holistic

medicine." It is by the peculiarities or idiosyncrasies of the individual patient that his "holism" is manifested. Everyone has two eyes, a nose, a mouth, a chin, etc. but the portrait-painter will always stress the ways in which the features of the person being painted — her eyes, her nose, her mouth — differ from those of everyone else in the world. It is these peculiar features of the individual which constitute the "likeness," i.e., his or her "wholeness".

This is an ancient, but at the same time very accurate and appropriate, understanding of the concept, "holistic." No better definition of "holism" has ever been given.

In contrast to the Empirical physicians, the Rationalist were interested in the "common" symptoms — for instance, of a patient with pneumonia — and these were the ones they wanted to treat. These were the symptoms, in their view, which pointed to the pneumonia "cause" in the patient's body. This "cause" was the same for every patient. The Rationalists were inexorably drawn to viewing the patient as representing a "class" of disease.

Consequently, they viewed the number of possible "diseases" in the world as relatively restricted. Diseases could not be more numerous than the number of "causes."

A third school of medicine in the ancient world, Methodism, represented an extreme development of this aspect of Rationalism. The Methodists recognized only two, or three, possible disease classes in the world. In one class the circulation of the blood through the body's pores (we would say today, "capillaries") was restricted; in the second class the pores were too loose and the blood flowed too rapidly. And there was a mixed class in which the patient's pores were sometimes too constricted and sometimes too loose.

Methodism was the logical reduction of the Rationalist position. If there were only three types of diseases, the physician only needed three kinds of remedies. This greatly simplified medicine and made practice very easy. In fact, one Methodist physician declared he could treat the whole population of Rome by himself. He died rich, but his patients died poor and soon.

The conflict between Empiricism and Rationalism dominates all discussion of medical issues. In any major controversy one side will always reflect the Empirical position and the

other side the Rationalist position. This is found on the wide scale, as in the nineteenth-century conflict between homeopathy and allopathy, and more narrowly — *within* allopathy and *within* homeopathy, also within chiropractic and within osteopathy.

The history of medicine is best understood or interpreted as a cyclical movement or oscillation back and forth between the two poles of thought.

In the early nineteenth century American medicine was extremely Rationalist, following the systems of the Scotsmen William Cullen and John Brown and their American disciple (and signer of the Declaration of Independence), Benjamin Rush, who was a professor of medicine at the University of Pennsylvania for forty years and by himself trained a couple of generations of American physicians.

This led to a reaction in the 1820s with the emergence and rise of botanical medicine, and, in the 1830s, with the spread of homeopathy. The latter phenomenon was particularly irksome to the allopaths because the homeopaths (in contrast to the botanical prescribes) were nearly all drawn from among the ranks of the licensed allopathic physicians themselves. Rationalist medicine could not contain this opposition within itself and consequently split in two: the American Institute of Homeopathy was founded in 1844, and, in response, the American Medical Association was organized in 1846. Its sole purpose was to draw a line between the therapeutic disciplines of homeopathy and allopathy, and the prohibition against homeopathy was stated explicitly in the AMA "Code of Ethics."

This division remained in place until 1903 when the AMA and the state and local allopathic medical societies decided to alter the Code of Ethics and permit homeopaths to join the allopathic societies.

The reason behind this move was the perceived weakness of homeopathy. During the period 1846 to 1903 it have grown steadily and ultimately encompassed fifteen percent of all American physicians. Therefore it was also very powerful politically, and when the allopathic profession in the 1890s tried to persuade state legislatures to pass medical licensing laws, the latter refused to do so until such bills were also supported by the homeopaths.

But the Empirical-Rationalist dualism was also at work *within* homeopathy. The former were those who adhered to Hahnemann's original and strictly Empirical formulation of the rules of homeopathic practice. The latter, constituting the majority of homeopaths, rejected Hahnemann's original formulation and preferred a doctrine modelled along the Rationalist lines of the prevailing allopathic therapeutic mode.

These latter physicians were anxious to accept the AMA's invitation to join the allopathic medical societies, where they were effectively stifled and barred from speaking about homeopathy. This led in a short time to the collapse of homeopathy as an organized movement in medicine.

After 1903 allopathy flourished as never before, bolstered in the 1940s and 1950s by the antibiotic revolution which promised so much and did indeed deliver some benefits. But, as had happened in the early 1800s, the allopathic dominance at length generated its own internal opposition in the form of the "alternative health movement" of the 1960s and later. Since these watershed years homeopathy, chiropractic, acupuncture, and several nutritional modalities have registered astonishing growth and public acceptance.

So the Empirical-Rationalist dichotomy is once again being played out on the broad national scale in the United States and many European countries.

But in the last hundred years Rationalism has also generated a number of Empirical departures *within its own ranks*, specifically, in immunology and pharmacology.

Empirical *immunology* within Rationalism can be divided into (1) preventive vaccination, (2) therapeutic vaccination, and (3) the treatment of allergy with immunologic techniques. Empirical *pharmacology* within Rationalism means using as medicines substances which rely for their efficacy upon stimulating the body's intrinsic reactive capacities.

Let us look first at immunology.

The use of preventive vaccination commenced with Pasteur's discovery in 1880 that an "attenuated" culture of a virulent microbe can be used to "vaccinate" susceptible individuals and thus prevent them from being infected.

In the fourth volume of *Divided Legacy* I have given evidence in favor of the idea that

Pasteur hit upon the idea of "attenuating" virulent cultures by observing the existing 500 or so French homeopaths "attenuating" their remedies through the process of serial dilution.

Major diseases brought under control by preventive vaccination at the turn of the century were anthrax, diphtheria, and tetanus.

Therapeutic vaccination, the practice of giving the vaccine to a person already sick with the disease, started with Pasteur's use of rabies vaccination in persons bitten by rabid dogs and with the use of Tuberculin by Robert Koch in 1890 as a treatment for tuberculosis. But *Tuberculinum* had been a homeopathic remedy for at least ten years prior to 1890, and Koch seems clearly to have taken this idea over from homeopathy.

But he did not appreciate the importance of lowering the doses and adjusting them to the individual patient (i.e., individualization). He gave Tuberculin in tincture to his patients and repeated the dose every day for weeks at a time, causing excessively violent reactions and many thousands of deaths.

The scandal was so great that the great Koch's reputation was almost ruined, and for ten years he had to stay outside Germany engaged in research trips to South Africa and the orient. Tuberculin came back into allopathic use in the early 1900s once it was realized that Koch's doses had been too large. When the dose was lowered to the level of the homeopathic "infinitesimal," Tuberculin was found to be remarkably effective in tuberculosis and other diseases, and it remained a part of allopathic practice until the mid-twentieth century. In fact, it is still in use today.

Another disease treated with curative vaccines was diphtheria. Von Behring's "serum therapy" in this disease was a major advance in public health.

In England, Almroth Wright during the decades from 1900 to 1940, developed therapeutic vaccines to a high degree of efficacy in such diseases as arthritis, pneumonia, streptococcal and staphylococcal infections, boils, typhoid, typhus, tuberculosis, whooping cough, erysipelas, and another 50 or so different conditions.

These pioneers of immunology were in many cases aware of the connection with homeopathy. Von Behring recognized this relationship and was not loath to pay compli-

ments to Hahnemann and the homeopathic school, even though this made his professorial life difficult at times. Almroth Wright, who has a good friend of Sir John Weir, England's leading homeopath of the first half of the 20th century, was also constrained at times to recognize the relationship between homeopathy and his own procedures. On the other hand, Koch never admitted any such relationship in respect of Tuberculin; it is my opinion that his reluctance to reduce the doses of Tuberculin to the range in which they were sage to use was due to his fear of being branded a homeopathic sympathizer.

Many other preventive vaccines were developed in the first half of the 20th century: BCG for tuberculosis, vaccines for yellow fever, cholera, plague, and, last but not least, against the diseases of childhood: poliomyelitis, whooping cough, measles, mumps, German measles (rubella), and others.

In their use of the "similar" medicine these procedures are akin to homeopathy. But in one major respect they have not followed the homeopathic procedure: no effort is made to *individualize*. This is especially true of vaccines against the disease of childhood (whooping cough, measles, mumps) which are prescribed across the board with no effort to check out beforehand whether the child will react violently or not. The outcome has been a major plague of adverse reactions to these vaccines — about which I have written extensively.

Almroth Wright, who developed therapeutic vaccination to a high level of efficacy, did make a major effort to individualize. But his followers were not willing to invest the same time and effort, and their results were less good than his own.

From this my colleagues in the medical history fraternity have mistakenly concluded that Wright himself did not get good results and that therapeutic vaccination was all a myth.

This only goes to show that the Empirical idea of individualization is a doctrinal point which is very difficult for allopathic (Rationalist) thinkers to accept.

The area of allergy and its treatment was another Empirical departure within allopathy. It came into existence just before World War I, but the first discovery of rag-weed allergy was made by a British homeopathic physi-

cian, Charles Blackley, in the 1870s and published in the *British Journal of Homoeopathy*. The field of allergy/allergology, predicated on the idea of the vital reactivity of the organism and its hypersensitivity to various environmental stresses, was for decades not well regarded within allopathy, which always prefers to view the patient as passive and non-reactive. But when the existence of allergic states was at length recognized, the allopathic profession took two opposed approaches to treatment. The Rationalizing approach (known as "clinical immunology") calls for suppression of the organism's reactivity using the *contrary* medicine: adrenalin, corticosteroids and other suppressive drugs. The Empirical approach, called "clinical ecology," urges treatment with the similar medicine (the provocation-neutralizing technique), namely, a dose of the same substance in a highly dilute form to provoke a reaction and thus to lessen the patient's sensitivity.

The clinical immunologists criticize the use of the provocation-neutralizing technique as too labor-intensive and time-consuming, i.e., as demanding too high a degree of *individualization*.

Modern allopathy also contains a strong undercurrent of Empirical pharmacology — medicines which function as similars and are used to stimulate the reactivity of the patient's organism. These medicines, as I have shown in many writings, were often taken from the homeopathic school, even though these borrowings were usually unacknowledged.

In the first half of the 20th century the allopathic texts mention: aconite, arnica, actaea racemosa, agaricus muscarius, arseni-cum, aurum metallicum, berberis, hydrastis canadensis, veratrum album, and dozens of others which were used according to rather crude homeopathic indications.

In the second half of the century pharmacology came increasingly under the influence of the allopathic pharmaceutical manufacturing industry, but such medicines remained in common allopathic use even so — often with the note that the "mechanism of action" remains unknown. These would include: belladonna, coffee and caffeine for headaches, ergot for headache (the OTC drug Cafergot), coffee for hyperactivity in juveniles, lobelia and stramonium for asthma (the OTC drug Asthmador), nitroglycerine for angina

pectoris, opium and its derivatives for headaches, botulinum poison for strabismus and other visual disturbances, platinum (Cisplatin, platinol) for testicular cancer, cobra toxin in heart conditions and eye diseases, krait venom in myasthenia gravis, rattlesnake venom in epilepsy, honey-bee venom in arthritis, gold salts in rheumatism, quinidine in heart conditions, etc. etc.

Often these medicines are criticized as dangerous because of the closeness of the therapeutic and toxic doses. This is quite natural in the case of medicines which operate by the principle of similarity. But since it means that the dose has to be adjusted to the patient, i.e., *individualized*, allopaths often prefer to discard this procedure, as demanding too great an input of time and effort.

This short survey of medical history gives rise to a final puzzle: how do we define "scientific medicine"? Which of the two doctrines is medical science and which is sectarianism?

In the conflict between Empiricism and Rationalism, between homeopathy and allopathy, between clinical ecology and clinical immunology, we see a clash between the Empirical/homeopathic view that the physician deals with individuals and the Rationalist/allopathic view that the physician deals with disease classes or disease entities. To the first group "science" means giving to the patient precisely what he or she needs. To the second "science" means prescribing the medicine which has been developed for that "disease" class or category.

It is not difficult to conclude that the first is truly scientific while the second is not. The therapeutics which gives to each patient precisely what that patient needs must be preferred over the therapeutics which treats each patient only as a member of a class. Therefore, it must be considered "scientific."

But this conclusion puts us in an awkward position. For the medicine which we define as "unscientific" — i.e., allopathy — has very much the upper hand in society today, while the Empirical disciplines, although on the rise, are still very much in the minority.

If one gives this a little thought, however, it is perfectly reasonable. Practicing a scientific form of medicine such as homeopathy is more demanding and involves more care and work than

practicing a medicine which is unscientific. The majority of physicians, like the majority of people in every profession and occupation, prefer to avoid hard work whenever they can.

What does this all mean for nutritional medicine? I think that nutritional medicine, especially in its Orthomolecular form, must be identified with the Empirical side of the spectrum, essentially by virtue of its stress on the uniqueness of the individual patient. Roger Williams, for instance, has written that each patient is unique, each has his or her own set of nutritional requirements, each differs from every other.

And, as Dr. Hoffer has told me, the other nutritionists disliked Williams for this, going so far as to ban his books, putting them on a sort of *Index Librorum prohibitorum* for nutritionists.

The stress on individualization gets very much under the skin of medical Rationalists, who simply cannot accept the idea that each patient is different from all the rest. So they put the books of one of the most distinguished nutritionists of the 20th century on the list of prohibited readings!

A second parallel between nutritional medicine and Empiricism is that nutritional medicine, especially in its Orthomolecular version, takes a very generous approach to the number of possible medicines in the world, i.e., to the number of possible nutritional remedies.

Here at this very meeting I have heard considerable discussion of the conflict between nutritionists' discoveries of new uses for various substances and the medical establishment's refusal to recognize these new uses. Our own beloved Food and Drug Administration has become notorious for initially rejecting nutritional claims — stating that there is no known use for some new nutritional substance and even wanting to put the discoverers and proponents of such substances in jail — and then, ten years later, changing its mind and recognizing the discovery after all.

The people who do the actual work on new substances represent the Empirical side of nutritional science, who are open to new vitamins, new medicines, new ideas.

A final parallel would be that nutritional medicine, like the Empirical therapeutic philosophy generally, always strives to promote

the body's own self-healing efforts rather than administering substances which suppress these efforts.

For these three reasons Orthomolecular medicine falls, in my opinion, within the Empirical paradigm and differs greatly from the Rationalist view of nutrition: that there is a limited number of necessary nutritional substances and that patients must be viewed as members of nutritional disease classes (scurvy, beri-beri, pellagra, etc.).

Now, what is the value of this knowledge? Can it be useful to you in your practice or your daily lives? This question I cannot answer just yet, but I could suggest that there are some advantages to knowing the historical antecedents of Orthomolecular medicine.

In general, it is a good idea to know where you came from, if only because it will tell you who your enemies are and where you are going in the future. The question was asked this morning why allopathic physicians act the way they do, why they are so stubborn, why so unwilling to receive new knowledge. Is it a built-in feature? Do they have low IQs? Why do they behave that way?

The reason is that they believe as strongly in the Rationalist paradigm as the rest of us do in the Empirical paradigm. If you tell one of these doctors that every patient is different from every other one, he will think you are a little screwy. Of course, he will say, there is a certain biological diversity, but what is important is what these patients all have in common. And that is that they all need X number of grams of vitamin C every week, etc. etc. If you question that element of belief, they become upset and feel threatened. That is one reason why they are so reluctant to take in new knowledge from the Empirical side of the spectrum.

This Rationalist way of thinking is very congruent with the overall structure of thought in

the late twentieth century. We think in engineering terms, in causes and effects. Hence these physicians equate "science" with knowledge of mechanisms of action. If an Orthomolecular nutritionist announces: we have observed this vitamin's effect and want to use it even though we do not understand its mechanism, they do not recognize this as "scientific."

Empiricism has always considered carefully controlled observation to be reliable knowledge. And, as I stated at the outset, it rejects as a matter of principle any excessively elaborate knowledge of the internal workings of the organism. Because, while one can know such mechanisms in general, one can never know whether such knowledge is true for a single concrete individual.

It would be necessary to perform an autopsy on each patient, and most patients are unwilling to be autopsied merely to promote the advancement of nutritional understanding.

Finally, I would say that this kind of knowledge can be of political use to the Orthomolecular movement in teaching you who your potential allies are, and who your enemies also are. And this, I think, will be of use in the future in picking your way through the minefield which always awaits those who want to practice a truly scientific, i.e., truly Empirical medicine.

Harris L. Coulter, Ph.D., is the author of Divided Legacy: A History of the Schism in Medical Thought. Volume I. The Patterns Emerge: Hippocrates to Paracelsus (580 pages); Volume II. The Origins of Modern Western Medicine: J. B. Van Helmont to Claude Bernard (785 pages); Volume III. The Conflict Between Homeopathy and the American Medical Association (550 pages); Volume IV. Twentieth-Century Medicine: The Bacteriological Era (790 pages). Washington, D.C.: Center for Empirical Medicine, 1973, 1975, 1977, 1994.