A Few Facts On
THE LIFE AND MEDICAL RESEARCH
Of
WILLIAM F. KOCH, B.A., M.A., Ph.D., M.D.

Dr. William F. Koch was born on April 6, 1885, one of ten children to German immigrants to the United States. He was not just the average high school student. At the time he graduated from high school in Detroit, Michigan in 1905, he was an awarded a six-year competitive National Scholarship to the University of Chicago. A Detroit Newspaper showed his picture with the following article:

"DETROIT BOY WINS CHICAGO UNIVERSITY SCHOLARSHIP"

> "William Koch Takes Highest Stand In Examination To Which Students from 25 High Schools Competed." "William Koch, a Detroit boy has been taking a post-graduate course at the Eastern High School, won the six years" scholarship offered by the Chicago University in competitive examination of students from 25 high schools of the country. Young Koch is about 19 years of age and is a graduate from the Field school. He finished his course in the Eastern High last January, his postgraduate course followed. During his vacations and Saturdays he assisted at the store on Townsend and St. Paul Ave, belonging to his mother, with whom he lives.
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> "Should the work of young Koch prove satisfactory in the "Rockefeller college" he will have an opportunity to become a member of the faculty at the completion of his studies there, but at present his ambition is to become a physician.

This honor came to Dr. Koch just two years after his father, Martin Koch, died from gastric carcinoma. Martin Koch had suffered from this cancer for about one year prior to his death. The terribleness of this disease had a great emotional effect on Dr. Koch, as a young boy. Thus he wanted to do something about the cancer problem and find an answer to it. He determined for himself that he would have to become a medical research scientist and a physician first to accomplish his goal.

Although Dr. Koch had been awarded this wonderful six-year scholarship to the University of Chicago, in 1905, he elected to go to the University of Michigan instead because he believed that the U. of M. would offer him the most demanding curriculum in the area of his interest; medical and cancer research. While at the U. of M. he studied chemistry under professor Moses Gomberg, Ph.D. (1866-1947), father of the chemistry of free radicals. Dr. Koch received his B.A. in 1909, M.A. in 1910, and Ph.D. in 1916 from the University of Michigan. While in graduate school and conducting his research on the function of parathyroid glands he also attended the medical school at the U. of M. Also, while at the U. of M. (1910 to 1914) Dr. Koch was an instructor in Histology and Embryology to the medical students for Professor Huber and while Dr. Huber was on a leave of absence he substituted for Dr. Huber. Also, during these years Dr. Koch was personally taught the principals of Homeopathic Medicine by Dr. A. W. Dewey,

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Professor of Materia Medica and Therapeutics, University of Michigan College of Homeopathy. Dr. Dewey wrote the following in 1926:[1]

> Dr. Koch was a member of my family beginning in 1907. He lived with me during his collegiate years in the University of Michigan. He was in my home when he took his B.A., M.A., and Ph.D. degrees. He was with us when he served as instructor on Histology, Physiology and Embryology in the University.
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> My wife was a mother to him, my son a comrade and I was a sort of medical father to him, perhaps of the 'Poor Papa' kind. But in our affections he remains and always will remain a member of our family.

In 1914,[2] Dr. Koch was appointed Professor of Physiology at the Detroit College of Medicine and taught physiology and physiological chemistry to the medical students. On August 22, 1918, after he had received his medical degree from the Detroit College of Medicine in June of 1918, he was appointed the Chairman of that Department. While at the Detroit College of Medicine, Dr. Koch had available to him a small laboratory to conduct and continue his personal medical and cancer research. In July of 1919, Dr. Koch published his first cancer research paper, "*A New And Successful Treatment And Diagnosis Of Cancer*" in the Detroit Medical Journal, Vol. No. 7, p 244-248. This was a preliminary report to the local medical profession on his cancer research that had been conducted with the help and cooperation of several local oncologists.

The Scientific Medical Research of William F. Koch, Ph.D., M.D.[3]

Dr. Koch's medical research was from a physiologist's point of view. This research started with his studies at the University of Michigan and it opened the door to his understanding of the basic causes of disease conditions and how the body fights off the toxic state caused by disease producing organisms and viruses. Through this research, Dr. Koch was able to develop his theories on how the chemistry of the natural immune system of the body worked. He then applied these theories in the treatment of different disease conditions by working with the body's natural immune system, not against it as so many medications do.

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[1] The Koch Cancer Treatment, Bulletin of the Koch Cancer Foundation, October 1926, p. 3.

[2] (a) On June 28, 1911, Dr. Olin Templin, Dean of the College of Liberal Arts and Sciences, University of Kansas, wrote to Dr. Koch about an opening at the University as an Associate Professor-ship to teach the medical students physiology. (b) On May 4, 1914, Dr. A. B. Macallium, University of Toronto, invited Dr. Koch to come to the University of Toronto to work under him and to do medical research. He wrote: "I may add that the facilities for research are excellent, and the material therefore is supplied gratis." Dr. Koch did not accept either offer. In 1914, Dr. Koch was appointed Professor of Physiology at the Detroit College of Medicine where he had a small laboratory, that he could use, to continue his medical research. (note: Insulin was discovered at the University of Toronto during the 1920's by Dr. Banting. Had Dr. Koch gone to the University of Toronto and had he completed his cancer research there, the doctors in power at the American Medical Association would not have been in a position to try to take over his discoveries and medical research in 1919, as they had tried to do. He would have been another Dr. Banting.)

[3] Starting in 1920, the editors of The Journal of The American Medical Association used their power to prevent all A.M.A. approved journals, including the Journal of The American Medical Journals Association, from publishing any of Dr. Koch's medical research papers. They also denied all favorable information about his research, his treatment for cancer and its allied diseases, and the A.M.A. punished all medical doctors that were caught using his medications, etc. In fact the J.A.M.A. and other A.M.A. publications did everything its editors could do to destroy Dr. Koch and his medical research and to deny the American public the availability of his medications.

Initially Dr. Koch's research interest focused on the function of the parathyroid glands. He wrote several papers on this subject concluding that the *tetany*, which followed the removal of the parathyroid glands, was not due to a disturbance of the calcium metabolism but instead r*esulted from an accumulation of certain toxic substances in the body. He also observed that the urine* of the animals without parathyroid glands *carried large amounts of lactic acid*, which meant that the oxidation process was badly handicapped by the substances that were produced in the parathyroidectomized animals. *These substances had blocked the normal tissue oxidation process*. This turned out to be a momentous discovery, which paved the way for his original cancer research. By studying the tissues that survived the longest, he found that the common feature was the presence of the di-carbonyl groups.[4] This discovery led to a study of the tissue oxidation process and its relationship to cancer. Building on these discoveries, Dr. Koch began to study how the body's natural immune system functions in fighting off other disease conditions. As a result he developed his theories on the chemistry of natural immunity, a revolutionary approach to the understanding of human diseases.

Early Research Papers By Dr. Koch

The following is a very short overview of the development of Dr. Koch's medical theories from the point of view of a physiologist. It is a brief review of the evolution of his thinking and how his theories evolved from his original research on the parathyroidectomized animals at the University of Michigan.

Dr. Koch's first three research papers were written while at the University of Michigan when he was investigating the functions of the parathyroid glands. These papers included: 1) *On The Occurrence Of Methyl Guanidine In The Urine Of Parathyroidectomized Animals,*[5] 2) *Toxic Bases In The Urine Of Parathyroidectomized Dogs*,[6] and 3) *The Physiology Of The Parathyroid Glands*,[7] It was also at this time that Dr. Koch started his original cancer research. *Tetany And The Parathyroid Glands*,[8] was his fourth research paper on the parathyroid glands that was written at that time he was Professor of Physiology and Physiological Chemistry at the Detroit College of Medicine.

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[4] "The transformed proteins have very special properties, like electric conductivity. **It is here in the electronic dimension that something is out of order in cancer. Carbonyls arrest cell division and my laboratory was led to the conclusion that it is still the carbonyls which arrest cell proliferation and it is the carbonyl which make the cell return to the resting state, after it completed division. If the carbonyls are missing, proliferation has to go on, and cancer results. We were not the first to be led to such a conclusion. A decade ago a very intuitive researcher, W. F. Koch, came to the same conclusion.** *"The Search For A Natural Cure For Cancer"* Albert Szent-Gyorgyi, Ph.D., M.D., N.L., 1974.

[5] Journal of Biological Chemistry, Vol. XII, No. 3, 1912.

[6] Journal of Biological Chemistry, Vol. XV, No, 1, 1913.

[7] The Journal Of Laboratory And Clinical Medicine, Vol. No. 5, Aug. 14, 1916.

[8] Medicine and Surgery, Jan. 1918. (This paper had been requested by the editor of this journal for their January 1918 Special Endocrinology Edition.)

In 1913, it was Dr. Koch's second publication that alerted the interest of the editor of the Journal of the American Medical Association that he had come upon a new approach to the understanding of the function of the parathyroid glands and their relationship to toxicity and to disease. In the J.A.M.A.'s editorial *Chemical Consequences of the Removal of the Parathyroid Glands*, Sept. 27, 1913, Vol. LXI, No. 13, p. 1049, the editor reported on the importance of this research. This editorial concluded with this statement:

> "The outcome of the discovery of the toxic bases in the urine is the suggestion of Koch that the parathyroid secretion appears to be concerned also with anabolic processes related to the synthesis of nuclear contents. Whether or not such a hypothesis can be further substantiated remains to be seen; in any event the *final successful isolation of recognized toxic chemical products of traceable origin has paved the way to definite conceptions and specific lines of inquiry where hitherto the explanations have been vague and the outlook unpromising."*

This parathyroid research of Dr. Koch was subsequently internationally recognized and confirmed by the research of Professor D. Noel Paton, who cited Dr. Koch's research, three years later. In *Part IV, The Parathyroids: -Tetania Parathyreopriva*, Professor Paton wrote:

> *Lastly, the observation of Koch that methyl-guanidin appears in the urine of dogs after parathyroidectomy seemed also to hint at the connection of such compounds with the onset of tetany.* In Professor Paton's conclusions to Part IV, he said: *The symptoms of tetania parathyreopriva are not primarily due to decrease in any constituent of the body, e.g. calcium ions*; and *The Symptoms are identical with those produced by the administration of salts of guanidin and methyl-guanidin.* In Part V, Professor Paton goes on to say: *W. F. Koch in 1912 and 1913 recorded the presence of increased amounts of guanidin, methyl- and dimethyl-guanidin, along with other bases in the urine of dogs after parathyroidectomy.* At the end of Part V, in his conclusion he stated: *There is a marked increase in the amount of guanidin and methyl-guanidin in the blood and urine of dogs after removal of the parathyroids and in the urine of children suffering from idiopathic tetany.* (Department of Physiology, University of Glasgow - September 11th, 1916).

Subsequently, Professor Paton received the Triennial Prize in Medicine from Harvard University for his research on the function of the parathyroid glands in 1918.

Professor Meyer Bodansky, Ph.D., in his textbook *Introduction To Physiological Chemistry* (1927) p. 327 wrote:

> *Certain physiologists (Koch, Noel Paton and others) have attributed the symptoms of parathyroid tetany to guanidine or methyl-guanidine, which Koch found to be present in the urine of parathyroidectomized dogs. According to this view, the parathyroids control in some way the metabolism of guanidine. In the normal animal, guanidine is presumably detoxified by these glands.*

A New And Successful Treatment And Diagnosis Of Cancer, was Dr. Koch's first published paper[9] on his original cancer research. This was a preliminary cancer research report to the local medical profession only. At the time of this report, Dr. Koch was seeking the full cooperation of the medical profession in order for him to set up a scientific clinical cancer research testing program for his method of treating cancer in the Detroit area. With the local medical professions full cooperation he wanted to be able to treat several hundred terminal cancer cases with his new method of treatment and then make a full disclosure of the results. This was part of his overall scientific cancer research program that had started when he was at the University of Michigan. In 1919, Dr. Koch had the full support and cooperation of about fifteen oncologists in the Detroit area who permitted Dr. Koch to treat some of their terminal cancer patients.[10] He closed his cancer research paper with the following paragraph:

> I believe that you will appreciate the importance of this cancer work and believe that you are all interested in my request for co-operation. I wish to work up very fully several hundred cases for final report. I shall be glad to interview anyone regarding this matter, but **for reasons that you will appreciate, wish only cases that have not received Ray treatments**.

A NEW AND SUCCESSFUL TREATMENT AND DIAGNOSIS OF CANCER[11]

By WILLIAM F. KOCH, Ph.D., M.D., Professor of Physiology, Detroit College of Medicine and Surgery; Research Pathologist to the Woman's Hospital; Director of Laboratory to the Jefferson Clinic

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Statistics show that there are over 200,000 cases of cancer in this country alone. The mortality is one out of eight for females, and one out of twelve for males, in spite of the great advances in diagnosis, surgery, and in the use of X-ray and Radium. It is hardly to be wondered at that the successful treatment of this disease should be sought in some other field of endeavor, as chemistry, for instance. I am glad to be able to announce that such a search has

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[9] Detroit Medical Journal, July 1919, Vol. No. 7, p 244-248. A more complete paper on this early research by Dr. Koch was published in the Medical Record, Oct. 30, 1920. Copies of both research papers are attached.

[10] Dr. Koch's cancer research predates the establishment of the Jackson Memorial Laboratory, circa 1929, and the subsequent availability of standard experimental mice for cancer research. Thus, his cancer clinical research was limited to a few "terminal cancer patients" who had no hope for recovery from this dreaded disease and who were willing to have Dr. Koch's experimental medications. In Kare Rader's book, *Making Mice,* she reports (page 132) on a request in January 1932 by Remert Korteweg, a Dutch cancer researcher, who contacted Jackson Memorial Laboratory about supplying Dr. Maisin with some of his cancer mice for Maisin's cancer research. Dr. C. C. Little, the Director of the Jackson Memorial Research Laboratory, responded effusively that he would be delighted to have Dr. Maisin be supplied with his cancer research mice. This is the same Dr. Maisin, in December of 1934 -1935 conducted cancer and other medical research with two of Dr. Koch's medication. This medical research continued and their results were reported in European and British Medical Journals until Dr. Maisin's Research Laboratory was destroyed during World War II. The American Medical Association and the American Cancer Society tried to stop this Koch-Maisin medical and cancer research prior to the war without success.

[11] A copy of A NEW AND SUCCESSFUL TREATMENT AND DIAGNOSIS OF CANCER is enclosed.

not been barren, and that indeed a number of inoperable cancer cases have already been clinically cured through a bio-chemical treatment with which a fair portion of the Detroit Profession is now familiar.

It is the purpose of this paper to explain briefly the history and principle of this treatment in order to engage interest and co-operation in this very necessary work.

In 1912 and 1913 (I), I reported the occurrence of the toxic quantities of guanidine, methyl-guanidine and other alkylated guanidines in the urines of parathyroidectomized dogs, and concluded that these substances were responsible for the symptoms and death of such animals. In 1917 (II), this work was amply confirmed at the University if Glasgow. In the meantime, I was able to isolate from parathyroidectomized dogs' urines the precursor of the quanidines, namely, methyl cyanamide. (III), This substance is formed by other body cells than those of the parathyroid glands after parathyroidectomy quite quickly combines the amino group liberated in the metabolism of amino-acids and thus becomes a quanidine.

I was never able to isolate quanidine from any normal tissue or unputrified protein. So it was presumable that whatever quanidine was formed in the body had its origin in a cyanamide. Now by preparing the protein of the various living organs so as to kill immediately all the ferments, dry it, and free it from all fats, those groups, which are metabolically active, are preserved for study. And by applying a certain chemical compound which readily binds the cyanamide group, it appeared that all normal tissue proteids contained this group. On testing cancer proteid, however, a peculiar behavior was observed which differentiates cancer and normal protein.

This substance when purified, taken up in water and immediately injected subcutaneously into a cancer patient, causes practically no local reaction; but instead, after about 24 hours, a very decided focal reaction takes place. Wherever the cancer tissue may be, its' cells are killed, their ionic concentration increases, the osmotic pressure increases, they take up water, swell and disintegrate. The swelling causes pain and the absorbed, disintegrated products are oxidized causing fever.

Those two things, focal pain and fever, constitute a reaction which lasts all the way from 6 to 48 hours, depending upon the amount of cancer tissue killed, and of course this depends upon the quantity of substance injected. Such a reaction occurs only in cancer cases and only in the presence of cancer tissue. After the cancer tissue has disappeared, no more reaction can be elicited, no matter how large an injection is given, an important diagnostic aid. The specificity of the substance for cancer is evidenced by the fact that while giving these injections in rapid succession (that is daily or every two days for a period of five weeks), a blood count will rise from 2,850,000 to 4,600,000 red cells and the haemeglobin from 37% to 82%. Thus the delicate red cells are not injured. At the same time a mass of cancer tissue, the size of a large cabbage, will entirely disappear, and all the signs and symptoms of the particular cancer will disappear with it, function return, and the patient become clinically cured.

Stomach, liver and rectal cancer clear up the quickest. Uterus cancer responds slightly more slowly. Squamous cell carcinoma responds about one-half as fast as stomach cancer. No cases of cancer that have previously received X-ray or Radium treatment respond to this treatment at all since these agencies have altered the chemistry of the cancer cell. I therefore, cannot make

any statements regarding breast cancer, since those breast cases that I have treated have all been previously rayed.

Before presenting a few brief case descriptions, I wish to express my gratitude and appreciation to Dr. Carstens, Dr. Judd, Dr. Paterson, Dr. Irvine, Dr. Palmerlee, Dr. Palmer, Dr. Blain, Dr. Watkins, Dr. Hewitt, Dr. Friedlander, Dr. Hackett, Dr. John Burleson, Dr. Ash, Dr. Van Baalen, Dr. Hurst, for the excellent cases they have offered and for their kind co-operation in the treatments of their cases. I think that interviewing them would prove more interesting and instructive than any mass of details that I could here append. (Seven cases were briefly reviewed in this paper:)

It appears from these brief case histories, that each injection does its work and that the growth does not become immune to the treatment, that destruction of the cancer removes all its noxious activities as eroding blood vessels, nerves, etc., and that the toxic products are no longer generated, so that the cachecia disappears and a return to the normal strength, body weight and blood count ensue.

I believe that you will appreciate the importance of this cancer work and believe that you are all interested in my request for co-operation. I wish to work up very fully several hundred cases for final report. I shall be glad to interview anyone regarding this matter, but for reasons that you will appreciate, wish only cases that have not received Ray treatments.

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(1) Koch Jour. Biol. Chem., 1912, Vol. XII., p. 313; Jour. Biol. Chem., 1913, Vol. XV., No. 1, p. 43.
(2) Paton, Findley, Watson, Burns, Sharp, Wishart, Quart. Jour., Phys. 1917, Vol. X., Nos. 3 and 4.
(3) Koch Jour. Of Med. and Surg., Jan., 1918, pp. 1 to 9.

From reading this research paper you will note how important Dr. Koch's earlier parathyroid research on toxicity was in establishing a basis for his theories on the cause and treatment of cancer and the chemistry of natural immunity of the body.

Only by chance, about a month later, a newspaper reporter for the Detroit News came across Dr. Koch's research paper and became interested in his original approach to the treatment of cancer. On September 7, 1919 an article, "REPORT NEW CANCER SERUM," was published in the Sunday Edition of The Detroit News paper giving a full review, to the public, on Dr. Koch cancer research.[12]

There was a brief attempt to start a program of clinical tests of the twenty medications Dr. Koch was working with. Some of them had shown therapeutic activity and others did not show much promise in treating cancer patients. Only terminal cancer patients volunteered for the limited clinical research that had be conducted to date with the full cooperation of patients' oncologists. In this newspaper article, the reporter quoted the comments of some the oncologists that were cooperating with Dr. Koch in his preliminary cancer research.

[12] Copy of The Detroit News, Sunday, September 7, 1919 article is attached: "REPORTS NEW CANCER SERUM, Professor at College Stirs Medical Profession by Announcement."

In this September 7th article, Dr. Alexander W. Blain said:

"**Dr. Koch is one of the most brilliant physiological chemists in the country**....what he has done is this: 'He has made people well who were so far gone with cancer that they had only a few weeks to live. Several patients he treated for me are working hard and enjoying life a year after they should have been dead...I believe—even if he has not discovered an absolute cure for cancer, he has added years to the lives of cancer victims....What he has already done is a boon to humanity and a great step forward in physiological chemistry'."

Dr. Walter L. Hackett said:

"There is no question of Dr. Koch's sincerity and ability....I have enough confidence in his treatment to let him inject his serum into any cancer patient of mine. I had, as a patient, an old woman who was very far gone. At Koch's suggestion, I operated on her and took out such cancerous growths as were apparent. Later, the cancer grew again. Dr. Koch gave her four injections and she is now apparently entirely well. I have seen some excellent work done with radium, but never anything so remarkable as this. Dr. Koch should be given every opportunity to prove the value of his treatment."

Dr. C. Hollister Judd, president of the medical board, Women's Hospital said:

"When we stop to consider that one woman in every seven and one man in every 12 have cancer, the importance of the work Dr. Koch is doing can not be overrated, though it is too early to say that he has a cure for cancer. He has been working under many handicaps. **The cases given him have been the 'hopeless' ones, where the surgeons saw the uselessness or impossibility of further operation, and his treatment has shown remarkable results.**" (Emphasis added)

When the proposed clinical research program started, there were about 10 terminal cancer patients from out of town that came to Detroit to be treated. During the few weeks that this testing program continued, there arose disagreements between Dr. Koch and the Wayne County Medical Society's Cancer Committee. Finally the whole program was cancelled by the Cancer Committee and all the terminal cancer patients were sent home. However, one of these patients, Mrs. Edythe M. Fritts, from Toledo, Ohio, remained in Detroit under Dr. Koch's personal care. Later when she was able to travel, she returned home and her local doctor cooperated with Dr. Koch during her recovery period. She made a full recovery and lived to the spring of 1935 when she died as the result of an accident. An autopsy was performed at that time and no trace of malignancy was found in her body. Dr. Koch learned from one of the other terminal patient's doctor that that patient recovered. Some people claimed it was Christian Science that was responsible for her recovery.

At the time these clinical tests were stopped, there was a lot of disagreement between the Cancer Committee and Dr. Koch as to whether or not the clinical tests should be continued. On December 22, 1919, Dr. Koch wrote the following letter to the

Wayne County Medical Society. This letter was read at the Society's meeting and then published in the December 22, 1919 Weekly Bulletin of the Wayne County Medical Society.

December 22, 1919

"To the Wayne County Medical Society:

"Gentlemen – A committee appointed by the Wayne County Medical Society met me last Friday and requested me to present information regarding my cancer treatment.[13]

"I was told the information was desired so as to ascertain:

1. Whether the work was worth continuing.
2. To dispel misunderstandings and prevent further false reports that have arisen against my methods.

"Now the first question requires no answer. This method has tentatively cured a sufficient number of cancer cases to demonstrate that there is a scientific principle underlying it. This principle needs development, both chemical and clinical, so there can hardly be any question about whether the work is worth while.

"The second question can be answered by a short history of this work.

1 " Only cases beyond other means of help have been treated by me. For a long time, indeed, most of the cases that have come to me were moribund before treatment. A large number of these cases needed most urgent relief from changes secondary to the cancer. They offered material for experiment rather than cure.

2. "The first compounds used were tentatively curative in carcinoma of gastrointestinal and endometrial origin, but there was the possibility of preparing a large number of closely related compounds all of which should possess some positive or negative value in treating cancer. Moreover, there were types of cancer that did not respond to the first series of compounds and the fact that rayed cancer was clinically different from unrayed cancer made it paramount to prepare as many of the compounds of the series as could be prepared and to try them clinically for positive or negative value. Most of the time since last March was spent preparing and testing these compounds. Now, **when we remember that the rule in advanced cancer is that the patients run their course and die**, instead of getting well, as in pneumonia, for instance, and since the vitality of my patients was, as a rule, very low, and because they were treated by compounds of uncertain action used in sequence as they were

[13] Note that Dr. Koch refers to his treatment as a "cancer treatment", not a "cancer cure"; it was the Wayne County Medical Society refers to this treatment as a "cancer cure".

prepared, the number of tentative recoveries was necessarily small; but yet some valuable information has come from the small amount of autopsy material. Likewise, pieces of tissue removed during treatment have given valuable information. Of the **clinical results, a number of tentative cures have been established, also a number of clinical improvements, all of which has demonstrated that among the 22 compounds used, as far as can be judged from the small number of cases treated, one compound specifically kills cancer arising in the gastrointestinal tract and endometrium and endocervix; one compound kills breast cancer of one type only, specifically; one compound kills rodent ulcer specifically. Several compounds have no demonstrable effect, and several recently prepared compounds very markedly increase the rate of growth of cancer of the gastrointestinal tract and prostate.**

"So much for the results to date.

"The maintenance of the work was for the first year entirely personal. The meager facilities of the Laboratory of Physiology of the Detroit College of Medicine and Surgery were used then also. Since March about 30 percent of my patients have contributed to the work. The other 70 percent are treated free.

"In regard to cooperation: **I am greatly indebted to those member of the Wayne County Medical Society that have given their clinical support. I believe they are physicians in the true sense of the word. It must be expected, however, that the necessary element of falsifiers have in their number those and their adherents who at one time expected that financial advantage would accrue to them from the work. Moreover, there always are those who are jealous.**

"My aim is entirely idealistic, and so far as I know now, I shall contribute my findings in every detail only when I can establish them completely scientifically, so completely, indeed, that any question can be answered by the scientifically obtained facts in hand.

"In order to establish this work in such a way, money is needed to pay a clinical staff. Ehrlich was given a million dollars to find a remedy for syphilis. **I have attacked this heretofore impossible cancer problem on my own resources, together with the very small facilities of my college laboratory.**

"From this effort something tangible has developed, which, if applied in the treatment of cancer, should relieve many sufferers, and which, when scientifically extended, should afford new means of relief.

"Whether or not the Wayne County Medical Society wishes to cooperate with me is up to the society. The cooperation must be spirited. In the first place, the attitude expressed in the editorial in the Bulletin of December 22 must be corrected. The first paragraph of this editorial is false, as the editor could have easily determined if he had taken the trouble to ascertain. The third paragraph is also a misrepresentation. **The**

Board of Health and the Wayne County Medical Society offered something which at first promised to become the long hoped for chance for a scientific study, but very soon proved to be only an opportunity for something not worth while, simply a preliminary clinical report.

"Such a report we already have, and no report is of value unless the compounds are reported. This I will consent to do only when I can make a scientific report showing the how and why certain compounds act on cancer.

"To make such a report, a clinical staff and at least one paid chemist and one assistant chemist is necessary. I was not able to secure a chemist under less than one-year contract, and the beds at Herman Kiefer hospital were not allotted for that time. Indeed, the superintendent informed me four weeks after the beds were granted that they would be needed for contagious diseases. No working arrangement could thus be made for the desired report. **Then the committee did not cooperate with me. One member never visited the hospital and only attended the final meeting to subscribe his name to the report of my negligence.**

"Another member, who is supposed to have a corner on cancer tissue, when this work was first started and when I was introduced to him to ask for cancer material, turned his back on me and refused the introduction. **Other members of the committee, who seemed to be fair and unbiased at first, soon came under the sway of those whom they knew and said were distinctly unfriendly to me and my work. There was thus no common aim and could be no cooperation.**

"The fourth paragraph says I promise much and charge well. Nothing is further from the truth. I promise nothing. My patients know this, and I require them to be examined from time to time by their physician that refers them to me. This aids my judgment as to the results and keeps the patients informed accurately. I have referred already to the 30 per cent that pay and the 70 per cent that do not.

"The last paragraph of the editorial touched on the secret of my success. I try to discuss this problem with those I respect sufficiently in the hope that they will offer encouragement and guidance; and from them only do I wish to receive it.

"Otherwise the best cooperation the Wayne County Medical Society can give is to leave alone a matter they have never advanced. I should not be asked to give my time to any activity that cannot aid me in placing this work for the treatment of cancer on a distinctly scientific basis. All of my time is needed and given to this end. In the future I shall have no time for any further activities that are not directly constructive to the intrinsic value of this work."

Sincerely yours,

W. F. Koch

On Christmas Day, December 25, 1919, the following article appeared in the Detroit Free Press.

"KOCH ASKS AID TO TEST CURE"

"Won't Some One Pay Cost of

Real Trial? Is Plea of Cancer Foe"

"'Is there not some rich man in Detroit with enough interest in his fellow men to pay the bare expenses of the trial of a cancer cure that has already shown enough tentative cures to have attracted the attention of physicians of prominence in New York, Chicago and Detroit, as well as of minor practitioners in all parts of the country?'

"'This was the query Wednesday evening of Dr. W. F. Koch, whose assertion that he has discovered 22 chemical compounds useful in the treatment of as many different varieties of cancer, has been under investigation by the Wayne County Medical society. The investigation resulted in a disagreement that found an airing at last Monday evening's meeting of the surgical section of the society.

"Wants Nothing for Self"

"'I don't want a penny for myself,' continued Dr. Koch, referring to the reported intention of the Wayne County Medical Society of asking the city authorities to pay him a salary of $5,000 a year and place a full staff at his disposal for 12 months in an effort to fully test his claims. 'What I want and what I am determined to get before I go ahead with any test are the right conditions.

"'The Ford Hospital, for instance could easily place 50 beds at my disposal, or rather at the disposal of the test, for one year. The city could provide nurses and chemists and other attendants necessary for a proper investigation of the results of the treatments. It would cost probably $65,000, but this is an insignificant amount when you remember that Sir Edward Speyer gave Ehrlich $1,000,000. and that the German scientist experimented with 610 compounds before he discovered the famous '606'.

"'**I have an offer to go to Chicago but have decided to refuse it because the conditions are not the ideal ones for which I am searching.** '

"In Touch With Other Cities"

"'I probably will read a paper before the February meeting of the American Congress of Internal Medicine in Chicago and I am in touch with New York doctors of prominence. If Detroit will not prove itself big enough for this thing, I am sure some other city will.'"

From then on the American Medical Association never permitted any further clinical tests of Dr. Koch's medications. On August 3, 1920, Dr. Koch wrote Dr. George H. Simmons, the Editor of The Journal of The American Medical Association, asking for

help in arranging further clinical tests at the University Hospital in Ann Arbor. Dr. Simmons in his reply letter denied Dr. Koch's requests.

The following is a little background history on how a group of influential "Chicago A.M.A" doctors became interested in Dr. Koch's cancer research in the summer of 1918 and wanted Dr. Koch to move to Chicago, Ill., and work for them.

In summer of 1918, Dr. Frank Smithies, an associated editor of Medicine and Surgery of St. Louis, and with his office and medical practice located in Chicago, first learned about Dr. Koch's cancer research from the Editor of that journal. Dr. Smithies, who had on prior occasions corresponded with Dr. Koch since 1912 and who personally knew of Dr. Koch's qualifications as a scientist, became very interested in learning more about Dr. Koch's cancer research. On September 9, 1918, Dr. Smithies sent the following telegram to Dr. Koch:

> "FIND LOT OF CASES WAITING WOULD LIKE TO TREAT THEM AT ONCE OR LET US TREAT THEM UNDER YOUR DIRECTIONS WIRE WHAT YOU WISH TO DO"
>
> DR FRANK SMITHIES.

This telegram was sent to Dr. Koch about 10 months prior to the July 1919 publication of Dr. Koch's first cancer research paper in the Detroit Medical Journal.

In November of 1919, after Dr. Frank Smithies[14] had learned more about Dr. Koch's cancer research from the national coverage on his cancer research, as reported in the national newspapers, etc, he sent the following telegram to Dr. Koch. The A.M.A Chicago doctors he represented, already knew the limited value of X-ray, radium and surgery in the successful treatment of cancer in those days.[15] The intent of the Chicago A.M.A. doctors was to take over complete control of Dr. Koch's research, its development and the marketing of his treatment for cancer to the medical profession. In order to accomplish this they approached Dr. Koch with an offer of a million dollars, if he would work with them and turn the complete control of all of his research and treatments over to them.

Thus on November 25, 1919, Dr. Frank Smithies sent the following Western Union Telegram to Dr. Wm. F. Koch.[16]

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[14] Dr. Smithies represented a group of important Chicago A.M.A. doctors that were a part of the upper echelons of the American Medical Association at that time. See enclosure

[15] At the 1925 International Symposium Held Under The Auspices Of the American Society For the Control Of Cancer; a 30% recovery rate from Cancer was considered good.

[16] Dr. Frank Smithies, a member of the American College of Physicians (and its 1927-1928 President), first became interested in Dr. Koch's medical research in 1912 after Dr. Koch published his first research paper on the function of the parathyroid glands. He was the Chicago A.M.A. doctor who subsequently became so very interested in Dr. Koch's cancer research that he sent his personal representative, Dr. Karshner, to interview Dr. Koch about Dr. Koch's cancer research and treatment in 1919. Dr. Smith represents the A.M.A. group that offered Dr. Koch a million dollars to go to Chicago, Ill. and work with his people who wanted to take over the control of Dr. Koch's cancer research, etc. The BIRTH of a SCIENCE, The Lutheran Research Society, Inc., Detroit, Michigan, p. 56, 1949.

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DR WM KOCH:

CARE DETROIT COLLEGE OF MEDICINE AND SURGERY DETROIT, MICH

MY ASSOCIATE DR CLYDE KARSHNER WILL CALL ON YOU FRIDAY AT COLLEGE

DR FRANK SHITHIES

Dr. Karshner did visit with Dr. Koch on that Friday. The purpose of this trip was for Dr. Karshner to personally learn all about Dr. Koch's cancer research from Dr. Koch and then return to Chicago and report this information to Dr. Smithies and his associates. Following this visit, on December 15, 1919, Dr. Frank Smithies sent the following letter to Dr. Koch.

FRANK SMITHIES
CHICAGO

Dec. 15th, 1919

Dr. Wm. Koch
C/o Detroit Medical College
Detroit, Mich.

Dear Dr. Koch:

Dr. Karshner returned an interesting account of your work with cancer.

Perhaps sometime during the Christmas holidays it would be well to come over and talk with me about the matter. If I go to New York to the American College of Physicians' meeting, I will try to stop off at Detroit but I cannot promise.

There might be a very good future for you and your form of treatment here in Chicago. We are willing to help, of course, must at the same time look out for ourselves in a business and a professional way. It would be very advantageous if we could arrange to have the general profession informed regarding your method at the meeting of the American Congress of Internal Medicine Feb.23rd to 28th, 1920, Chicago.

With best wishes and thanking you for your kindness to Dr. Karshner, I am,

Fraternally yours,

Frank Smithies, M.D.

After Dr. Koch had turned down Dr. Smithies invitation to go to Chicago to work directly with the current power brokers of the American Medical Association, hostility towards his cancer research started on a national level unbeknown to Dr. Koch at the time. This is the Chicago group of A.M.A. doctors, who had recognized the financial value of Dr. Koch's discovery of a new a form of medication for treating cancer patients that was superior to the standard form of cancer treatment that was in used at the time (X-ray, radium and surgery). They wanted complete access to and control of his successful cancer research and treatment and thus they made him an offer of one million dollars, which was a lot of money at that time.[17] In December of 1919, just before Christmas, Dr. Koch had told a Detroit Free Press Reporter about this Chicago offer. The reporter then made a brief reference to it, without going into detail, in his December 25, 1919 newspaper article.

> "I have an offer to go to Chicago but have decided to refuse it because the conditions are not the ideal ones for which I am searching."

After Dr. Koch learned that he could not find the hospital medical research support in Detroit that he was looking for, he then continued his independent cancer research on his own with the aid of a few friendly doctors and former students of his who had supported him in his cancer research in the past.

In the summer of 1920, Dr. Koch believed that the time was right for him to conduct an official large scale clinical test of his medications in an independent research hospital that would have the complete and proper facilities for this purpose. Since no proper cancer hospital facilities in Detroit, such as Ford Hospital, had been made available to him in the past for this purpose even though he had asked for it, he picked the University of Michigan Hospital in Ann Arbor as the proper venue to establish the therapeutic activity of his cancer medications. He also believed that if he had the complete support of his national medical society, the American Medical Association, he would be able to return to Ann Arbor, his alma mater, with the A.M.A.'s cooperation and set up and successfully conduct an official clinical test of his cancer treatment. At that time, Dr. Koch was in the process of writing up his proposed patents covering his discoveries.[18] On August 3, 1920, Dr. Koch wrote the following letter to Dr. George H. Simmons, Editor of the Journal of the American Medical Association, asking him for his

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[17] The BIRTH of a SCIENCE, Albert L. Wahl, M.D., C.M., Bessie L. Rehwinkel, M.D., & Lawrence Reilly, A.B., B.D., D.D., The Lutheran Research Society, p. 56, 1949.

[18] It should be noted that Dr. Frederick G. Banting did not reveal all of the information on the preparation and use of insulin until he received his first patent in the 1920's. Like Dr. Banting, Dr. Koch felt that it was important to withhold the full identity of the substances he was working with to prevent incompetent or unscrupulous manufacturers from flooding the market with specious or untested preparations and at the same time claiming their products to be the Koch medications. Without a patent, Dr. Koch had no protection from such fraud by such people. He told this to the Detroit News Paper reporter in September 1919 and this reporter reported this caution in his September 7, 1919 article on Dr. Koch's cancer research. Each doctor that used the Koch Treatment for cancer had to be personally trained by Dr. Koch on how to use his cancer treatment if they were to be successful. Dr. Koch knew that any actions by unauthorized and incompetent doctors would do his research and his name great harm. Dr. Banting: "Its discoverers declared that insulin is a substance which is only safe when administrated by a physician specially trained in its use." Current Topics, Insulin--Its History, The Bulletin of The Wayne County Medical Society, pp. 13-14, #9, Oct. 29, 1923.

advice as to how he should proceed in this official testing of his medications.[19] A.M.A. approval of all clinical research of new medications was and has always been considered necessary and important to the success of all new medications.[20]

Aug. 3, 1920

Dr. George H. Simmons

Chicago, Ill.

Dear Dr. Simmons:

I have been working for the last few years on a treatment for cancer, which requires now to be presented to the medical profession in the proper, and I need your advise in further procedure.

I would like my report to the profession to be authoritative in placing the scientific status and clinical value of this treatment and I can see no better way than that the material for this report be worked up and reported under the supervision of a committee appointed by the A.M.A. In order that there should be no undesirable secrecy I am willing to submit for publication in the Journal a preliminary report with ample material to explain the working of the treatment.

It might convenience matters if the material for the final report be worked out at the University of Mich. Hospital, if such a step could be arranged.

I would like to know your disposition of the matter and should appreciate any advice you may be kind enough to give.

Sincerely,

W. F. Koch

On August 5, 1920, Dr. Simmons, knowing that Dr. Koch had not accept the prior A.M.A. offer of Dr. Smithies to entice Dr. Koch to transfer his cancer research to Chicago, replied to Dr. Koch's letter in the following manner. First he ignored Dr. Koch's request to do clinical cancer research at the University Hospital in Ann Arbor. Then he went on to say that any clinical tests that Dr. Koch would personally conduct would be biased. He then directed Dr. Koch to (prematurely) release all secrecy to the public (i.e. to the A.M.A.) as to the composition of his products and the method of using it so that any person (qualified or unqualified) could investigate the Koch Treatment and published their results (no matter how competent or incompetent that person might be

[19] On August 1, 1919, Dr. Koch had written to the J.A.M.A. asking the Journal to publish his second and more detail research paper on his cancer research that he was in the process of writing. This was just prior to the time he had received national recognition for his cancer research in of September 1919.

[20] The Long White Line, by Herman Kogan, The Story of Abbot Laboratories, Random House, N.Y.

to conduct clinical cancer tests on a completely new and different method of treat for cancer). What Dr. Simmons really wanted Dr. Koch to do was for Dr. Koch to release to the public the unpatented manufacturing process on how to manufacture the Koch Treatment.[21] In this way the Smithies' Chicago medical group would now be able to obtain Dr. Koch's full research information, the scientific information they wanted (free of charge). Thus, with the A.M.A.'s help, they could effectively take over and duplicate Dr. Koch's cancer research with their own vast financial resources and take credit for Dr. Koch's original cancer research, the Koch cancer treatment that Dr. Frank Smithies had failed to obtain control of months earlier.

What Dr. Koch wanted at that time and what he was asking for was the full support of the public and the medical profession to permit him, as the research scientist and discoverer of a new method for the treatment of cancer, to be able to carry on his scientific research with up to date scientific facilities, free from the control of third persons, who had contributed nothing in the past to his research and who did not understand the scientific principles on which his treatment for cancer worked. Dr. Koch knew that his cancer research was still in the "*research and development period.*" In the past, with the full cooperation of several friendly local doctors, he had already been able to demonstrate a few "clinical cures" in the treatment of some forms of cancers for a period of years that were less than the approved "five years period", the accepted standard guide for establishing a complete "cancer cure". At that time he also wanted to expand the scope of his research and perfect his treatment before it was made available to the medical profession for its general use.

Dr. Koch came to the proper conclusion that it would be unscientific for a researcher to turn over his preliminary research to others to test before he had first completed all of the basic research himself. This is why the principal of "completed personal basic research" was so important to him. A researcher does not want another person to try to duplicate one's original research until that original research has been perfected and patented. If another person, in trying to duplicate the original research of the discoverer is incompetent and fails then this failure, unfortunately, is a reflected upon the discoverer only, not the other person doing the testing. Dr. Koch had been testing over twenty different substances, and he knew that some of these products had therapeutic action against certain forms of cancer and that some substances appeared to have little and/or no effect at all against any form of cancer. Dr. Koch also knew that there still was more basic research, on his part, that had yet to be completed by him personally before he could release full details of his work. He also wanted to fully identify the chemical structure of this material that he was working with and to perfect the chemistry of these therapeutic agents before he could publish all of this research information. He also wanted to be able to identify the types of cancer conditions that

[21] The power of the American Medical Association and its journal was successful in blocking Dr. Koch from obtaining United State Patents until the mid 1930's. Dr. Koch had been successful in obtaining patents in other countries such as Canada and Great Britain.

each of these products would be most effective in treating.[22] This type of research could only be done under his personal direction and scientific control and by large-scale clinical trials in a modern impartial hospital, such as the hospital at the University of Michigan, by him. Once the validity of his research had been clearly established and accepted by the medical profession, it would then be proper for him to make full disclosure of his scientific discoveries. Even today, no university, private research laboratory, governmental research laboratory and/or pharmaceutical company makes full disclosure of their basic research to the public until the validity of their discoveries have been established and accepted and research patents have been obtained. It should be noted that Dr. Frederick G. Banting did not reveal all of the information on the preparation of insulin until he received his first patent in the 1920s. He followed this procedure when insulin was first discovered and tested in Canada for medical use.[23] This is same procedure that has been followed over the years in the United States and in other countries by inventors and corporations to protect their new inventions. Dr. Koch also knew that it was important to withhold the full identity of the substances he was working with to prevent incompetent or unscrupulous manufacturers from flooding the market with specious or untested preparations and at the same time claiming their products to be the Koch medications. Such actions by unauthorized persons would do his research and his name great harm.

In November of 1920, Dr. Koch received the following letter a few days after his second and more detail cancer research paper was published in the October 30th, 1920 issue of the Medical Record. This was the cancer research paper he wanted to submit to the J.A.M.A. to print.[24]

H. Edwin Lewis, M.D.
Editor
Ira S. Wile, M.D.
Associate Editor

November 4th, 1920

Dr. Wm. F. Koch

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[22] See Dr. Koch's letter of December 22, 1919 to the Wayne County Medical Society.

[23] "Its discoverers declare that insulin is a substance which is only safe when administrated by a physician specially trained in its use." Current Topics, Insulin—Its History, The Bulletin of The Wayne County Medical Society, pp13-14, Vol. XV, #9, Oct. 29, 1923.

[24] Subsequently, the editor of the Medical Record told Dr. Koch that the Medical Record had been ordered by the editor of the J.A.M.A. not to publish any more research papers by Dr. Koch. This order banning Dr. Koch medical research went out to all A.M.A. approved medical publications according to the editor of the Medical Record. Subsequently, Dr. Koch had to publish his own medical research in the U.S.A. and/or let independent medical journals, that were not under the controlled by the J.A.M.A., publish his medical research papers. On one occasion, in 1924, a medical research paper by Dr. Koch did slip by the J.A.M.A. censorship.

355 Sheridan Ave.,
Detroit, Michigan

Dear Doctor:

We have been much impressed with a most interesting and valuable article by you which appeared in a recent issue of the Medical Record, and are taking the liberty of writing to you to solicit a contribution from you on any medical topic for early publication in American Medicine.

As you may know American Medicine is one of the most widely read and quoted medical journals in America and assures you an audience that is not exceeded by that of any other high class medical monthly.

We are constantly striving to make American Medicine helpful and inspiring to the thinking medical men of the country and it is because we believe any article you may send us will aid us in these efforts that we are asking you to become a regular contributor to our p ages.

Hoping you have something in hand you can send us in the near future, and assuring you that we will 'leave no stone unturned' to make our relations most pleasant and satisfactory, we remain.

Faithfully yours,

The Editors of American Medicine
(signed) H. Edwin Lewis
Editor-in-Chief

On November 9, 1920, Dr. Koch wrote the following reply letter to Dr. Lewis.

Nov. 9, 1920

Dear Dr. Lewis:

Your communication of the 4th. inst. was received with appreciation. I have barely introduced the cancer subject, and have considerable material to discuss.

In the near future I shall have something to present, which I hope will prove worthy to appear in your unexcelled publication.

Thanking you for your courtesy, I remain

Yours very truly,

Dr. Koch never received a reply from Dr. Lewis to any of his three letters.

In 1923, four years after Dr. Koch had started his private practice of medicine, the Wayne County Medical Society's Cancer Committee agreed to review only the case histories and medical records of a few of Dr. Koch's "clinically cured"[25] cancer patients. None of these "clinically cured" cancer patients were permitted to appear before this committee for examination in support of Dr. Koch's cancer research. All of these cancer patients had been under Dr. Koch's medical care for less than the accepted "five year" period to establish an "acceptable cancer cure". Dr. A. W. Dewey[26] was Dr. Koch's representative at this meeting since this committee wanted Dr. Koch exclude from attending the meeting. Dr Dewey took details note on each cancer case presented. About 11 months later, this Committee finally released its report to Dr. Dewey who then sent Dr. Koch a copy of the report together with the following letter.

"Dear Dr. Koch;

"I have received what is termed the latest report on your treatment.

"This claims to be an account of the seance held on November 5th, 1923, at which I was present and took notes of each case.

"For a studied intent to falsify, a premeditated determination to condemn everything, and an un-scientific, un-American assumption to be judge, jury and prosecuting witnesses, the report of this so called committee outstrips in bias, unfairness and mendacity anything that has ever been my lot to observe in a medical practice of forty-four years.

"The frankness with which you presented these cases, giving the committee all the details and referring them to original records and to the family physicians, showed your honest desire to have an honest investigation of your method.

"The composition of the committee being for the most part surgeons and Radium or X-ray 'experts,' a class that assumes cancer to be curable only by these methods, was unfortunate in the first place, and in the second place, no member of the committee was in my opinion, qualified to sit in judgment on your treatment, by education, experience or by right.

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[25] The standard for establishing an acceptable "cancer cure" was for the cancer patient to be "cancer free" for a period of at least 5 years from date of recovery.

[26] The 1918 edition of the University of Michigan year book, The Michiganensian, page 231, honored Professor Dewey that year with a full page picture of him and the following caption:

"To us who know him a profound scholar,
To the people a valued friend,
And to the profession an honored educator."

"The greatest American authority on cancer is doubtless L. Duncan Bulkley, senior surgeon of the New York Skin and Cancer Hospital. He has probably seen and treated more cases ten times over than has been seen or treated by the combined membership of this 'official' committee.

"Dr. Bulkley declares first that cancer is not a surgical disease, and that neither surgery, X-ray, nor Radium have changed in any way whatever the ultimate mortality of cancer in forty years. It was 90% in 1884. It is 92% in 1924. This is the result of surgery, X-ray and Radium treatment.[27]

"I can corroborate Dr. Bulkley's declaration, for in a practice of nearly forty-five years I have yet to see a single case of cancer, save a few semi-malignant epitheliomata, that have been cured by these measures, and my experience has been in hospitals of both this country and Europe.

"However, to return to this really grotesque report—anyone who reads it will be impressed by its 'scientific' deductions.

"I hope that some day your treatment will have an investigation before a body of seekers after the truth. These you will not find in American official medicine, which is a trust to keep all progress not coming from its own, out of the field.

"Should the Pasteur Institute investigate it, I am quite sure you will not suffer from false and trumped up reports upon it, and moreover, the investigation will be thorough, with a foremost desire to find out the truth, and not to get control of your procedure."

Best wishes,

W. A. Dewey

Middlebury, Vermont,
October 25, 1924

Among the many important therapeutic agents discovered by Dr. Koch, during his years of medical research, were Glyoxylide (O=C=C=O), Malonide (O=C=C=C=O) and p-Benzoquinone (B.Q.). B.Q. was a well-known chemical agent, but had never been used as a medication until Dr. Koch discovered it therapeutic activity. Glyoxylide and Malonide were two medications that Dr. Koch had to synthesize from other organic chemicals. He identified the chemical structure (formula) for Glyoxylide as O=C=C=O and for Malonide as O=C=C=C=O. However, the true chemical structure for Glyoxylide and Malonide was not determined until the chemists at Dow Chemical Company conducted their detail chemical research with these medications during 1944 to 1946 to determine their chemical structure in full cooperation with Dr. Koch. Years earlier, in 1936, George R. Harrison, Ph.D., at Massachusetts Institute of Technology, had

[27] According to Dr. Francis Carter Wood, A. F.D.A. Government cancer expert witness in the 1943 F.D.A. trial against Dr. Koch, Dr. Wood testified that "About 95% of all well established cancer cases prove fatal."

conduct a preliminary spectrographic analysis on a sample of Koch's Glyoxylide and found it to have a similar Spectrographic curve to that of glyoxal (a dicarbonyl).[28]

In 1944 Dr. Willard Dow, President of Dow Chemical Company, had taken a personal interest in Dr. Koch and his medical research.[29] This was right after the first criminal F.D.A. trial in 1943, that ended in a "mistrial". Dr. Dow made available to Dr. Koch the Dow Chemical Company's research laboratory and its chemist to conduct scientific experiments on the Koch medications to identify their true chemical structure. The identity of each of the Koch medications had become a major trial issue in 1943. Not only were the Dow scientists able to determine the exact chemical structure for Glyoxylide and Malonide, two of the most important of Dr. Koch's medications, they also testified in court in support of Dr. Koch on their chemical research. The chemical structure of "B.Q." was not an issue. The chemical structure of Glyoxylide was found to be the trimer of (O = C = C = O) i.e., $(O = C = C = O)_3$, a pure "dicarbonyl" chemical structure. Thus the Dow scientists were able to disproving the Government's claim that "Glyoxylide when added to water became glyoxylic acid." It was common knowledge that glyoxylic acid had no known therapeutic activity. The Government (Food & Drug Administration) had claim during the 1943 and the 1946 trials that when Koch's Glyoxylide was added to water, it became glyoxylic acid by the addition of one molecule of H_2O during the manufacturing process. A similar claim was made for Malonide, that it became malonic acid when diluted in water. The F.D.A. had tried to prove that these Koch medications had no therapeutic activity by testing "glyoxylic acid" solutions and "malonic acid" solutions for therapeutic activity. The Dow scientists were able to disprove this F.D.A.'s fraudulent claims.[30] They proved that the Glyoxylide and Malonide molecules were stable chemicals and did not chemically add water during the dilution process to become the corresponding acids as claimed by the F.D.A. Thus the F.D.A. test with Glyoxylic acid and malonic acid were without value, fraud and misleading to the trial court. Likewise, the F.D.A. withheld vindicating evidence during both the 1943 and the 1946 trials from the court.

The Importance of the dicarbonyl structure in modern medicine:

The biological activity of Vitamin C in the body is very important in that there is a reversible biological reaction between ascorbic acid (Vitamin C) and its chemical partner, dehydroascorbic acid (which has the all important oxidizing dicarbonyl group). It is this reversible reaction, in the body, between these two chemical structures (ascorbic acid and dehydroascorbic acid) that Dr. Linus Pauling attributes some of the physiological properties to Vitamin C.[31]

Dr. Koch discovered, many years ago, that the biological activity that occurs in the body, do to the above type of reversible oxidation-reduction reaction, should never be over

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[28] Modern medical research has identified methylglyoxal as the chemical essential to stopping cell division. (Proc. Natl. Acad. Sci. USA, Vol. 74, No.7, pp. 2844-2847, July, 1977) For the chemical structure of Glyoxylide see Dr. George R. Harrison's letter of August 3, 1936 to Dr. Millard Smith and Jim Sheridan's letter of April 21, 1947 to Dr. Arnott.; and THE FUNCTIONAL CARBONYL GROUP IN PATHOGENESIS AND ITS REVERSAL, Dr. Koch, 1967.

[29] Dr. Dow's letter of June 21, 1964 to Mr. Laurence B. Thatcher.

[30] The F.D.A. tested glyoxylic acid and malonic acid for therapeutic activity and found none.

[31] HOW TO LIVE LONGER AND FEEL BETTER, Linus Pauling, Ph.D., N.L., p.90, AVON BOOKS, 1987

looked by the modern medical researcher. This type of reversible of oxidation-reduction reaction is important to the body's immune system.[32] There is a similar reversible oxidation-reduction reaction between hydroquinone's semi-quinone radical and para benzoquinone where para benzoquinone is the oxidizing agent and hydroquinone is the reducing agent. Dr. Koch's discovered in 1919 that para benzoquinone had therapeutic activity. I believe that it will be found that there is a multi-step biological oxidation-reduction series of chemical reactions between inositol[33] with its 6 hydroxyl groups and triquinoyl with its 6 carbonyl groups where rhodizonic acid (with its 4 carbonyl groups and its 2 hydroxyl groups) acts as one of the active intermediary structures between inositol and triquinoyl. I believe that the intermediary free radicals that are formed during the oxidation-reduction transformation reactions between inositol and triquinoyl will be found to be the most important part of the chemistry in the body's natural immune system. Effective basic medical research will support the finding that when the body's immune system breaks down, it will become necessary to "jump start" this immune system with a strong activated di-carbonyl structure, such as triquinoyl, in a non-toxic catalytic homeopathic dilution. In fact, triquinoyl may be found to be the body's most perfect oxidation catalyst.

Dr. Koch has always stress the importance in a proper diet, where each person eats foods that do not produce toxicity in the body. For toxicity is an important factor that contributes to human illness, diseases of all types and death. He stressed a healthy vegetarian diet for all of his patients as an important aid to overcome all type of illnesses. A part of "The Chemistry of Natural Immunity", as he called it.

The importance of diet to avoid toxicity was brought out in the 1937 lecture, "Diet as a Basic Cause of Disease," by M.Beddow Bayly, M.R.C.S., L.R.C.P. He said:

> "Mr. J. E. R. McDonagh, one of the most eminent of modern bacteriologists, regards intestinal toxaemia as the basic cause of most chronic diseases, and has declared:
>
> `If it were possible to rid humanity of chronic intestinal intoxication, disease would become almost extinct.'
>
> "It is here that the importance of the work of Dr. William F. Koch, of Detroit, may best be appreciated. By a series of brilliant investigations into the chemistry of the body, which were entirely unconnected with experiments on animals, he has shown that the absorption of certain products of the decomposition of animal proteids into the system results in their being eventually `absorbed,' i.e., chemically attached, to the molecular particles of protoplasm which constitutes the cells of the body.
>
> "The effect of this is that the oxidation processes of cell-life on which the healthy growth and normal functions of each individual cell depends is more or less inhibited.
>
> "Just as one might imagine, by way of analogy, the effect of smoke on the glass of a lamp in which shines a light, so one can, I think, glimpse in some degree what the effect of a chemical substance intimately adherent to the minute cell-particles of every organ in the body might ultimately entail.

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[32] Dehydroascorbic acid's dicarbonyl structure is a strong oxidizing power due to its two adjacent "dicarbonyl groups and. ascorbic acid's ascorbyl radical is a strong reducing agent.

[33] Inositol, one of the vitamin "B" complex, has been found to have some therapeutic activity to inhibit tumor growth.

"Moreover, these chemical products of faulty diet have more than merely inhibitory properties. By virtue of their intrinsic power of altering the wave-length of radiations reaching the cell they may, and do eventually, elicit a vibratory response from the cell-life which takes the form of an exaggeration of one of the normal functions of the particular cell or tissue: for instance, of cell-division (i.e., growth) or of autolysis (i.e. death). The final result of this disordered metabolism is seen, according to Koch, in the development of malignant growths such as cancer, or of tuberculosis.

"It is not possible to do more than touch briefly upon this fascinating and illuminating theory here, and to add that its correctness finds convincing support in the effectiveness in practice of the chemical remedy which Dr. Koch has devised to destroy this basic toxin at its very point of attachment to the body-cells, its chemical point d'appui.

"It will be sufficient for our present purpose if these profounder concepts of disease causation are borne in mind when dealing, as now we must, with some specific instances of disease in relation to diet." (pp. 8 & 9)

"Sir William Arbuthnot Lane declared in 1933: `Everyone can avoid cancer who is prepared to keep internally clean by eating natural foods and drinking plenty of water. I have never yet operated for cancer upon a healthy person.' While we need not necessarily accept this opinion as representing the whole truth about the problem, for there is evidence that the adoption of such ways of living does not always prevent the development of cancer, there can be little doubt in our minds but that they are vitally important factors, and, combined with the system of detoxification devised by Dr. William F. Koch, provide us with the most hopeful means of ridding humanity of this menacing scourge." (p. 26) Diet as a Basic Cause of Disease, A Lecture, by M. Beddow Bayly, M.R.C.S., L.R.C.P.; Published by The Health Education And Research Council, 15 St. Jame's Place, London, S.W.1, 1937.

Over the years the independent research of both Dr. Szent-Gyorgyi and Dr. Koch have followed the same basic parallel path which has led both of them, individually, to the identification of the same "activated dicarbonyl" group that is an essential ingredient of the body's natural immune system. Their individual "basic research" has complemented each other for the benefit of humanity. I further believe that Dr. Linus Pauling had likewise recognized the importance of this dicarbonyl structure in dehydroascorbic acid and its relationship to ascorbic acid and the readily reversible reaction that takes place between dehydroascorbic acid (a strong oxidizing agent) and ascorbic acid (a strong reducing agent) and that these two chemicals act together as a general detoxifying agent. Dr. Koch recognized the importance of the general detoxification of the carcinogenic and other toxic substances in the body by oxidizing these substances into nontoxic derivatives that can be eliminated from the body in the urine, all of which is in accordance with Dr. Koch's original thesis. That Dr. Otto Warburg, Dr. Szent-Gyorgyi and Dr. Koch have recognized, independently, that cancer cells are normal cells that have reverted into an anaerobic state thus losing their normal aerobic biological activity and direction and as cancer cells, they continue to reproduce out of control indiscriminately. Dr. Koch, in 1919, and Dr. Szent-Gyorgyi, in 1974, publically recognized that it was the dicarbonyl structure O=C=C=O as found in glyoxal type chemical that stop uncontrolled cell division, as well as, inhibit cell division of invading pathogens.

Albert Szent-Gyorgyi, M.D., Ph.D., N.L., wrote in his book, "Electronic Biology and Cancer, A New Theory of Cancer":

> "The C=O groups seem to be Nature's universal tool to suppress cell proliferation. The animal body has to suppress the proliferation of its own cells, and do this reversibly, without causing damage. This can be done by use of the moderately active aliphatic dicarbonyls.... The chemical structure of this substance (dicarbonyl) satisfies the requirement of an inhibitor of cell division.... Possibly, the free radical described in Chapter 13 is the primary oxidation product of the oxidation of ascorbic acid. The bactericidal action of this stable radical has not yet been studied. It can be expected to be high, and it seems possible that it is actually this radical which protects the plant against bacterial invasion when its cells are damaged." "This they can do by the highly active aromatic dicarbonyls, the diquinones of catechol derivatives.... The animal, with its blood circulation, does not need such local defense, being able to invoke the immunological defense mechanism of its whole body. It could not use toxic substances either which would be spread by the circulating blood."(Chapter 14, Defense and Regulation; pp. 71-72)

> "My experiments suggest two more important and direct roles for oxygen: transformation of the protein into free radicals and semiconductors, and promotion of electronic reactions, making charge transfer and formation of free radicals autocatalytic."(Chapter 13, The Biological Function Of Oxygen; p. 64)

Dr. Szent-Gyorgyi was right when he said that quinones inhibit cell division but are very toxic. I only wish that Dr. Szent-Gyorgyi had learned more about Dr. Koch's work. In 1979 Dr. Garber had contacted Dr. Szent-Georgyi in regards to my father's work. Dr. Garber had suggested that Dr. Szent-Georgyi meet with me in order that he might learn more about Dr. Koch's theories and work. Dr. Szent-Gyorgyi's wrote the following to Dr. Gerber in his letter of November 1, 1979:

> **"I can tell you, I have a great admiration for Koch. He must have been a very outstanding man. My feeling is that he had a strong intuitive feeling about the role of C=O group and especially its conjugated form as C=OC=O as one of the great regulating forces in nature**. It is very unfortunate that he never expressed this clearly and definitely in any (of) his writings known to me. I have been working myself on these lines now for years and the subject has made very great progress and it is doubtful whether the notes of Dr. Koch could help any further. (emphasis added)

> "I would not like to become involved in the controversy around his name and, maybe, reproached later that I am led in my studies in by the posthumous notes which Paul could put at my disposal. I also doubt whether I could find the time for their study they undoubtedly deserve. I would not like either to revive the controversy around his work. That he has met by hostility is not doubtful for me. ***I know it from my own experience that people with intuition are regarded as an enemy by those who have none."*** (Emphasis added)

In his 1974 article "The Search For A Natural Cure For Cancer" [34] Dr. Szent-Gyorgyi wrote:

> "Carbonyls arrest cell division and my laboratory was led to the conclusion that it is still the carbonyls which arrest cell proliferation and it is the carbonyls which make the cell return to resting state, after it completed division. If the carbonyls are missing, proliferation has to go on and cancer results. We were not the first to be led to such a conclusion. **A decade ago a very intuitive research, W. F. Koch, came to the same conclusion**. Unfortunately, he did not leave us enough information to enable us to follow his trail". (emphasis added)

In order to better understand Dr. Koch's theories on the causes and treatment of diseases and the application of his theories to the treatment of cancer and its allied diseases; it is important to consider at the same time the contributions of other similar researchers of his day and their contributions to modern medicine. The importance of all basic knowledge about the physiology of normal cells and how this physiology is changed under the influence of toxins, viruses, etc. to create a pathogenic state has to be fully understood by each medical researcher first, if that researcher wants to fine "true way" to assist the body natural immune systems to over come all disease conditions and thus bring about a restoration of the body's normal cellular functions and health.

Linus Pauling, Ph.D., N.L., in his book, "How To Live Longer And Feel Better" (1987) discusses the reversible chemical reaction between ascorbic acid, a strong reducing agent, and de-hydroascorbic acid, a strong oxidizing agent, and the importance of this reversible reaction to physiological properties of Ascorbic Acid. It should be noted that dehydroascorbic acid contains a di-carbonyl (O = C - C = O) group and that free radicals are formed during this reversible reaction in the cell. Dr. Pauling was of the opinion that some of the physiological properties of vitamin C are likely due to the reducing power of ascorbic acid and the oxidizing power of dehydroascorbic acid. (pp. 89-90) It should also be noted that para-benzoquinone (BQ) has a similar oxidation-reduction relationship with hydroquinone where hydroquinone is a reducing agent and para-benzoquinone (BQ) is an oxidizing agent and that during these reversible reactions, free radicals are formed. In Dr. Pauling's book on General Chemistry (Dover Ed., 1988, p. 279) he points out that free radicals are usually highly reactive and that they are difficult to prepare except in low concentration.

In their book, "Cancer And Vitamin C", Dr. Linus Pauling and Dr. Ewan Cameron, Linus Pauling Institute of Science and Medicine, 1979, discuss the cause, prevention and treatment of cancer and that Vitamin C plays an important role in this matter; that nutrition and environmental changes for the patient play a part in the stimulation of the natural protection mechanism of the body to overcome cancer and that large doses of ascorbate are an important nutrient. (p. 47-9) For the control of cancer, the most important nutrient may be Vitamin C. (p. 99) Ascorbic acid, a weak acid, is a chemical reducing agent and can react with oxygen. (p. 208) When ascorbate reacts with molecular oxygen, free

[34] THE SEARCH FOR A NATURAL CURE FOR CANCER, Albert Szent-Gyorgyi, Ph.D., M.D., N.L., Cancer & News Journal, Vol. 9, No. 4, p 7, 1974.

radicals can be formed. (p. 192) High doses of vitamin C are important not only to the body in the protection against cancer, but also in the protection against viral and bacterial diseases. (p. 107) And supplemental ascorbate will play a part in all future cancer treatment programs. (p. 196) For progress to be made in the fight on cancer, organizations such as the American Cancer Society and the National Cancer Institute must open their minds to new ideas. (p. 86) I believe that the independent research and the advanced ideas in cancer research, as illustrated by scientists such as Dr. Linus Pauling and Dr. Ewan Cameron, are of up most importance in the present day fight against cancer and viral diseases.

In 1936 Dr. Koch was able to obtain a limited amount of institutional research accomplished through the help of a friend, Dr. R. G. Hoskins, a member of the Board of Trustees for The Memorial Foundation for Neuro-Endocrine Research, Harvard Medical School. Dr. George R. Harrison, at M.I.T., at the request of Dr. Hoskins, conducted a preliminary spectrographic test of Dr. Koch's Glyoxylide in August of 1936. Dr. Harrison found that Glyoxylide had a similar spectrographic curve to glyoxal in water.[35] Dr. Hoskins was also to arrange a few tests using the "Warburg Chamber" to test the effect of Glyoxylide on cellular oxidation for Dr. Koch. Mr. Hoskins wrote:[36]

> "The Warburg (chamber) work is looking quite favorable. The initial experiments indicate definitely that the glyoxylide makes an immediate difference in the oxidation rate of living tissue, --using liver as the substrate. We want to make a few more runs before saying anything definite but the present indication is that after a seven minute lag the first effect is a depression in the oxidation rate. This lasts, however, only a short time after which the oxidation picks up again. This of course is not the phase of the reaction that is of the most interest but it serves to show at any rate that the material has a real effect in an oxidation-reduction system. There are skeptics I suppose who would not have conceded even that."

In a subsequent letter, dated January 5, 1937, to Dr. Koch, Mr. Hoskins made the following report on their research:

> "...our results in the Warburg have been consistent in showing that tissue oxidation is at once increased by the material. Control studies indicate that the effect is not to be ascribed to any associated materials. Dr. Nickerson has become very much interested in the chemistry of the effect and we should like to study it further in connection with the oxidation of pyruvic and other acids that seem to be involved in the biological oxidation cycle. In particular, we want to see what it will do in removing the block that seems to be characteristic of the distorted cycle of cancer tissue. We hope before a great while to have cancer tissue available and to study the oxidations of this as influenced by the glyoxylide in the Warburg chamber."

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[35] Copy of Dr. Harrison's August 3, 1936 is attached.

[36] Dr. R. G. Hoskins was the only person how was willing to do some scientific research on Dr. Koch's treatment "Glyoxylide". Beside a preliminary spectrographic analysis of Glyoxylide at M.I.T., a few tests were conducted in the Warburg Chamber to study the effect of Glyoxylide on cellular oxidation. This research was limited and I cannot find any records that the research was ever completed.

In an article published in Science, February 24, 1956, Vol. 123, Number 3191, "On the Origin of Cancer Cells", which was based on a lecture by Otto Warburg, Ph.D., N.L., Dr. Warburg said in his summary:

> "Cancer cells originate from normal body cells in two phases. *The first phase is the irreversible injuring of respiration*. Just as there are many remote causes of plague--heat, insects, rats--but only one common cause, the plague bacillus, there are a great many remote causes of cancer--tar, rays, arsenic, pressure, urethane--but *there is only one common cause into which all other causes of cancer merge, the irreversible injuring of respiration.*[37]
>
> "The irreversible injuring of respiration is followed, as the second phase of cancer formation, by a long struggle for existence by the injured cells to maintain their structure, in which a part of the cells perish from lack of energy, while another part succeed in replacing the irretrievably lost respiration energy by fermentation energy. *Because of the morphological inferiority of fermentation energy, the highly differentiated body cells are converted by this into undifferentiated cells that grow wildly--the cancer cells*.
>
> "To the thousands of quantitative experiments on which these results are based, I should like to add, as a further argument, the fact that there is no alternative today. If the explanation of a vital process is its reduction to physics and chemistry, there is today no other explanation for the origin of cancer cells, either special or general. From this point of view, mutation and carcinogenic agent are not alternatives, but empty words, unless metabolically specified. Even more harmful in the struggle against cancer can be the continual discovery of miscellaneous cancer agents and cancer viruses, which, by obscuring the underlying phenomena, may hinder necessary preventive measures and thereby become responsible for cancer cases." p. 312. (emphasis added)

In Warburg's paper, "Prefactor Chapter" he identifies benzoquinones and naphthoquinones (the latter compounds occur in nature as ubiquinones and vitamins K) as oxidants. In this paper he reports that through mouse cancer experiments it has been shown "that living animals tumors tissue alone lives anaerobically, as was expected since the discovery of the fermentative metabolism of cells...Very likely this great difference in the life of normal and cancer cells will be the basis of a future selective cancer chemotherapy." (p. 11, 1963) (emphasis added) Dr. Warburg continues:

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[37] Dr. Szent-Gyorgyi, in his cancer research has shown that "Glyoxal" is essential to stop normal and/or cancer cell division and when glyoxal is not present, cell division and/or uncontrolled cancer cell division will continue on indefinitely. The all-important chemical structural feature of glyoxal is its "di-carbonyl structure." Glyoxylide is a trimmer of O=C=C=O or $(O=C=C=O)_3$. Dr. Szent-Gyorgyi's cancer and cellular medical research postdates the earlier cancer research of Dr. Warburg. Dr. Warburg's cellular research was limited to the measurement of cellular oxidation and reduction and the difference in cellular metabolism between cancer and normal cells. He developed the Warburg Chamber as a means of studying the metabolism rate in cancer and normal tissue. Dr. Szent-Gyorgyi's cancer research went a step forward and it involved the enzyme system that actually controls normal cell division and when the body requires it. When this system brakes down and goes out of control, cancer can follow. It is the dicarbonyl structure that he found in glyoxal that completes this enzyme system and stops the on controlled cell division in cancer. Dr. Szent-Gyorgyi, in 1974, gave Dr. Koch the credit for being the first person to make this discovery years earlier before this chemistry was fully understood by anyone.

"Owing to their anaerobiocity, and because anaerobic cells contain less catalase than aerobic cells, hydrogen peroxide acts selectively on cancer cells.... To produce H_2O_2 in living cells we injected into mice quinones[38] which produce H_2O_2 by alternate reduction and oxidation, in a way similar to that by which H_2O_2 is produced today in the chemical industry. Small curative effects were obtained, but the quinones were too toxic to be of practical value.

"More encouraging were experiments with glyceric aldehyde, which as has been known for a long time, inhibits fermentation of cancer cells at a concentration of 0.01 N."

Dr. Warburg goes on to explain the limitations of using the aldehyde in his experiments. At the end of his paper he added the following paragraph (c):

"Since this article was written, we observed that glyceric aldehyde and cysteine react very rapidly at room temperature, at physiological pH. The compound contains one molecule of the aldehyde to one molecule of cysteine and is a relatively stable thio-hemi-acetal of the aldehyde. Other SH compounds react much more slowly, for example, glutathione and coenzyme A; yet it may be that a reaction with an SH group is the cause of the rapid killing of cancer cells by the aldehyde. (p. 14) (emphasis added)

Dr. Warburg in his lecture at the meeting on June 30, 1966 at Lindau, Lake Constance, Germany, and in the revised editions of this lecture (1969), came to the conclusion that anaerobiosis is the prime cause of cancer and that this (anaerobiosis) meets the demands of Pasteur. (p. 14) In the preface to the Second Revised German Edition of the Lindau Lecture, "The Prime Cause and Prevention of Cancer, he wrote:

"Since the Lindau lecture of June 1966 many physicians have examined - not unsuccessfully - the practical consequences of the anaerobiosis of cancer cells....**The cure of human cancer will be the result of biochemistry of cancer and of biochemistry of man.**

"There exists no alternative today to the prevention of cancer as proposed at Lindau. It is the way that attacks the prime cause of cancer most directly and that is experimentally most developed. Indeed millions of experiments in man, through the effectiveness of some vitamins, have shown, **that cell respiration is impaired if the active groups of respiratory enzymes are removed from the food; and that cell respiration is repaired at once, if these groups are added again to the food. No way can be imagined that is scientifically better founded to prevent and cure a disease, the prime cause of which is an impaired respiration.** Neither genetic codes of anaerobiosis nor general cancer viruses are alternatives today, because no such codes and no such viruses in man have been discovered so far; **but anaerobiosis had been discovered.**" (emphasis added)

"It has been asked after the Lindau lecture why the repair of respiration by the active groups of the enzymes was proposed as late as 1966, although the

[38] Early in Dr. Koch's cancer research, he found that para-benzoquinone had therapeutic effect on some of his cancer cases.

fermentation of cancer cells was discovered as early as 1923. Why was so much time lost?

"He who asked this question ignored that in 1923 the chemical mechanism of enzyme action was still a secret of living nature alone. The first active group of an enzyme, `Iron, the Oxygen-Transferring Part of the Respiratory Enzyme' was discovered in 1924. There followed in two decade the discoveries of the hemoproteins, the flavoproteins and the pyridinproteins, a period that was concluded by the `Heavy Metals as Prosthetic Groups of Enzymes' and by the `Hydrogen Transferring Enzymes' in 1947 to 1949.

"Moreover, during the first decades after 1923 glycolysis and anaerobiosis were constantly confused, so that nobody knew what was specific for tumors....Anaerobiosis of cancer was an established fact only since 1960, when methods were developed to measure the oxygen pressure inside of tumors in the living body.

"*This abridged history shows that even the greatest genius would not have been able to propose in 1923,* what was proposed at Lindau in 1966. As un-known as the prime cause of cancer was in 1923 *was the possibility to prevent it.*

"Life without oxygen in a living world that has been created by oxygen was so unexpected that it would have been too much to ask that anaerobiosis of cancer cells should be accepted at once by all scientists. But most of the resistance disappeared when at Lindau it was explained that on the basis of anaerobiosis there is now a real chance to get rid of this terrible disease, if man is willing to submit to experiments and facts. It is true that more than 40 years were necessary to learn how to do it. But 40 years is a short time in the history of science." (pp. 1-3) (emphasis added) (August 1967) Otto Warburg

At the end of Dr. Warburg's lecture in 1966 he said:

"But nobody today can say that one does not know what cancer and its prime cause is. On the contrary, there is no disease whose prime cause is better known, so that today **ignorance is no longer an excuse** that one cannot do more about prevention. **That the prevention of cancer will come there is no doubt, for man wishes to survive. But how long prevention will be avoided depends on how long the prophets of agnosticism will succeed in inhibiting the application of scientific knowledge in the cancer field. In the meantime, millions of men must die of cancer unnecessarily**." (p. 16) (emphasis added)

Dr. Warburg has shown through his work on cell metabolism that normal respiration (aerobic metabolism) of a healthy cell is changed to anaerobic metabolism in cancer cells. That viruses, chemical agents, etc are remote causes that lead to anaerobiosis and it is this anaerobiosis that is the primary cause of cancer. Dr. Warburg believes that once anaerobiosis occurs, this process cannot be reversed.

In 1963, Dr. Koch wrote:

"Warburg credited anoxia with the power to produce cancer, and while anoxia is essentially provocative, we have found that in addition two carcinogenic agents are also necessary. They are the initiating and sustaining carcinogens. One and the same chemical structure may serve in both capacities.....However, the initiating carcinogen or allergen may be a virus, a product of germ activity in the

> intestine, a mercaptan or other structure carrying a sulphidryl group, or a free radical produced by the sun's rays on a ripening pollen, or present in some plastic material. The sustaining allergen or carcinogen is in our experience a product of germ activity. It is brewed in an old scarred in focus of silent infection where enough oxygen is not admitted to burn the free radicals produced in its slow metabolism, thus giving them a chance to polymerize. Both are joined to the energy receiving mechanism of the host cell by free radical addition, and hence by a single covalent bond. The integration of a virus is with the energy producing mechanism, likewise by a single covalent bond and so the phenomena associated with viral infection and allergy including cancer producing as well as their reversals are of the same pattern and may be discussed together. "Though the single covalent bond is well known for its easy rotation under environmental influences, it appears fixed for each disease entity, a fact that gives a good clue to the nature of the critical atomic groups both of the pathogen and of the host cell energy producing and receiving mechanism." (Neoplastic And Viral Parasitism, Their Basic Chemistry And Its Clinical Reversal; p. 7, 1963)

Dr. Koch has shown how the cell can be injured to produce Warburg's anaerobiosis and how the resulting anaerobiosis can be reversed. This can be corrected by the removal of the injuring causing agent (carcinogen, etc) and by restoring the cell to its normal aerobic chemistry. Thus, through the use of the proper oxidation catalyst (as found in glyoxylide, para-benzoquinone, etc), by removal of all toxins from the body and by following a proper diet, the reversal of the disease process follows.[39]

In 1993, Yannis Gounaris, Ph.D., a research molecular biologist, did an electron spin resonance (ESR)) test on a product made from the oxidation of inositol with chlorine under ultraviolet (UV) light and then precipitated it with barium chloride (a process developed by Dr. Koch in the 1940's). His laboratory test showed that this procedure produced a product containing a free radical. A homeopathic solution (12x potency; 10^{-12}) of a mixture of this product with p-benzoquinone, glyoxal and triquinoyl obtained from commercial sources was prepared and clinically tested by given it to a person with a 12 year history of a herpetic condition that would break out every 20 to 30 days. Three months later, Dr. Gounaris reported that there had been no outbreaks from this condition and that no adverse effects of any kind were observed from using this product.

A little bit of additional history: Over the years the editors of the Journal of the American Medical Association have claimed that Dr. Koch's medications were secret medications. This claim was untrue. It is the common practice for all inventors to write up

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[39] Dr. Koch has never had available to him in the United States a modern biological research laboratory for him to work in and conduct his medical and chemical laboratory research. Except for the onetime help he received from Dr. Hoskins in 1936, no university or other scientific laboratory in the United States was willing to support his medical research. That is why Dr. Koch had to go to Europe and South America to do his medical research. The only exceptions were when Government of British Columbia, from 1943 to 1948, did officially approve the cattle research of Dr. Arnott using Dr. Koch's Glyoxylide and thanks to Dr. Willard Dow and the scientist at Dow Chemical company, Dr. Koch was finally able to identify the true chemical structure of Glyoxylide and Malonide in 1946. Even today, the University of Michigan will have nothing to do with Dr. Koch and his medical research. They still live in the past and follow the dictates of the editors of the Journal of the American Medical Association going back to 1919-1920. Is U. of M. supposed to be a progressive scientific institution? I sometimes wonder!

their proposed patents and then obtain government patents to protect their legal rights to their discoveries. In 1919 Dr. Koch wrote out, in hand, a proposed patent procedure on how to prepare one of the medications he had been working with. This medication was extracted from "fresh" animal tissue. On August 13,1920 he prepared a second, typed written, proposed procedure using calf hearts or other tissue that had been taken as soon as possible from an animal after death. This tissue was obtained from a local slaughterhouse in Detroit. It should be noted that for many years Dr. Koch tried to obtain United States Patents on the procedure to manufacture his treatments without success do to the efforts and the power of the American Medical Association in being able to block his right to United States patents. It has always been the claim of the J.A.M.A. that his medications had no therapeutic value in the treatment of any disease and thus the U.S. Government should not grant Dr. Koch any U.S. Patents. Dr. Koch had been able to obtain patents in Canada, England, and other countries, but not in the United States due to the false misrepresentations of the J.A.M.A. editors. With no patent protection, the J.A.M.A. editors were able to claim that Dr. Koch's Treatment was a secret drugs. After Dr. Koch obtained his first two and only U.S. patents the J.A.M.A. changed its claim. The J.A.M.A. then "Black Listed" his Treatments". Thus no doctor was permitted to use any of his medications. If a doctor was caught using them, that doctor could, and in some cases that medical doctor did loose his license to practice medicine.[40] It should be noted that Dr. Koch was never successful in obtaining additional U. S. Patents during his lifetime due to the false claims and representations that were made by the J.A.M.A. about Dr. Koch and his medications.

One of the medications that Koch Laboratories prepared and sold only to licensed doctors was "B.Q." (para-benzoquinone) which was obtain from Eastman Kodak Company. "B.Q" was then purified so that it could be used as a medication in 6X dilutions. Another product was "T.Q." ("Triquinoyl") that Dr. Koch made from the oxidation of inosital and used in 6X, 9X, 12X and higher homeopathic dilutions. There were several other medications that he also manufactured and sold only to licensed doctors. Glyoxylide sold for $25.00 per ampule and B.Q. sold for $10.00 per ampule. Aldrich Chemical Company now manufactures its version of "T.Q." that they call Hexaketoyolohexane octahydrate in its catalog. Another one of Dr. Koch's medication was Ethylene Disulphonate that was first used and sold in England. It was also manufactured in California by Spicer-Gerhart Company under license by Dr. Koch and sold to medical doctors in the United State.

A point of interest: In 1953 the Senate Committee on Interstate and Foreign Commerce, appointed Benedict F. FitzGerald, as a special investigator to investigate different treatments for cancer including Krebiozen, Glyoxylide, Mucorhicin, etc. and the influence of the American Medical Association had over the practice of medicine and its control over acceptable cancer medications. Before this investigation had been completed Senator Charles W. Tobey, who had ordered this investigation, died and Senator Bricker

[40] See the investigation of the Koch Treatment (SOME INFORMAL REMARKS ON THE TREATMENT OF CANCER by Professor Carroll W. Allen, April 27, 1925). Dr. Allen was forced to stop his investigation of the Koch Treatment or loose his position as Professor of Medicine at Tulane University, School of Medicine; his membership in the A.M.A. etc. Also see the Report of Benedict F. FitzGerald, Jr., Special Counsel To The Committee On Interstate Commerce of the United States attached.

suddenly stopped this investigation. Mr. FitzGerald filed his partial report that is now a public record. The newspaper columnist, Drew Pearson, wrote an article on this Senate Investigation that had come to an abrupt halt thanks to political pressure. Had the A.M.A. permitted this investigation to continue, the truth about medical research of Dr. Koch would have been brought out before the public and they would be able to fully benefit from it. Today medical schools in our country, including the University of Michigan and Wayne State University, continue to treat Dr. Koch's scientific research in the same way that the Catholic Church treated Galileo so many hundred years ago. It is over ninety years since Dr. Koch published his first paper on cancer and the American public is still being kept in the dark about the scientific truth that he has established. How many hundreds of years must pass before the American Medical Association, the American Cancer Society and other such organizations will allow the American public to benefit from his medical research? Only time will tell.

Since President Nixon declared his "War on Cancer" years ago, our government has spent billions and billions of dollars on cancer research and what answers has this medical research produced? How sound was this cancer research and how successful has it been to cure a cancer patient or to extend the life of that cancer patient? What success has today's cancer research brought forth to extend the lives of the individual cancer patient as compared to what was accomplished 10 years ago?, 20 years ago?, etc.

It might be noted that in 1940 the cost of Glyoxylide was $25.00 (which included a returnable specially prepared sterile syringe and needle for the doctors use in giving the treatment to his patient). Today a modern pharmaceutical company could produce Glyoxylide in very large quantities at a cost of less than one dollar per ampule and still make a profit, if the A.M.A. and the F.D.A. would allow this to happen. There is still a lot of medical research to be conducted to better understand how the Koch medications function in relation of the body's cellular chemistry. Dr. Albert Szent-Gyorgyi expressed his theories on the cause and treatment of cancer in 1974 at a time that he acknowledge that Dr. Koch had reached the same conclusion some 10 years earlier. Actually, Dr. Koch's cancer dated back more than 55 years during the darker age of true cancer research.

Exhibits:

1) "Detroit Boy Wins Chicago University Scholarship and July 7, 1905 letter to Dr. Koch from the University of Chicago.

2) CHEMICAL CONSEQUENCES IF THE REOVAL OF THE PARATHYROID GLANDS, reprint of Editorial from The Journal of the American Medical Association, Vol. 61, No, 13., p. 1049, Sept. 27, 1913.

3) a) 1911 letter to Dr. Koch from the University of Kansas; b) Dr. A. B. Macallum's letter of May 4th, 1914 inviting Dr. Koch to go to the University of Toronto and Dr. Koch's reply letter of May 6, 1914 thanking Dr. Macallum for the invitation; c) An article; INSULIN ---ITS HISTORY; d) Dr. Willard H. Dow's June 21, 1946 letter to Mr. Laurence B. Thatcher in which he states his reasons for supporting the medical

research of Dr. Koch; e) The October 26,1936 letter from Dr. Parran, The Surgeon General of the United State, to Dr. Koch in which Dr. Parran turned down Dr. Koch's request to treat leprosy patients at the Louisiana leopard colony and thus duplicate the successful medical research of Dr. Maisin in the Belgium Congo prior to World War II; f) A New Treatment of Leprosy, an Interview of Dr. Maisin just prior World War II; g) Four newspaper articles about the A.M.A.; h) The Power of the A.M.A.; and i) First page of the article **"SOME INFORMAL REMARKS OF THE TREATMENT OF CANCER"** by Dr. Carroll W. Allen's (Professor of Medicine, Tulane Medical School). In 1925, Dr.Allen investigation of Dr. Koch. Dr. Allen was punished by the A.M.A. for his unauthorized investigation of the Koch Treatment for cancer.

4) Four letters of interest about Dr. Koch and The Detroit College of Medicine and Surgery between January 18, 1918 and October 17, 1919.

5) Dr. Koch's first paper on his cancer research: **A NEW AND SUCCESSFUL TREATMENT AND DIAGNOSIS OF CANCER,** Detroit Medical Journal, 1919.

6) a) Detroit News' article and report to the public on Dr. Koch's cancer research, September 7, 1919 and b) a typed copy of this newspaper article.

7) Dr. Koch's second and more detail paper on his cancer research: **A NEW AND SUCCESSFUL DIAGNOSIS AND TREATMENT OF CANCER, Medical Record of New York, Oct. 30, 1920;** and Dr. H. Edwin Lewis's letter of Nov. 4, 1920 to Dr. Koch. Note: Dr. Koch offered this research paper to the J.A.M.A. to print in 1919.

8) Newspaper Articles: a) DOCTORS SEE PROGRESS IN CANCER FIGHT; b) MAYOR OFFERS DR. KOCH HELP; c) CURE FOR CANCER TO BE GIVEN TEST; d) KOCH ASKS AID TO TEST CURE; and e) 2 Voice of The People articles dated June 1924.

9) Nobel Prize Winner Publicly Recognizes the Cancer Research of Dr. Koch in 1974 (THE SEARCH FOR A NATURAL CURE FOR CANCER, Albert Szent-Gyorgyi, Ph.D., M.D., N.L., Cancer News Journal, Vol. 9, No. 4, Page 7, 1974.)

10) Dr. Koch's 1919 Membership Certificate and August 4, 1919 letter to the J.A.M.A. about printing the Nov. 4, 1920 (which this journal would never printed).

11) Dr. Koch's Feb. 1, 1922 letter to Royal Copeland, Health Commissioner for New York City, in reference to the Koch treatment for tuberculosis and Dr. Copeland's reply.

12) **The Function of Cancer,** Dr. Koch's third and last cancer research paper that got through the J.A.M.A.'s censorship of Dr. Koch's research papers; and Dr. Mitchell's, Nov. 12, 1924, letter to Dr. Koch about this paper.

13) **Declares Basic Cancer Causes, Body Poisons;** a 1925 article about Dr. Koch from an Ann Arbor, Michigan newspaper.

14) **"Who was Dr. Frank Smithies."** Some information on the Chicago Doctor who first became interested in Dr. Koch as a medical researcher in 1912 and in 1919 wanted to take control of Dr. Koch's medical research. Also, letter from E. R. Squibb & Sons about producing Dr. Koch's treatment for cancer in 1920 before the J.A.M.A. attack's on Dr. Koch. Also, J.A.M.A. article about the arrest of Dr. Koch in April

1942, on Good Friday, in which the J.A.M.A. took credit for the Government's action.

15) The McWhorter Affidavit, re Judy McWhorter and the Newspaper article: "Doctors' Convinced That Little Judy Overcame Cancer Ailment Herself." (Judy received one treatment of Glyoxylide, at the age of about 11 weeks for cancer involving 85% of her liver. She made a full recovery. All of the doctors at this meeting knew Judy received the Koch after she had been sent home to die by her A.M.A. doctors. Note: (The treating doctor lost his license to practice medicine for using the Koch Treatment, an A.M.A. unapproved medication and treatment.)

16) In 1926 Dr. Koch's letter offering to present his cancer research to the American Society For The Control Of Cancer's September 1926's International Cancer Meeting. Dr. Koch's offer was refused and at this meeting the Society members vilified him.

17) Some newspaper articles on the dismissal of the J.A.M.A.'s instigated F.D.A. criminal actions against Dr. Koch after the two longest criminal trials in the history of the Food & Drug Administration, to date. Also some newspaper daily articles during the 1943 criminal trial in Detroit. During the 1946 trial, the government instructed the Detroit newspapers not to cover the daily trial testimony as they had during the 1943 trial. The F.D.A. wanted to censor this medical research and treatment from the public. About 145 newspaper articles appeared in the three Detroit News Papers during this 1943 criminal trial. Also note that no local Federal Judge would take the case for a second trial and a Federal Judge from Ohio had to be imported to Detroit to preside over the 1946 trial.

18) **A BRIEF HISTORY OF THE DEVELOPMENT OF THE KOCH SYNTHETIC ANTITOXINS (1941).** Dr. Koch illustrates how inositol, a dicarbonyl, is converted into Glyoxylide.

19) **Inositol 'Essential' for Cells** newspaper article. **(Dr. Koch recognized the importance of Inositol in his early cancer research.)**

20) **Dr. Koch contacts Georgia Warm Springs Foundation, Inc. about his medical research and treatment for Polio. He offered them his treatment for Polio in 1936; Whoever the A.M.A. would not approve of the use of Glyoxylide for treating Polio on any other disease and the Foundation turned down Dr. Koch's offer.**

21) **CO-ED'S SWIF RECOVERY - MYSTERY EVEN TO DOCTOR;** August 1949 Polio case. The A.M.A. tried to take away the Doctor's license to practice medicine for using Glyoxylide, an A.M.A. unapproved (Black Listed) medication.

22) **STATEMENT OF WARREN E. MILLER**; Dr. Koch tries to give Koch Treatment to Veterans Administration for the treatment of Malaria patients in 1943. (Note: In the 1920's Dr. Koch also offered to give his treatment to the government for T.B. and to the Veterans Administration without success.)

23) **Several articles about A.M.A.**: (1) **"A.M.A. Split over Cancer Drug"** (Krebiozen); (2) Yale Law Journal Calls AMA Retarded to Medicine, May 1954; and (3) AN APOLOGHY OVER DUE.

24) A series of articles on the use of Glyoxylide in the treatment of Mastitis in cattle; a Canada province approves the use of Glyoxylide in 1945 in the treatment of cattle.; and "A Judicial Statements Against Koch Treatment termed Reckless" – 1953 article.

25) Two medical papers by Dr. H. M. Candlish in 1939 on the Koch Treatment in Canada.

26) Morris' article: Dr. Koch and 'Glyoxylide' ... A Man Ahead of his Time.

27) Two newspapers articles about Dr. Koch's 1941 trip to Brazil and a November, 1941, photograph of Dr. Koch at the airport when he left Brazil to return to the U.S.A. He promised his friends that he would return in April of 1942 to continue his medical research in Brazil. He was unable to return to Rio until 1948.

28) Dr. George R. Harrison's August 3, 1936 preliminary spectrographic analysis of Glyoxylide indicating the presence of a glyoxal type structure.

29) Dr. Koch's booklet: INSTRUCTIONS *for* PATIENT.

30) Cancer research articles; Letter of November 1, 1979 and some information on the cancer research of Albert Szent-Gyorgyi, M.D., Ph.D., N.L.

31) The Use of Peroxide of Diformaldehyde and Organic Unsaturated Compounds in the Treatment of Anergy and Hyperergy, Joseph Henri Maisin, M.D., The Medical Press And Circular, September 7, 1938, Vol. CXCVII, No. 5183;. Dr. Maisin started his medical research with Dr. Koch in December of 1935. Dr. Koch gave Dr. Maisin's University a license to use these medications in Europe and Africa.

32) A list of Reference papers, etc by Dr. Albert Szent-Gyorgyi and Dr. Otto Warburg.

a) "Cell Division and Cancer," Science 149, p. 34-7, July 2, 1965;

b) "Keto-Aldehydes and Cell Division, Glyoxal - Derivatives may be regulators of cell division and open a new approach to cancer," Science 155, p. 539-541, Feb. 3, 1967.

c) The National Observer's July 5, 1975 article "Electromagnetic Theory of Cancer, A Nobel Winner's Explanation," by Patrick Young who reported on Dr. Szent-Gyorgyi's cancer research;

d) Autobiotics and their use in eliminating nonself cells; U.S. Patent #5849783. This patent is based upon the medical research of Dr. Albert Szent-Gyorgyi and Laszlo G. Eqyud with a modified glyoxal molecule (a dicarbonyl chemical structure) to treat diseases of all types including cancer.

e) On the Origin of Cancer Cells, Otto Warburg, Ph.D. M.D., N.L., Science, Vol. 123, No. 3191, Feb. 24, 1956.

33) There are 2 U.S. Patents, based upon the medical research of Dr. Albert Szent-Gyorgyi and Dr. Laszlo G. Egyud, that confirm the scientific and medical research of Dr. W. F. Koch, which dates back to 1914 when he was Professor of Physiology at the Detroit College of Medicine and first conducted his original cancer research at the Detroit College of Medicine. Dr. Koch's medical research has opened the scientific door for today's scientist to carry on his work and to obtain worldwide recognition for this medical research that has benefited all humanity. For ninety-one plus years the American Medical Association and the American Cancer Society have selfishly refused to recognize Dr. Koch's medical research to the detriment of all. These two patents support Dr. Koch's medical research and they can be obtained "on line" free of charge. They are worth reading by all. They explain the

"Cancerostatic action of dicarbonyl chemical structure as found in methylglyoxal," a ketoaldehyde and how it works with the body to fight all kinds of diseases including cancer, fungal diseases, parasitic diseases, viral infections, etc. A better, nontoxic and more perfect dicarbonyl is Glyoxylide, $(O=C=C=O)_3$, a trimer of O=C=C=O. Triquinoyl is a well establish chemical compound that is now commercially available for medical researchers to use in their scientific research, should they be interested in progressive scientific and medical research. What seemed impossible yesterday to the average medical scientist is now possible today, if only today's scientists would open their eyes and minds to see the scientific truth as Dr. Koch first saw it 90 plus years ago. **Note**: Attached you will find the first 7 pages of U.S. Patent 5849783 which explains the principals on which this simple dicarbonyl structure functions as the basic universal therapeutic agent for the treatment of cancer and its allied diseases. I believe that further medical research will clearly show how the healthy body makes its own "triquinoyl", $(O=C=C=O)_3$ by the simple oxidation of inositol, one of the Vitamin B complex vitamins, to fight off all diseases as Dr. Koch has illustrated in his writings and in his 1941 paper "A Brief History of the Development of the Koch Synthetic Antitoxins". Dr. Koch called this phenomenon the "Chemistry of Natural Immunity ".

a) http://www.freepatentsonline.com/5849783.html

b) http://www.freepatentsonline.com/5147652.html



DETROIT BOY WINS CHICAGO UNIVERSITY SCHOLARSHIP

William Koch Takes Highest Stand In Examination To Which Students From High Schools Competed.

William Koch, a Detroit boy who has been taking a post-graduate course at the Eastern High school, won the six years' scholarship offered by the Chicago university in a competitive examination of students from 25 high schools of the country.

Young Koch is about 19 years of age and is a graduate of the Field school. He finished his course in the Eastern High last January, his post-graduate course following. During his vacations and Saturdays he assisted at the store on Townsend and St. Paul aves. belonging to his mother, with whom he lives.

Should the work of young Koch prove satisfactory in the "Rockefeller college," he will have an opportunity to become a member of the faculty at the completion of his studies there, but at present his ambition is to become a physician.

WILLIAM KOCH.

"DETROIT BOY WINS CHICAGO UNIVERSITY SCHOLARSHIP."

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COPY OF EDITORIAL FROM THE JOURNAL OF THE
AMERICAN MEDICAL ASSOCIATION
VOLUME LXI NUMBER 13

CHEMICAL CONSEQUENCES OF THE REMOVAL OF THE PARATHYROID GLANDS

The complete removal of the parathyroid glands is attended with fatal consequences. This experimental fact speaks decisively with regard to their importance for the maintenance of the bodily functions; it does not, by itself, give any indication of the mode in which the parathyroidal tissue determines the healthy continuance of the normal processes in the organism. As has been done in the case of other so-called glands with internal secretion, so here we may assume that they act in one of several ways —either they furnish some regulatory or stimulating product (a hormone) which is distributed to appropriate parts of the body, or they may act as antitoxic agencies, neutralizing, modifying or destroying products which would otherwise be harmful to the individual.

The most prominent symptoms of abnormality which attend the removal of the parathyroids are perhaps those of tetany. This is of itself suggestive, though by no means demonstrative, of the participation of a toxic agent in the physiologic events caused thereby. The discovery of toxic bases in large quantities in the urine of parathyroidectomized dogs by Dr. Koch[2] at the University of Michigan is therefore of more than passing interest. In every case studied methylguanidin was present in the secretion of the kidneys. When this substance was found in smaller quantities, other guanidin bases were present, so that the excreted guanidin nitrogen approached a constant. In addition to these bases others were observed, namely, beta-imidazolylethylamin, cholin, neurin and unidentified bases, although these were not distributed uniformly in the cases studied.

The histologic picture which appears in the tissues of parathyroidectomized animals is one of cellular disintegration, particularly in such organs as the liver, kidney and brain. Various degrees of chromatolysis are observed in the nuclei, and in some places the latter disappear entirely in large areas. Koch suggests that the passive protein destruction which must accompany such tissue changes may give rise to basic products and thus account for the unusual compounds excreted. Inasmuch as in animals which have been operated on the specific toxic symptoms can be provoked by the feeding of digested protein, it may be that the toxic effects are initiated by products of intestinal or even of parenteral digestion. Normally these derivatives are incorporated in some cell molecule or stored up in some form. In the case of parathyroidectomized animals after feeding digested proteins, it is suggested that the products remain free and act as toxins. In animals operated on when no feeding occurred the symptoms increased in violence with short intermissions until death. The intensity of the symptoms doubtless followed the rate of disintegration of body protein. The pathologic condition would thus appear to be a failure on the part of the cells to build up their protein. This part of the metabolism of the cell, Koch reminds us, is regarded as the function of the nucleus. Such indications, together with the formation of free "nuclein" components, point to a nuclear atrophy. The histologic findings, moreover, show an active "nuclein" degeneration. The reputed relation of the parathyroid to calcium metabolism and the theories of glandular function built up on it have not made effective progress of late. One is not justified at present in saying that these are quite unfounded. Doubtless in the complex disturbances set up by so serious an operation as the complete exclusion of vitally important glands the interrelated consequences are varied and numerous. The outcome of the discovery of the toxic bases in the urine is the suggestion of Koch that the parathyroid secretion appears to be concerned also with anabolic processes related to the synthesis of nuclear contents. Whether or not such a hypothesis can be further substantiated remains to be seen; in any event the final successful isolation of recognized toxic chemical products of traceable origin has paved the way to definite conceptions and specific lines of inquiry where hitherto the explanations have been vague and the outlook unpromising.

[2]Koch, W. F.: Toxic Bases in the Urine of Parathyroidectomized dogs, Jour. Biol. Chem., 1913, xv, 43.

THE UNIVERSITY OF KANSAS

LAWRENCE.

COLLEGE OF LIBERAL ARTS AND SCIENCES.

OLIN TEMPLIN, DEAN.

June
Twenty-eight,
1911.

Mr. William F. Koch,

University of Michigan,

Ann Arbor.

Dear Sir:-

You have been suggested by Dr. Noby as a possible candidate for a position in the Department of Physiology in this institution. I write to ask you whether you would be interested in an Associate Professor-ship at a salary of seventeen hundred dollars to have charge of physiology classes for medical students. If so, I should be glad to hear from you and to receive such information regarding yourself and your preparation as you may care to submit in the interest of your candidacy.. Dr. M. T. Sudler, dean of the Medical Schoolin this institution, starts tomorrow for the east and will be in Chicago Friday and probably Saturday, stopping at the Auditorium Hotel. If you are interested in this position, I wish very much that you might meet him at some convenient point and if you will kindly telegraph him suggesting such a meeting, probably at Detroit, I am sure he would stop off and see you. He might be willing to run up to AnnArbor but Detroit would suit him better, I am sure, if that would be convenient for you.

Respectfully, Olin Templin-

UNIVERSITY OF TORONTO
BIOCHEMISTRY

May 4th, 1914.

W.F. Koch, Esq., M.D.,
The Detroit College of Medicine,
Detroit, Mich.

Dear Sir,

Your name has been given to me in answer to enquiries of mine regarding the appointment of a Demonstratorship in my Department here, and I write now to place the matter before you, and to ascertain whether you are available for such an appointment for the coming year. The post involves seventeen hours of instruction per week in Biochemistry to two laboratory classes (one elementary and one advanced) in Arts of the Third and Fourth Years, in numbers of not more than fifteen each, and one class in Medicine of the Second Year of about a hundred. In the last-named class, you will be assisted in the instruction by four teaching Fellows.

The post is not a permanent one, but it may become a very important one indeed to a good teacher and an enthusiastic research man. The salary will be at least $1600.00, and it may be more for an individual with special qualifications.

UNIVERSITY OF TORONTO
BIOCHEMISTRY

The service is from the first of October until the middle of May. I may add that the facilities for research here are excellent, and material therefor is supplied gratis.

Will you kindly let me know how you view the matter at your earliest convenience.

I am,

Yours sincerely,

A.B. Macallum

Detroit College of Medicine and Surgery

May 6/1914

Prof. A. B. Macallum,
University of Toronto.,

Dear Doctor Macallum.

I am highly honored by your recent letter concerning an appointment in your department. However, I am not certain that my adaptability to the work in question, may not be overestimated; and therefore give brief information as to my experiences.

I have never taught Biochemistry other than the small portion given in Prof. Starlings Physiology. This was given, prefaced by a brief course in organic chemistry to medical students of this school, on their work in metabolism. My work here in Physiology is very successful considering the preparation of the students. For three years I have been instructor in Histology and Embryology at the University of Michigan where Prof. Huber gave the lectures, with the exception of the 12 demonstrations

of his leave of absence. when the work was in my charge.

My interests have always been absorbed by this wonderful subject Biochemistry, and I have therefore spent every available minute in studying advanced organic chemistry in the chemical Dept of the university; my evenings were occupied in synthesizing polypeptides after using Waldens reversal etc. When Prof. Huber was on leave of absence & time well occupied by teaching, extra moments were used to study urines of Parathyroidectomized dog. This year I have nearly completed the isolation of substances from 43 parathyroidectomized dogs and have some interesting results.

My experience are therefore very immature, and although I would do almost anything to avail myself of real research facilities and become associated with yourself who has done so much in this subject and can make of me an efficient worker in this field, I must decline to assume that I should do full justice to the teaching the first year.

Detroit College of Medicine and Surgery

Perhaps I might do better than I imagine. I should much prefer however to become of your students for a year and then if I prove worthy to accept such a position as you may decide upon.

I thank you sincerely for your kindness.

Very Sincerely,
Wm Fredrick Koch.

AT THE THEATERS

New Detroit—"The Covered Wagon," beginning Monday, October 28th.

Shubert-Detroit—

Garrick—"Whispering Wires,' continuing.

B. F. Keith's Temple—Vaudeville.

Orchestra Hall—Melba, Wednesday evening, October 24th.

"The Covered Wagon"—American history and world history is replete with striking evidence of our gallantry and heroism in conflict; whenever called upon to bear the brunt of battle and make the sacrifice for the betterment of ideals and humanity in general, the United States, as a people, has never been lacking or found wanting. But a greater side of our life—the struggle of a nation within itself—has been sung but little. It remained for the late Emerson Hough to immortalize this feature of American advancement and development and he did so in the master story, "The Covered Wagon." But the master pen of Hough has been driven to greater heights of enthralling appeal in the marvelous motion picture that has been made from his great story. The mighty and supremely superior *screen version* of *"The Covered Wagon"* will be seen at the new Detroit Opera House week beginning Sunday, October 28th.

Having defended ourselves against foreign aggression and even before there was waged the mightiest struggle in history—a struggle that this nation dedicated to liberty and the equality of mankind might last and be preserved—there occurred the most striking struggle in our history and among the histories of all people of all times. The call for interior development and expansion came and was answered in the closing forties. What a glorious movement that was, and the manner in which it was effected with man, woman, boy and girl sharing equal and alike the pain and the hardship was never shown before Hough made his pen picture. Now the motion picture has made it all the more vivid and Americans have something of which they can truly feel proud. Each player in this picture of a century was particularly chosen with a view to his or her fitness. Among them will be found J. Warren Kerrigan, Lois Wilson, Ernest Torrence, Tully Marshall, Ethel Wales and others.

An orchestra of 20 selected musicians will play the special score arranged for the production by Hugo Reisenfeld.

CURRENT TOPICS

INSULIN—ITS HISTORY

In a recent issue of *Detroit Saturday Night* we find an enlightening feature article which discusses Dr. F. G. Banting, his discovery of Insulin, and its reception by Canada and the World. Other than an annuity of $7,500 a year, the University of Toronto have had a chair of research endowed for him by the Ontario Legislature with endowment of $10,000 a year, and of this endowment the major part will be paid to him as a salary. Dr. Banting has also the privilege of doing private practice, and it is reported that this practice is growing wonderfully. The article further says:

"For a long time biologists had noticed small globules scattered about in the pancreas, 'like currants in a cake,' as one physician described them, but their exact function had never been determined. Dr. Banting hit upon the notion that perhaps these bodies, known as the 'islands of Langerhans,' because of their discovery by an anatomist of that name, might contain that mysterious sugar-burning secretion.

"He was so obsessed with the idea that he resigned his position, returned to Toronto and applied to his alma mater for facilities with which to experiment. In the spring of 1921 these were granted him and he set about to follow his hunch. The obvious thing to do was to separate the islands of Langerhans from the rest of the pancreas, make an extract from them and then try administering it to diabetic animals.

"In view of the fact that previous attempts to extract the substance from the pancreas of a dead animal failed because of digestive ferments which automatically destroyed them, Dr. Banting sidestepped this difficulty by operating on living dogs and tying up one set of the pancreatic ducts. Roughly this process constituted his first experiment; and it worked. He had obtained the long-sought secretion in its pure form and he called it 'insulin,' from the Latin insula, meaning island."

"The next step was to see if it would remedy a diabetic condition; dogs came in again for laboratory use, further establishing the triumph of vivisection. Animals rendered diabetic by the removal of the pancreas were then treated

(Continued on page 15)

(Continued from page 13)

with injections of the extract. The results were beyond the fondest hopes of the scientist. Dogs almost at the point of death, emaciated and listless, recovered life and energy almost immediately, took on weight and to all appearances were in perfect health as long as the injections were continued.

"In February, 1922, a little less than a year after Dr. Banting had his first inspiration, the first tests were made upon human patients in advanced stages of the disease. The results were amazing. Immediately a clamor for insulin arose from patients, hospitals and doctors the world over and with that clamor arose the problem of supply.

"Dr. Banting says that insulin is not a cure for diabetes but a remedy; it does not repair the organic defect but simply supplies to the body what the diseased organ is failing to supply.

"During his experimentation upon dogs in the laboratories of the university of Toronto Dr. Banting discovered a process of obtaining insulin from dead animals. He found that by treating the pancreas with alcohol and other agents, he could destroy the digestive part of the gland but leave the islands of Langerhans unimpaired. This opened the way to quantity production and made it possible to draw on the packing houses for the raw materials from butchered animals. Food animals now constitute the chief source of supply, but already laboratory workers have been casting their eyes over the world to find what particular form of life yields the largest supply and at the smallest cost.

"Strangely enough, they have found that from the ocean may be taken an almost inexhaustible supply of insulin-producing fish.

"The increase in output in the last few months seems to give promise that before a great while insulin will occupy a place in the family medicine cabinet along with castor oil and other home remedies. Already the cost of individual doses of insulin has been reduced from $5 to $3 to $2 to $1 and, in England, to 60 cents.

"The University of Toronto controls the world supply of insulin, Dr. Banting having patented the process and copyrighted the name, so that only such firms as are able to obtain licenses from the owners of the patents can manufacture it. This action was not taken with financial gain in view, but to prevent incompetent or unscrupulous manufacturers from flooding the market with spurious or untested preparations which might do the patient more harm than good. Its discoverers declare that insulin is a substance which is only safe when administered by a physician specially trained in its use."

note

LABORATORY WORKERS CATCH RARE DISEASE

(Special to the Bulletin by Science Service)

Washington, Oct. 26.—Two cases of Malta fever, a highly infectious but seldom fatal disease and one very rare in this country, have occurred among the laboratory staff of the U. S. Public Health Service Hygienic Laboratory here where the disease is under investigation. Both patients are now convalescent.

Goats are subject to the disease, and a few months ago there was an outbreak of it in Arizona in sections where unpasteurized goat's milk was extensively used as food. Doctors and workers from the Hygienic Laboratory were sent to the spot and after quelling the outbreak returned to Washington where further inquiry as to methods for the prevention and care of the malady were undertaken. The two cases among the laboratory workers followed.

Malta fever, as its name indicates, was formerly very prevalent on the island of that name and to a less extent throughout the whole Mediterranean basin where goats' milk is a staple food. While rarely fatal, it causes disability for long periods in many cases, convalescence being interrupted and tedious.

The two cases of this disease among workers in the Hygienic Laboratory calls renewed attention to the risks run by the doctors and scientists there who handle deadly germs with the same indifference to danger that is shown by workers with high explosives. Not long ago there were six cases in the laboratory of a rare disease known as tularemia. Rabbits and other small mammals have been found to be infected with this disease, which is easily transmitted to human beings, causing a long continued fever and prolonged disability, although the death rate is practically zero. So infectious is this disease that practically every laboratory worker who deals with it catches it sooner or later.

In a more serious class is the deadly Rocky Mountain spotted fever, a disease which because of its prevalence in parts of the northern Rocky Mountain region has caused the abandonment of settlements and ranches and serious loss of life and property. Cattle are subject to it and it is usually transmitted to man through the bite of a certain species of tick. The mortality in man runs from 5 to 90 per cent.

Although it has already killed severa

(Continued on page 17)

CABLE ADDRESS DOWCHEMCO

BRANCH SALES OFFICES
NEW YORK CITY
SAN FRANCISCO
PHILADELPHIA
LOS ANGELES
WASHINGTON
SAINT LOUIS
CLEVELAND
HOUSTON
CHICAGO
SEATTLE
DETROIT
BOSTON

THE DOW CHEMICAL COMPANY

MIDLAND MICHIGAN

TRADE DOW MARK REG. U.S. PAT. OFF.

June 21, 1946

Mr. Laurence B. Thatcher
Imlay City, Michigan

Dear Mr. Thatcher:

It is indeed a pleasure to acknowledge your letter of June 19 and to hear your comments, especially as applied to your sister-in-law in Bay City. It is rather unfortunate that our Company has become in any way associated with the Koch medical treatments, and I want to correct this statement right now. The Dow Chemical Company is not responsible and has no more than a very great scientific interest in this work, and Dr. Koch himself is to be credited in every respect with the origin of the ideas and for all his successes.

You may be interested to know, however, how we began to be interested in this method of treatment. Some years ago we decided it was up to us to apply ourselves to the chemistry of such diseases as influenza, and find out all we could. During the analysis of the problem entirely from a chemical standpoint, and not from a medical standpoint, we arrived at the conclusion that some medicinal of high oxidizing characteristics should be the method of medical cure. About that same time one of our people here discovered Dr. Koch's activity and found that his chemistry as applied to medical treatment was exactly the thing we were interested in. We proceeded to follow all his problems, and as a result of his observation of our interest, he began to concentrate a great deal of his attention in this neighborhood.

His recent trial in connection with the Pure Food and Drug Administration has brought him the support of some of our technical people on the basis of submitting technical information that is available here and has been proved up and which the government had attempted to misrepresent. Our intention all the way through has been to try to get at the truth of this whole matter, and whether it is Dr. Koch or somebody else, we would take the same attitude to try to prevent an innocent man from being crucified. We cannot understand what the Food and Drug Administration is driving at for the reason that all our information to date would indicate Dr. Koch has been exonerated from illegal practices as far as the Administration is concerned, and as for the mislabelling of packages, like everyone else it is merely a matter of interpretation rather than willful

violation of any law. Before the present trial came up, Dr. Koch had appeared before the Washington representatives of this department and thought the whole matter was straightened out to their satisfaction, but apparently not so. It is strange, because the same procedure is run into time and time again by industry when it is necessary to get a label properly approved before it goes to the public, but in his case it does not seem to be possible without a trial. He has had no trouble in proving his points, but the government has spent a tremendous amount of money to try to prove he is wrong. It almost sounds as if a certain group is attempting to persecute him unjustly.

I am replying to your letter in some detail to give you the benefit of our background and our interest in Dr. Koch's work. He is not a representative of our Company in any sense of the word. We have no control over his treatments, although we do hope to assist him in developing additional products for further use. As far as I am personally concerned, I consider him one of the outstanding scientists in the medical profession, and he is so far ahead of the thinking of his profession that he is naturally being ridiculed somewhat. As a matter of fact, the inventor of penicillin was completely ridiculed for a period of about twenty years until the war brought about its acceptance by the medical fraternity. The mere fact that Dr. Koch has a treatment definitely affecting virus diseases is of itself sufficently important that it ought to be analyzed from every angle by the medical profession. As I understand it, his treatment of the virus type of cancer will run anywhere from 40 to 60 percent cure. If he had a 10 percent cure, it would be something the medical men ought to look at, but the ways of the world are strange, and new ideas are slow in developing. I think we all have an opportunity to see something new aborning in Dr. Koch's work, and it pleases me a great deal to hear about your enthusiasm.

This type of treatment has been used with outstanding success in the case of cattle and other animals, but as luck would have it, I have a cow myself which was infected with mastitis, and although the record of mastitis cures is of the order of better than 90 percent, we have had a great deal of difficulty in getting her cured. Actually, I think the disease had progressed to such a stage before she had the injection that it will take a long time for her to recover, but I am still very hopeful and periodically we are able to see definite improvements. I have all the faith in the world she is going to be cured, and I am just pointing it out as an example with which I am personally familiar that is giving some difficulty.

I hope you have had a chance to meet Dr. Koch, as he is ardently interested in his work, although he is a very modest man. He is really working himself much harder than he should for his own health. I sincerely hope some day the public will recognize him for his ability.

It was so kind of you to write and I hope I have not presumed too much on your kindness by sending you such a long reply.

With kind regards,

Very truly yours,

Willard H. Dow

Willard H. Dow
President

Re Virulent Isolations

0725

TREASURY DEPARTMENT

PUBLIC HEALTH SERVICE

WASHINGTON

IN REPLYING
ADDRESS THE SURGEON GENERAL
U. S. PUBLIC HEALTH SERVICE
AND REFER TO

October 26, 1936.



Dr. William Frederick Koch,
8181 East Jefferson Avenue,
Detroit, Michigan.

Dear Dr. Koch:

I wish to acknowledge the receipt of your letter of October 10, referring to the conference held in this office under date of September 15, and submitting certain data in support of views expressed by you at that time.

We have taken note of the several points you discuss but I regret to advise you that we are not at present in a position to go forward with studies in the field in which you are especially interested.

Very sincerely yours,

Surgeon General

UNIVERSITÉ DE LOUVAIN
(BELGIQUE)

ISTITUT DU CANCER

DIRECTEUR : PROF. J. MAISIN

Louvain le 28 octobre 1934

Monsieur le Docteur KOCH

Hotel Imperial

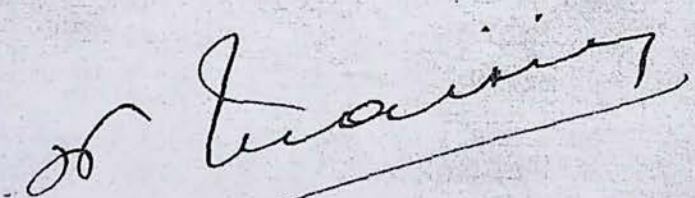
VIENNE.

Dear Sir,

I got your letter yesterday. I know very well Father Roosens and he spoke with me a few words during his last holidays in Belgium.

As you know I am very interested in cancer research as you are, I am thus very interested too in your treatment and I would be glad to test it on some of my bad cases and even if it is harmless on good casse. I think the best would be to meet you in Louvain You may come anytime you like, next week or the second week of November, any afternoon except the first or second of November or any Saturday. If you would be unable to come in Louvain I would be glad to get some of your solution.

Hoping to have the pleasure to meet you here I remain very sincerely yours.



UNIVERSITÉ DE LOUVAIN
(BELGIQUE)

INSTITUT DU CANCER

DIRECTEUR : PROF. J. MAISIN

Louvain, Sept. 7th 1935

Monsieur le Docteur W. KOCH.

C/O. Hardcastle Pennock

Office I'/OI

50th East 42st. Street

NEW YORK CITY.

My Dear Dr. KOch,

Tbank you very much for your nice letter and your cable. I am always very happy to receive news from you. As you know I am intended to leave to-morrow for the Congo. I am very sorry that you are note able to come with me.
I take with me a lot of material for preparing N° 1-3-4 and the other smelling unsaturated compound which was prepared by the manufactory. I will have a wonderfull opportunity there to try this different products on more than one thousand leprosis negro which I will treat with them. I am going to test also the activity on the belnnorrhagie.

I am very interested in your work in U.S. Write me about the Canadian Government and New-Washington patent.

My adress in the Congo will be : Prof. Maisin, C/O. Son Excellence le Gouvernour Général Leopoldville.
I wish you sincerely a great succes in the new step of your xxxx treatment. Don't remain too long without coming back to Europe.

I asked Melle. Fourbaix to write you about the experiments we are doing now. Some are encouraging and other give negative results.

I enclose in this letter the different photographs of the S boy. As you see he is perfectly cured.

Always very anxious to get your letters and

very sincerely yours.

P. Maisin

UN NOUVEAU TRAITEMENT DE LA LÈPRE
INTERVIEW DU DOCTEUR MAISIN

Léopoldville, 23 octobre.

Nous avons profité du passage à Léopoldville du docteur Maisin, professeur à l'Université de Louvain et directeur de l'Institut du Cancer, pour l'interroger sur les buts du voyage qu'il a entrepris dans la Colonie.

Le docteur Maisin, qui est chargé par le ministère des Colonies d'une mission d'étude sur la lèpre, visite les différents centres de lépreux du Congo et expérimente sur les malades un nouveau procédé de traitement.

Ses recherches antérieures sur les substances capables d'assurer la prophylaxie du cancer l'ont amené, en effet, à trouver certains corps dont les propriétés de désintoxication organique sont intenses et dont l'action cicatrisante est remarquable pour toutes les maladies ulcéreuses en général.

Dans son laboratoire de Louvain, le docteur Maisin a traité avec ces substances la lèpre expérimentale du rat et il a pu la cicatriser.

Il était par conséquent intéressant de constater les résultats de ce traitement appliqué à des lépreux et les expériences que le savant professeur va entreprendre dans la colonie lui permettront de vérifier les résultats acquis par ses travaux de laboratoire.

A vrai dire, il ne s'agit pas d'une substance spéciale en particulier, mais de plusieurs groupes de substances agissant sur les grandes fonctions organiques d'oxydation et de réduction. Le traitement se fait par injections, soit de corps dénaturés, soit de corps peroxydés.

A l'occasion du récent congrès national des sciences, le docteur Maisin et le docteur médecin-colonel Cock, assistant libre de l'Institut du cancer, ont présenté une étude sur les travaux qu'ils ont poursuivis en commun à ce sujet à l'Institut du cancer.

Le docteur Maisin est arrivé au Congo avec tout le matériel qui lui sera nécessaire pour installer sur place les médications nécessaires.

Il tient à nous faire part du très cordial accueil que lui avaient réservé les docteurs Van Hoof, médecin en chef de la colonie, Vermarl et Brutsaert. Tous trois lui apportant l'aide la plus précieuse. Il a trouvé en outre à Léo un matériel de laboratoire choisi et d'excellents sujets d'expérience dans le camp d'isolement de Léo-Ouest, qui abrite 45 lépreux dans les dispensaires établis par la Fomulac (Fondation médicale de l'Université de Louvain au Congo) dans la région de Kisantu.

Dans une quinzaine de jours, le docteur Maisin compte gagner l'Est de la colonie et visiter les lépreux du Kivu et du Népoko. Il est encore prématuré de parler de résultats, mais les premières réactions constatées sur les sujets traités sont de nature à encourager vivement le docteur Maisin à persévérer dans la voie où il s'est engagé.

DÉPART DE Mme ENZEN

UNE CONFÉRENCE SUR LE CANCER

Léopoldville, 26 octobre.

Le docteur Maisin, professeur à l'Université de Louvain, actuellement en mission au Congo où il va expérimenter un nouveau traitement contre la lèpre, donnera ce soir une conférence sur le cancer au Cercle de Léopoldville.

The Use of Peroxide of Diformaldehyde and Organic Unsaturated Compounds In the Treatment of Anergy and Hyperergy

BY

JOSEPH HENRI MAISIN, M.D.,
Director, Institut du Cancer, Louvain University;
MEDARD DE JAEGHER, M.D.; YU-HAN TANG, M.D.
and JEAN RUBAY



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The Use of Peroxide of Diformaldehyde and Organic Unsaturated Compounds in the Treatment of Anergy and Hyperergy.

By JOSEPH HENRI MAISIN, M.D., Director, Institut du Cancer, Louvain University; MEDARD DE JAEGHER, M.D.; YU-HAN TANG, M.D.; and JEAN RUBAY

Origin of this Research

The use of the substances discussed in this article in the treatment of anergic and hyperergic states is an outcome of extended experimental work with them in other directions.

One of us[1] has made a long study of the action of peroxides on experimental cancers, in an attempt to re-establish, with the aid of these peroxides, those oxidation processes which, as is now generally known, are defective in the malignant cell. He succeeded in obtaining definite prophylactic results against benzpyrene cancer in white mice.

Having subsequently tested the action of the peroxide of diformaldehyde in a large number of desperate cases of human cancer, he was struck, from the very beginning of the work, by the remarkable influence of these products on the general health of the patient; euphoria, increase of appetite and weight, diminution of pain.

In addition, he noted coincidentally, in certain patients, a very definite influence on various infective processes as well as on such hyperergic conditions as asthma, eczema, etc., which happened to accompany the malignancy in certain of our treated individuals.

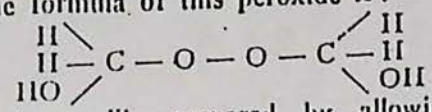
These results were of such a nature that he was prompted to inquire into the action of these products on ordinary cases of anergy or hyperergy, uncomplicated by any malignancy. The early results having been good, he then carried out, with his collaborators, a series of experimental and clinical researches. The products employed were the peroxide of diformaldehyde and certain unsaturated compounds, of which the method of preparation is given below.

Nature and Method of Preparation of the Products Used

The substances in question are of very simple chemical composition and are easy to prepare.

The first group of products comprises the organic peroxides, of which several have been used with a measure of success. We will describe here one only, the peroxide of diformaldehyde, since it has been particularly studied and is very efficacious.

The formula of this peroxide is:



It is readily prepared by allowing a saturated solution of hydrogen peroxide in anhydrous ethyl ether to react with a saturated solution of formaldehyde in anhydrous ethyl ether.

The second group of compounds comprises certain highly unsaturated chemical substances, of which we do not know the exact formula, but which may be prepared by the action of phosphoric acid on malonic acid, or by the action of sulphuric acid on ether, or also by the action of sulphuric acid on a solution of acetaldehyde in ether. The first reaction should theoretically give as a final product, malonic anhydride, having a formula of $OC=C=CO$. We have reason to believe that the general formula of those active products would correspond with the structure $R=C=C=R$.

An Experimental Study of Anaphylaxis in the Guinea Pig

One of us has undertaken the study of the action of these two groups of substances on anaphylaxis in guinea-pigs. Guinea-pigs were sensitised by the injection of five centigrammes of crystallised egg albumen. When the animals were sensitised, i.e., three to four weeks after the injection, he proceeded to test the possibility of desensitising these animals by the use of the two groups of substances in question.

These researches have shown, as did those with experimental cancer, that only very dilute solutions were really efficacious. It is necessary to use the peroxide of diformaldehyde, or the unsaturated compounds in a dilution of the order of 1×10^{-9} at least. Actually, our best results have been obtained with dilutions from 1×10^{-9} to 1×10^{-16}. These very high dilutions (1×10^{-16}) still contain several thousand molecules per c.c.

We desensitised our animals by injecting subcutaneously 1 c.c. of the chosen dilution every eight days. Altogether, three or four injections were made. Several hours after the last injection we gave the treated animals, as well as the controls, the shock injection intraperitoneally, viz., 40 to 50 centigrammes of crystallised egg albumen.

All the control animals died; 30 to 60 per cent. of the desensitised ones survived.

We have also attempted, with success, to

control an anaphylactic crisis which was already under way.

In the disensitisation of guinea-pigs to egg albumen, both types of product were successful, if the shock injection is made a few hours after the last injection of the products. But if the shock injection is given several weeks or months after the last desensitising injection, then we see difference between the two types of products; the unsaturated compounds remain effective months after the last injection. We are still studying this phenomenon, in order to determine the reason of this marked difference which may lead to a chemical definition of allergy, anergy and hyperergy.

Clinical Researches

In human beings we have observed carefully all the variations in blood pressure, as well as variations in the blood contents and the coagulation rate, in our patients to whom injections have been given. The results have been very definite and very interesting. With a dilution of 1×10^{-9} of one or other of these products, one finds in 90 per cent. of the cases who have never before received an injection, a hæmoclastic crisis, i.e., a temporary leucopenia plus lymphocytosis, plus lowered blood pressure and changes in blood coagulability. Thus a fall in the blood pressure is noticed, which takes place from 5 to 15 minutes after the injection. The blood pressure is taken with the most painstaking precautions, with a view to avoiding every source of error. It should be noted that these results have been obtained in patients resting in bed, the blood pressure being taken first thing in the morning, i.e., fasting.

As in the phenomenon of shock, certain febrile manifestations may follow in persons who were afebrile at the moment of injection. Increases of temperature are particularly noticeable in patients who have a latent focus of infection, which is disclosed by the injection. These elevations in temperature may follow from two to several days after the injection.

On the other hand, patients who have a temperature at the moment of the injection frequently show a reduction to a normal temperature during the following day. Finally, we have observed delayed temperature reactions appearing as late as three weeks after the injection.

Clinical Applications

The various phenomena which we have just described suggest that several morbid states may be favourably influenced by this entirely inoffensive therapy. Briefly, one may say that it is applicable in any case where shock therapy is indicated; in anergic and hyperergic states, with or without infection. We would like in this paper to confine ourselves to certain indications in which this therapy has been successfully tested by us.

Infectious states: acute or chronic colds; furunculosis, where generally one single injection suffices; osteomyelitis, acute or chronic; various febrile skin conditions.

Hyperergic states: asthma and eczema, either acute or chronic.

Notes on Treatment

In most of the ordinary infections, such as furunculosis, coryza, and in certain mild eczemas, a single injection is sufficient to obtain the desired result. In cases which have become chronic, or where one has to obtain a considerable desensitisation, it is necessary to repeat the injection at intervals of 7 or 14 days. Three or four injections are so given, and then the patient is left for two months or more. If the treatment is successful no further injections are given; if not, they may be repeated at the same intervals as before.

Extremely high dilutions are always used. Doubly distilled water, prepared in a still made entirely of Pyrex glass, is used in the diluting. Only one c.c. is injected at a time, preferably in the arm muscle (brachial triceps). The injection is painful, and is followed in a few seconds by violent muscular contractions at the site of injection. The pain is transitory. We recommend that the injection is given with the patient lying down. The site of injection *must not be sterilised with iodine*, but either with ether or preferably by rubbing with sterile gauze.

At present it is impossible for us to recommend one product more than the other, i.e., peroxide, or the unsaturated compounds. In the majority of cases in practice but particularly in hyperergic conditions (asthma, eczema) we use the latter, as they are much easier to prepare and keep better, and also on account of the late result in experimental anaphylaxy in guinea-pigs. This we strongly recommend (it is known as "Allergosil").

Case Notes of Several Cases of Eczema and Asthma

Eczema

1. *L.E. A child of 5½ years.*—For two weeks had had skin eruption. The child is the son of one of our patients treated by us for neoplasm of the breast. Constitution excellent. Nutrition good. The hands and limbs had been covered with a tar ointment prescribed by his doctor. Small pinhead sized patches, pruriginous; on the wrists, back of hands, knees and several papules on the

shoulders. The rest of the body clear. One injection of one c.c. of the unsaturated bodies was given. One week later more irritation. A further injection was given. One week later the child returned. All the eruption had disappeared (some slight desquamation).

ii. *Mr. B.F. Age* 37. Bricklayer.—Weeping eczema on both hands for four years. Has had various treatments, autohaemotherapy and sodium thiosulphate. The eczema disappears at certain times, but always returns regularly. Small groups of vesicles, situated chiefly on the finger tips, and on the back of the hands and spaces between the fingers. The eruption sets up an intense itching, and forces the patient to scratch. There is also considerable oozing. The patient suffers much, and each time has been obliged to give up work. During an acute attack three injections of the unsaturated compounds were given at seven-day intervals. Local treatment. One month after treatment, great improvement. Only a few isolated vesicles remained on the back of the hands. Desquamation over the healed patches. The patient was seen three months afterwards. He had not had an outbreak since our treatment, and he was well pleased.

Asthma

i. *M.Sp. Age* 24. Medical student.—Had had asthma since the age of three years. Until ten years of age had often to stay away from school on this account. Between 12 and 17 years old slightly better, but always liable to attack. Since he came to the University in 1931 he has had at least two attacks each week. In July, 1936, an injection of peroxide of diformaldehyde was given. Twenty-four hours after, a violent attack of asthma with temperature 102° F. to 103.6° F. Eczema between the fingers. Six weeks after the injection, no good or bad effect. In September, 1937, an injection of the unsaturated compounds was given. He was much better during the days following the injection. He remained fairly well until the end of 1937, having one attack every four weeks. In May, 1937, he was not so well. He was given another injection of the unsaturated bodies in alkaline solution. Twenty-four hours after this injection he had an acute attack of asthma, temperature 102° F. for three days. At the same time the patient again had eczema between the fingers. During the following weeks he got better and better, and only had a slight attack each week. His eczema disappeared steadily. At the moment he is very well, is free from attacks, and is practically rid of his asthma.

ii. *Mr. V.G. Age* 55.—He has suffered from asthma for some time. The patient had received three or four injections of adrenalin each week, and is practically never free from attack. We gave him an injection of the unsaturated compounds. This injection was followed by another some hours afterwards. The same day the patient had received an injection of adrenalin. He did not have an attack the following week. At present he is well and has commenced to work again.

iii. *Mrs. C.J.L. Age* 34. — Bronchial asthma from 11 years of age. The attacks, infrequent at first, have become more and more frequent during the last few years, and she was having an attack every two or three days. The patient was given an injection of the unsaturated compounds in March, 1936. She returned in November, 1936, and reported that her asthma was much improved. The attacks were less severe and occur less frequently than one month. The patient was injected with the same compound and since then there has been a progressive improvement. There has been no attack of asthma since November, 1937.

iv. *Mr. A.C. Age* 36.—Has had asthma since 1921. Eczema on the hands since 1925. Since 1931 the attacks of asthma have become more frequent and the patient has received as much as 4 mgs. of adrenalin in 24 hours. Since 1932 he has had morphine and he has taken as much as 75 cgr. in four to five days. He has tried several other treatments without effect — Heckel serum, autogenous vaccines, etc. We saw the patient in December, 1937, with a typical attack and a permanent shortness of breath and considerable wasting. On December 24, 1937, we gave him an injection of the unsaturated bodies in alkaline splution. The next day he had a critical attack, which lasted for eight days, and increased in intensity at the beginning of 1938. On January 20 a further injection of the unsaturated compounds in alkaline solution was given, followed by three days of reaction; disintoxication of the morphine. By January 27 the attacks were not quite so frequent, and did not last so long. Another similar injection was given. On January 28 there was an outbreak of eczema on the hands. On February 3 a further injection was given. On February 8 he could sleep without morphine. He was pleased and only had a slight attack each day. From February 22, 1938, until March 14, 1938, he had no more attacks. His health was excellent and his weight increased by 9 kilos. Between March 14 and March 29, 1938, he had some attacks, and was re-injected with the same compound. From March 29 until April 4, 1938, no further attack. Since then the patient has had attacks, but always less intense than before treatment was commenced. No morphine. General health good. This is an extremely refractory case, which required long treatment. Up to the present we have only succeeded in improving

the general state, cutting out morphine and in obtaining a transitory diminution in the attacks of asthma. We are following with interest the course of this case. From June, 1938, to the end of August the patient has remained practically without attacks. This is a remarkable result.

Discussion

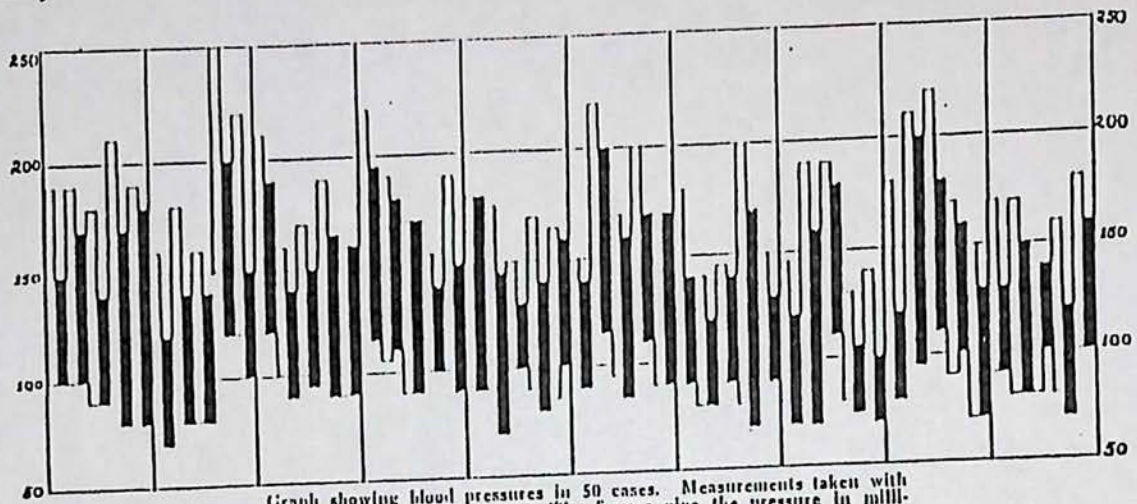
The results obtained are clear, and can be repeated easily by anyone wishing to do so. They are obtained with doses of extremely high dilution, which serves to prove that the active substance can act when exhibited in extremely small traces, as do catalysts, or enzymes. The injections have a lasting action, and do not often have to be repeated, which is an advantage from the patient's point of view. The treatment is absolutely harmless. We have given several thousand injections without the least untoward incident, except that some may have a passing malaise, due to a fall in the blood pressure. It is still too early to be able to say with certainty exactly how these substances act, but we know already with certainty that peroxide of diformaldehyde has a deep and prolonged action on the catalase of the blood.

There is no doubt that we are dealing with new phenomena, which deserve to be carefully investigated, and whose application in therapeutics appears to us to be of interest.

This work is not finished, but is leading us to believe that these two substances are not alike in their action. Finally, a curious fact which we have proved and one which we would stress, is the lengthy effect produced in a large number of cases, as well as the prophylactic action which we have proved the peroxide of diformaldehyde to have on benzpyrene cancer produced in white mice.

Conclusions

I. Peroxide of diformaldehyde and certain unsaturated compounds have a definite physiological action on the organism when only minute traces are injected.



Graph showing blood pressures in 50 cases. Measurements taken with a Vaquez-Laubrey apparatus. The figures give the pressure in millimetres of mercury.

Blood pressure immediately before the injection of a solution of the unsaturated compounds—dilution 1×10^{9}.

Blood pressure taken 15 minutes after the injection.

II. Their therapeutic use is indicated since they are very effective in the treatment of various infections and of hyperergic states.

III. The results obtained are better than those obtained with any other shock-producing therapeutic agents, especially from the point of view of the general health of the patient.

Investigation carried out at the Cancer Institute at Louvain. Director, J. Maisin.

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SAMUEL TEMPLE & CO., LTD., 271b, KING STREET, HAMMERSMITH, LONDON, W.6.

Washington Merry-Go-Round

Wash. Daily News
Aug 30, 1953

AMA Split over Cancer Drug

BY DREW PEARSON

WASHINGTON—The Senate report on krebiozen, a new treatment for cancer, prepared at the direction of the late Sen. Tobey and released after his death, has caused some bitter feuding inside the American Medical Association.

Dr. Edward J. McCormick, president of the AMA, issued a critical blast against the Senate report and also against krebiozen, while Dr. Andrew C. Ivy, vice chairman of the University of Illinois Medical School, himself a distinguished member of the American Medical Association, blasted back.

Dr. Ivy, who went even further than the Sen. Tobey report, accused the AMA of falsifying and outright faking in its effort to discredit the new treatment for cancer.

It was krebiozen which Sen. Tobey, then on his death bed, sent by his investigator, Benedict Fitzgerald, to Sen. Taft, also on his deathbed. The drug was not used, partly because it lacked the approval of the AMA.

"Dr. McCormick," said Dr. Ivy, in reply to the AMA president, "could not have been familiar with the sworn testimony before the committee of the Illinois Legislature investigating krebiozen and the AMA file on krebiozen subpoenaed by the committee. This testimony showed that the case histories of 24 patients in the official report of the AMA committee were falsified and outright fakes.

"Another report published in The Journal of the AMA against krebiozen was completely faked and disreputable," continued Dr. Ivy who serves on the National Advisory Cancer Council to prevent quack cures.

"At the same time the AMA committee deliberately ignored the reports of 140 physician members of the AMA, many of whom had observed favorable changes in cancer patients after receiving krebiozen.

"Dr. McCormick apparently was not informed that I have reported that a well known tumor clinic observed favorable changes in tumors in 45 per cent of patients after krebiozen was given. . . . I have found krebiozen to be biologically active in 50 per cent of 100 cancer patients. Other physicians have reported to me that they have found it to be active in 50 per cent of a total of 500 patients.

"Furthermore, the AMA has never sought to establish the value of krebiozen," continued Dr. Ivy. "It has not tried seriously to find out if it is active in the cancer patient. All it has done is to publish two reports based on fabrications and very incomplete case studies.

"Dr. McCormick vituperatively refers to the 'promoters' of krebiozen. Krebiozen has no 'promoters.' It has never been offered for sale or sold. Some 65,000 doses have been given away free. Does he (Dr. McCormick) mean to suggest that representatives of the United States Senate have been engaged in the promotion of krebiozen?

"The AMA should serve without infringement of the rights of others as a watchdog to caution the public regarding harmful and worthless remedies. But are dishonest tactics and inadequate scientific procedures required to protect the public against krebiozen?

"I firmly believe," concluded the University of Illinois expert, "the cancer sufferers, which a few officials of the AMA seem so eager to protect, would be better served by an honest, non-prejudiced appraisal of the facts regarding krebiozen. Petty, dishonest and prejudiced critics should bow their heads in shame. They should keep their mouths shut and their pens dry until the one paramount question—how good is krebiozen—can be answered with finality."

NOTE—Dr. Ivy has served as scientific director of the Naval Medical Research Institute, as president of the AMA section of physiology and pathology, as president of the Society of Internal Medicine, as president of the American Gastroenterology Association, as president of the American Physiology Society, and as president of the Chicago Institute of Medicine.

Merry-Go-Round

Drug Report Raps AMA

BY DREW PEARSON

WASHINGTON — Ohio's statuesque Sen. John Bricker ordered it suppressed before even reading it, but a confidential report on cancer has been sent to his desk highly critical of the American Medical Association for attempting to suppress a new drug which helps to relieve cancer.

This blistering report was prepared under the direction of the late Sen. Tobey as chairman of the Senate Interstate and Foreign Commerce Committee and was submitted to Bricker, the new chairman, by the investigator appointed by Tobey.

The report charges: (1) that "the AMA has been hasty, capricious, arbitrary, and outright dishonest" in its opposition to the cancer drug, krebiozen; (2) that AMA's treasurer, Dr. J. J. Moore, "attempted to get the distribution rights" for krebiozen for two Chicago businessmen, and, after failing in this, "he embarked upon a course to ruin . . . the drug"; and (3) that "public and private funds have been thrown around like confetti at a country fair to close up and destroy clinics, hospitals, and scientific research laboratories which do not conform to the viewpoint of medical associations."

Finally the report suggests that "the machinations of Dr. J. J. Moore could well involve the AMA and others in an interstate conspiracy of alarming proportions."

These shocking charges are based upon the investigation of Senate Agent Benedict Fitzgerald, who was given a secret assignment by the late Senator Tobey to investigate alleged AMA hamstringing of cancer research. The probe was kept secret because Tobey feared the powerful doctors' lobby which last year was listed as the No. 2 lobbyist in Washington. The lobby spent $309,514.93 last year to influence Congress, making it second only to the electric power lobby.

* *

BRICKER SAYS NO—After Tobey's death, Bricker, who replaced him on the Interstate Commerce Committee, promptly ordered the investigation stopped. He refused to so much as see Fitzgerald, though the investigator offered to fly to Ohio at his own expense for an interview.

Instead, Bricker's office ordered Fitzgerald to "forget" the whole thing, and above all, not to talk to the press. If he followed these instructions, Fitzgerald was told, he would be "taken care of."

However, Fitzgerald wrote a sharp letter to Bricker, saying he was "surprised and even shocked" at the runaround. He then sent copies of both the letter and his report to every Senator on the committee.

Fitzgerald's report does not claim that krebiozen is a cure for cancer. It simly sets forth the results of the research so far, adding: "The heavy toll of life being taken by cancer requires a searching investigation."

* * *

DIFFERENCE BETWEEN DOCTORS—In particular, the report cites the findings of Dr. Andrew C. Ivy, Vice President of the University of Illinois Medical School, who directed medical research for the Navy during World War II and discovered a chemical to make sea water drinkable and an ointment to protect the skin against extreme heat and cold.

He has also made other important medical discoveries, such as enterogastrone for treating peptic ulcers. Dr. Ivy is so respected in medical circles that he was also called upon to evaluate cancer therapy for the American Cancer Society and expose quack treatments.

In the case of krebiozen, however, Dr. Ivy did not find that it was a "quack" drug. He tested it first on animals to make sure it was nontoxic, then he tried it out on cancer patients.

"On the conclusion of his preliminary study," the Fitzgerald report states, "he issued a statement that 70 per cent of the cancer patients receiving krebiozen derived benefits from the new drug ranging from relief of pain to complete healing. A 1,000-page compilation prepared by him, supplemented by laboratory records, gives case histories on 500 patients treated by 232 doctors in 150 clinics and hospitals throughout the Country."

Though Dr. Ivy had once served on its board, the AMA promptly censured him and expelled him for three months from the Chicago Medical Society. Because of the controversy, he also took a leave of absence from the University of Illinois and was prevented from continuing his research there.

The Fitzgerald report points to Dr. J. J. Moore, for 10 years treasurer of the AMA, as "the spearhead behind attempts to have the drug ostracized."

NOTE 1—Sen. Bricker's office, when queried, stated flatly that Bricker intended to do nothing about the cancer report. Asked whether Bricker had read the report, the reply was "no."

NOTE 2—Many doctors disagree vigorously with the American Medical Association, feel that it has gone too far in engaging in politics.

FDA Drug Official Okd Antibiotic— And Made Money

Merry-Go-Round

By DREW PEARSON

WASHINGTON — It's not supposed to be published, but inside the Criminal Division of the Justice Department is an FBI report regarding Dr. Henry Welch, former chief of the antibiotics division of the Food and Drug Administration. He is the man who earned $257,142 during 1953-60 from the "Medical Encyclopedia" which the drug companies he policed were advertisers.



Pearson

Dr. Welch was half-owner of the encyclopedia, also received 50 per cent of the net advertising and 50 per cent of the net reprints profit from "MD Publications" which he edited just as Sen. Estes Kefauver was about to probe into this. Dr. Welch applied for disability retirement. May 11, 1960. Today, December 8, 18 months later, still no action by the Justice Department.

* * *

MEANWHILE here is another development.

One speech by Dr. Welch which was widely circulated in the drug industry was before the fourth annual Antibiotics Symposium in Washington, Oct. 17, 1956. It pertained to the new Pfizer antibiotic — Signomycin, and Dr. Welch hailed it as a "new era."

What he didn't say, but which sworn testimony before the Kefauver Committee disclosed, was that the speech was submitted to the Pfizer company for revision before it was delivered.

What he also didn't say was that after it was delivered Pfizer purchased 283,000 reprints of which 50 per cent of the profit went to Dr. Welch.

Some of the reprints were used in advertising Signomycin. However, there were so many of them that one Pfizer employee told the Kefauver Committee: "It was a standing joke around the office. It would have been impossible to have given away all the copies that were actually around the premises."

The speech praising Signomycin, was delivered by a Food and Drug official charged with protecting the public against dangerous medicine on Oct. 17, 1956.

Five years passed. On Nov. 20, 1961, just before Thanksgiving day, Pfizer found that Signemycin was not such a great drug after all. It had side effects.

* * *

AND IN a letter to doctors labeled "Drug Warning", Pfizer explained these side effects and urged caution in using the drug which had been touted by the official supposed to guard against faulty antibiotics.

The drug warning then pro-ceeded to tell how in the treatment of 50 patients, "one of more abnormal liver function tests were found in 37 of these patients at the conclusion of the treatment."

Doctors were told to watch their patients closely in case of "prolonged therapy."

This, it should be noted, was five years after the glowing endorsement by the man who was supposed to protect the public but who checked with the drug manufacturer before making his speech, then sold them 283,000 reprints after making it.

Merry-Go-Round

By Drew Pearson

1944

WASHINGTON, Jan. 13—The most potent, backstage big-business lobby in Washington now plugging for lower taxes happens to be financed by the gracious exemptions of the United States Treasury.

The lobbying job is done by members of such organizations as the United States Chamber of Commerce and the Committee for Economic Development, and they operate so successfully because the contributions which maintain them are tax exempt. Any corporation which has profits in the 90-per cent-excess-profits class can make contributions to United States Chamber of Commerce or Committee for Economic Development practically without sacrifice. Since the donations are deductible, 90 per cent of their donations are paid, indirectly, by Uncle Sam to lobby against his future tax take.

On the other side of the ledger is the unfortunate fact that a fund for liberal causes is not tax exempt. Federal tax courts have just ruled that the endowment created by Robert Marshall to advance the cause of labor unions and civil liberties is interested in "promoting legislation" and, therefore, not deductible.

But if you are promoting legislation for lower taxes, it's another matter. That can come out of your income tax.

• • •

Dairy Diseases

EVERYBODY is aware of the butter shortage, but not many are aware of the fact that dairy herds are being depleted by State and Federal slaughter at the rate of 10,000 head a month in order to wipe out Bang's disease.

This is now the worst and most widespread disease among all United States cattle. Department of Agriculture officials claim they have reduced Bang's disease 50 per cent in the past 10 years, yet it still stands at the top of an unhealthy list, with mastitis next, and tuberculosis way down the line.

Ten thousand killed a month is a lot of cows, yet officials defend the slaughter campaign. They say most of the cows are "old cast-off animals" no longer profitable for dairy production. Also, they point out that owners are given the privilege of keeping any animals which may be productive, even though diseased. The disease produces undulant fever in humans.

Even more difficult to combat is mastitis, an infection of the udder. Officials of the Agriculture Department have ample opportunity to observe mastitis close at hand, for the herds of the Soldiers' Home and St. Elizabeth's Hospital are both infected. These herds have the best care, and are not pushed for utmost production, as are commercial herds, yet the disease is persistent.

In fact, the combination of Bang's disease and mastitis is making a serious situation on a nation-wide scale.

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A.M.A. Justly Convicted, Arnold Says

Final Supreme Court Decision in Group Medicine Issue Due in Few Weeks

By the Associated Press

Thurman Arnold, Assistant Attorney General, contended before the Supreme Court yesterday that members of the American Medical Association do not engage in professional activities "when they descend to the market place and attempt to bolster up their income by boycotting competitors."

Arnold, who has charge of antitrust law enforcement, argued that the association had been properly convicted of violating the Sherman Antitrust Law by activities against a group health organization in the District of Columbia.

The court took the case under advisement after a brief concluding argument by William E. Leahy, Washington attorney for the association. A final decision is expected in a few weeks.

Not Professional Action

"When a doctor," Arnold asserted, "gets away from the treatment and care of the sick, he is not acting professionally."

This statement was in opposition to contentions of counsel for the association that practicing medicine is a profession and hence it could not be prosecuted for the activities complained of in the Sherman Act. This 1890 statute prohibits conspiracies "in restraint of trade."

Arnold said activities of the association against group health here in restraint of trade and hence the organization had been properly convicted.

"We do not claim," Arnold said in conclusion, "that group health (a cooperative organization of Government employes) is any panacea. It is only an experimental method. We are not here concerned as to the extent it may or may not be useful for the state to distribute medical care to low-income groups.

"We are not here concerned with the unquestioned right of medical societies to be concerned with the health of the public.

"We are concerned here only with the seizure of private power over the distribution of medical care for the sole purpose of stopping the experimental development of competing methods of medical distribution, not for reasons of public health, but only to enhance the pecuniary gains of the private group that seeks control."

Leahy argued briefly that the Medical Association did not know upon which count or counts of the indictment the jury voted conviction. For this reason he said, the Supreme Court should reverse the decision of the United States District Court for the District of Columbia.

The Medical Association and an affiliate, the Medical Society of the District of Columbia, were convicted and the National Association was fined $2500, and the local society $1500.

1 of 100 DOCUMENTS

AMERICAN MEDICAL ASSOCIATION v. UNITED STATES *

* Together with No. 202, Medical Society of the District of Columbia v. United States, also on writ of certiorari, post, p. 613, to the United States Court of Appeals for the District of Columbia.

No. 201

SUPREME COURT OF THE UNITED STATES

317 U.S. 519; 63 S. Ct. 326; 87 L. Ed. 434; 1943 U.S. LEXIS 1206; 6 Lab. Cas. (CCH) P51,153; 1943 Trade Cas. (CCH) P56,254

December 11, 14, 1942, Argued
January 18, 1943, Decided

PRIOR HISTORY:

CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA.

CERTIORARI, post, p. 613, to review the affirmance of convictions for violation of the Sherman Antitrust Act.

DISPOSITION:

130 F.2d 233, affirmed.

LAWYERS' EDITION HEADNOTES: [***HN1]

RESTRAINTS OF TRADE, §7
Sherman Act--obstruction of business--interference with co-operative activities.--

Headnote: [1]
The fact that an organization is cooperative in nature, serving only its own members, does not mean that it is not a business the obstruction of which, through a conspiracy, may sustain a prosecution for violation of the Sherman Anti-trust Act.

[***HN2]

RESTRAINTS OF TRADE, §7
Sherman Act--who may be guilty of restraints--persons not engaged in "trade."--

Headnote: [2]
The fact that the activities of persons, such as physicians and medical associations, may not constitute a "trade" does not prevent them from being subject to prosecution under the Sherman Act for imposing restraints on trade, where the objective of the restraints is a business or trade, the prohibition of the Act being directed against the imposition of restraints by "any person."

[***HN3]

INDICTMENT, ETC., §94
sufficiency to support conviction--conspiracy in restraint of trade--physicians' opposition to group health plan.--

Headnote: [3]
An indictment, in a prosecution under the Sherman Anti-trust Act *(15 USC 5)*

NEW YORK WORLD-TELEGRAM, WEDNESDAY, FEBRUARY 5, 1941.

U. S. Starts Trial Of A. M. A. Doctors

Society Accused Under Trust Act

By the United Press.

WASHINGTON, Feb. 5.—The American Medical Assn. and 20 prominent physicians, charged with conspiring to violate the federal anti-trust laws, go on trial today in Federal District Court.

Government attorneys will try to prove that the defendants sought to defeat a venture in co-operative medicine.

The indictment also names the medical society of the District of Columbia, the Harris County (Texas) Medical Society, the Washington Academy of Surgery and their officers.

A. M. A. officials named were Morris Fishbein, editor of the A. M. A. Journal; Olin West, secretary and general manager of the A. M. A.; William Creighton Woodward, director of the A. M. A. Bureau of Legal Medicine and Legislation; William Dick Cutter, secretary of the A. M. A. Council on Medical Education and Hospitals, and Rosco Genung Leland, director of the A. M. A. Bureau of Medical Economics.

The charges are without precedent and reach the trial stage only after an unsuccessful court battle by the A. M. A. for a ruling that the practice of medicine is not a "trade" as conceived by the Sherman and Clayton acts.

The Texas society was named for allegedly instituting disciplinary proceedings against a group health staff member at the request of the District of Columbia Society.

A.M.A. Justly Convicted, Arnold Says

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By the Associated Press

Thurman Arnold, Assistant Attorney General, contended before the Supreme Court yesterday that members of the American Medical Association do not engage in professional activities "when they descend to the market place and attempt to bolster up their income by boycotting competitors."

Arnold, who has charge of anti-trust law enforcement, argued that the association had been properly convicted of violating the Sherman Antitrust Law by activities against a group health organization in the District of Columbia.

The court took the case under advisement after a brief concluding argument by William E. Leahy, Washington attorney for the association. A final decision is expected in a few weeks.

Not Professional Action

"When a doctor," Arnold asserted, "gets away from the treatment and care of the sick, he is not acting professionally."

AMA Loses Its Appeal in Trust Case

Group-Medicine Advocates Assert Ruling Opens Way for Spread of Co-Ops

By the United Press

WASHINGTON, Jan. 18—Advocates of group medicine won a major victory today when the Supreme Court unanimously ruled the American Medical Association and its District of Columbia chapter were guilty of conspiracy to restrain trade in their fight against a co-operative health association of Government employees.

The ruling affirmed a decision by the District of Columbia Court of Appeals which found that the AMMA and the district medical society proceeded unlawfully in opposing operation of Group Health Association, Inc., a local co-operative, and levied fines of $2,500 against the AMA and $1,500 against the local chapter.

The two medical societies carried the case to the Supreme Court on the premise that they could not be prosecuted under the anti-trust laws.

Proponents of group health said the decision would bring rapid expansion of such organizations because hundreds of doctors, fearing disfavor of the AMA, had been reluctant to join such movements.

The decision, written by Justice Owen J. Roberts, was unanimous, but Justices Frank Murphy and Robert H. Jackson did not participate, presumably because the suit was in progress while they were serving as attorneys general.

Detroit Free Press

AMA Is Loser in High Court

Conviction Upheld in Anti-Trust Case

WASHINGTON, Jan. 18.—(AP)—The Supreme Court upheld today the conviction of the American Medical Association on a charge of violating the Sherman anti-Trust Law by alleged activities against a group health organization in the District of Columbia.

Justice Roberts delivered the 6 to 0 opinion, which also applied to the Medical Society of the District of Columbia, an affiliate of the national organization. Justices Murphy and Jackson did not participate.

The two medical organizations were alleged to have conspired against Group Health Associations, Inc., described as a non-profit co-operative organization of Government employes to provide medical care and hospitalization in return for monthly dues from the members.

OPINION QUOTED

"The defendants, during the years 1937 and 1938," the Justice Department told the Supreme Court, "have combined and conspired to restrain group health in its business of providing medical care and hospitalization, to restrain the doctors on its staff, as well as other doctors, in the pursuit of their callings, and to restrain Washington hospitals in the operation of their business.

"To achieve these objectives, the district society and AMA induced and coerced their members to boycott Group Health by refusing to serve on its staff or to consult with doctors on its staff, and induced and coerced all the hospitals in the District of Columbia not operated by the Government to boycott Group Health by denying hospital privileges to doctors serving on its staff."

DETROIT NEWS
Jan. 18, 1943

AMA Admits Putting Censor In Health Post

The American Medical Association admits that the special assistant to the Secretary for Health and Medical Affairs, the new Eisenhower cabinet post, will be a watchdog and censor for the AMA.

"All our suggestions were received with interest and were largely adopted," reported Dr. Louis H. Bauer, AMA president, in the March 28 issue of the Journal of the American Medical Association. "As a result, the reorganization plan introduced, provided a new position, that of a special assistant to the Secretary.

Go Through Assistant

"All medical activities within the new department, as well as all medical phases of any activities within education or social security, must be cleared through this special assistant to the Secretary. This will include appropriations and budgets as well as policies."

(Testimony, including that of Secretary Hobby before the joint Senate and House Committee on Reorganization, had been that the special assistant's duties would be "advisory" only. It was only through Sen. Hubert Humphrey and Rep. Chet Holifield that the committee, just before adjournment, learned of the actual job status of the "special assistant.")

Gets AMA Approval

"The same special assistant will also be representative of the Secretary at all interdepartmental meetings at which health will be a topic for discussion and also at Congressional hearings where appropriations involving health will be discussed," the AMA magazine continued.

The Journal also pointed out that the special assistant whose powers will in many cases be even greater than that of the Secretary, will probably be selected subject to AMA approval. Said the magazine:

"Furthermore, this special assistant must be selected from among persons who are recognized leaders in the medical field with wide nongovernmental experience."

Illustrations of the unbelievable POWER of the American Medical Association over the years

The Carroll W. Allen Investigation of the Koch Treatment
And
What the American Medical Association can do to stop
an Honest Independent Investigation of the Koch Treatment

The Dr. Carroll W. Allen matter is another good example on how far some members of the American Medical Association can go, and are willing to go, to destroy a doctor, his good name, his reputation and his medical practice when that doctor tries to put scientific truth and the interest of his patients above the dictates of organized medicine. When Dr. Allen first read the negative propaganda about Dr. Koch and his treatment for cancer, that had been published by the Journal of the American Medical Association in the early 1920's, he believed that these false allegations about Dr. Koch and his cancer treatment were true. He considered Dr. Koch's treatment for cancer as a fraud and that was it. Nothing more to say.

It was not until after Dr. Allen had personally investigated the Koch treatment that he learned the truth about Dr. Koch, his research and his cancer treatment. It was when he started to speak out in support of the Koch Cancer Treatment and report on his personal investigation of Dr. Koch and his cancer treatment to other local doctors that Dr. Allen started to get into trouble with his local medical society. His position as Professor of Surgery at Tulane University and his right to successfully practice medicine were all put into jeopardy by his local medical society that was under the direct control of the American Medical Association and its state organization.

Based upon Dr. Allen's personal investigation of the Koch Cancer Treatment and the favorable information he had learned about Dr. Koch and his cancer treatment, he contacted several doctors in New Orleans to tell them of his investigation. Finally on April 27, 1925, he read his report, *SOME INFORMAL REMARKS ON THE TREATMENT OF CANCER* [1] to the Orleans Parish Medical Society. This report included a brief history on how he became interested in Dr. Koch's cancer research and treatment and the results of his investigation. In this report Dr. Allen said:

> "Last October a patient of mine suffering from an inoperable cancer of the rectum asked my advice about the Koch treatment. I strongly advised him to have nothing to do with it, that it had been investigated and pronounced worthless, and that I regarded it as a fraud. He, however, was determined to go to Detroit and consult Dr. Koch. At that time he was emaciated, weighing less than a hundred pounds and was so weak that he had to be carried to the train on a stretcher. Two months later he returned to New Orleans weighting more than 130 pounds, and now weighs 170 and attends to business as usual though there is still some local evidence of his trouble.
>
> "I am frank to say that I was amazed at the wonderful improvement in this man. I then called on another patient here who was treated by Dr. Koch at the same

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[1] Printed in the September, 1925, issue of the Journal New Orleans Medical and Surgical Society Orleans, pp 169 – 174.

time. After talking with these two afflicted persons I was deeply impressed, not only by their personal experience but also by statements concerning others with whom they came in contact while being treated.

"A doctor friend whose wife was in a hopeless condition from carcinoma called on me to discuss the matter and as his wife was unable to travel we wired Dr. Koch and received a treatment. In a similar way I received a dose for a hopeless bladder case of Dr. Walther's. With these treatments Dr. Koch sent some directions and information as to what would happen following its use.

"The results were so strikingly as he predicted that I became extremely interested.

"I looked up Dr. Koch's earlier contributions to medical literature and learned that he had written several creditable papers on the parathyroid glands, such as one would expect from a high class laboratory man. Dr. Koch's method of procedure in the above work was quite original and his deductions and conclusions were at first not accepted but later were recognized and the proper credit given him. Paton of Glasgow won a triennial prize by a paper on the same subject in which he gave Dr. Koch due credit for what he had done. These papers will be found in the Jour. Biol. Chem., 1912, XII. 313; Jour. Biol. Chem., 1913, XV. 43-63; Jour. Lab. & Clin. Med., 1919, 1,299; and Jour. Med. & Surg. Jan., 1918, 1-9; that by Paton will be found in the Quart. Jour. Phys. 1917 Nos. 3 and 4.

"In the A.M.A. Journal of 1913, Page 1049, there is a lengthy editorial devoted to Koch's work on the toxic bases in the urine of parathyroidectomized dogs. Dr. Lewellys Barker on the subject of tetany in a paper read at the Southern Medical Association, in 1922, quotes extensively from Dr. Koch. These papers, are however, of more than passing interest in this investigation as it was through the application of methods of reasoning in cancer similar to those that he used in his work on the thyroid (parathyroid gland) that he feels he was able to recognize the specific toxins which formed the basis of his work on cancer.

"Dr. Koch had a bachelors', a master's and a doctor's degree before he obtained the M.D. degree to give him clinical opportunities to pursue his study of cancer. He, however, does not care for practice of medicine and is not a clinician but strictly a chemist and physiologist.

"I was so deeply impressed with the conviction that Dr. Koch had discovered something that at least brought about certain more or less definite reactions indicating some direct or specific effect on cancer that I decided to go up there and make a personal investigation.

"Arriving there December twenty-seventh I began a systematic study of his cases and saw many in all the various stages of reaction. Everything was absolutely open to my closest scrutiny and Dr. Koch was often not present during my examinations though always available to answer all questions, which he did with perfect frankness, both to me and the patients. Results were not always favorable, some were slow and uncertain, and he expressed doubt regarding others. He stated that 20 percent of his cases failed to react. All this was done in a spirit of perfect candor and openness that disarmed at once any feeling of the possibility of subterfuge or evasion that may have existed in my mind.

"The most interesting and impressive thing was the cured cases; of these I saw a large number and questioned them most closely. There remained no doubt but that they had had cancer as they all gave a perfect clinical history. Some were primarily inoperable, many had been operated with recurrence, the majority had had the usual routine of X-ray and radium. They all had been hopeless surgically and had come to Dr. Koch as a last resort.

"The interesting thing in questioning these cured cases was that they all had gone through the same course with its varied reactions and toxemia as those I saw under treatment. This naturally increased my interest and encouraged my closer study of the phenomena which they presented. While many of these were quite sick it was apparent that they were not running a cancer course. The typical cancer symptoms were slowly giving way to a toxemia in which nausea, vomiting, temperature and prostration were the most prominent features with a progressive diminution of pain and finally just a soreness to remind them of their former suffering. During this time, or as long as the toxemia and temperature persisted there was a steady loss of weight until they were reduced to an extreme degree. As convalescence set in, recovery was at first slow later more rapid, and many of them told me that their physical condition and general health was better than they had ever enjoyed formerly.

"The preparation used is a delicate, synthetic chemical compound clear and colorless. It is injected subcutaneously in one cubic centimeter dose. The treatment is based on the germ theory of all malignancy and upon the theory that the cancer mass is an attempt at protection by the host towards the invading organism. The organisms being killed the cancer becomes a foreign proteid mass which must be absorbed to be removed. The absorption of this mass is a highly toxic process and produces the various symptoms which occur during the treatment; fever, nausea, vomiting, and depression. These symptoms and reactions of the cancer tissue are subject to considerable variation. At times the mass may swell and there may be an increase in all symptoms including pain, in other cases there is an immediate subsidence in the size of the mass and a lessening of pain. The reason for these variations is not well understood. The cancer mass takes on a bluish color and there is an ingrowth of angioblastic tissue during the stage of absorption. As this vascularized tissue contracts frequent small hemorrhages occur and it may require six to nine months for all of this tissue to disappear. Cases that are badly exhausted before treatment, where the mass to be absorbed is very large, or when the heart and kidneys are weakened are not likely to survive the toxic period.

"My duty was apparent. I should take some steps to bring this matter to the attention of the profession and I felt that the best means of accomplishing this as well as for further proof for myself was first to treat a few of my hopeless cases here and properly check this work with the aid of the laboratory. This appeared to me to be the best plan of procedure and I accordingly arranged with Dr. Koch to furnish me with as much of his formula as was needed.

"My understanding with Dr. Koch was that should any recognized group of reputable physicians make a calm unbiased investigation of his treatment and accord him due credit for having discovered something useful in the treatment of cancer, he would then make the formula public in some way, such as was done with insulin.

"I know that a great many of my friends and associates feel that I have made a mistake in going into this subject but I hope that none will question my honesty or sincerity and just as soon as sufficient time has elapsed for me to arrive at a definite conclusion, based on personal experience, for or against the further use of this remedy I propose to make a frank, positive statement of the results.

"In conclusion I wish now to present a brief summary taken from the records of cases treated."

Dr. Allen then briefly reviewed ten case histories and then said:

"I feel that your careful consideration of the above cases must convince you that they have not run a normal cancer course and if Dr. Koch has not discovered what he thinks he has, he has at least found something which profoundly affects cancer tissue and I feel it should be accorded a most liberal investigation both clinically and in the laboratory as it may at least be the beginning of tremendous possibilities.

"I have been persistently at work on the two objectionable features in the use of this preparation; its cost and its secrecy. The cost has been substantially reduced and I feel the problem of its secrecy is open to solution."

The meeting was then open for discussion. During the discussion period, the issue of the secrecy of the Koch medication was brought up as if this was the most important issue. The issue of therapeutic effectiveness was over looked. It should be noted that at that time Dr. Koch did not have patent protection because it was necessary to prove the therapeutic effectiveness of his product through recognized testing of his discoveries before he could get a patent as was the case with Dr. Banting and the production of insulin. Dr. Banting did not release to the medical profession or the public the method to produce insulin until after he received his first Canadian patient.

Dr. F. W. Parham of New Orleans opened the discussion period with the following statement:

"It is with considerable reluctance that I rise to take the position of opposing Dr. Allen. I want to say first that if Dr. Koch had presented the matter in the same scientific spirit as has Dr. Allen, I do not believe there would have been so much feeling. I want it understood that anything I have to say shall not be construed as any reflection upon the sincerity of Dr. Allen. While I think he is mistaken in his advocacy of the treatment, I believe he is sincerely of the opinion that the treatment is of value...."

Dr. Parham, after expressing his anti Koch opinions went on to say:

"Contrary to our Code of Ethics we are dealing with a secret remedy; it is not professional for a physician to prescribe a secret remedy; **many of us do it sometimes**, but this is an aggravated case."

Dr. Parham continued his comments and then closed his speech with the following statement:

> "Dr. Allen is sincere and I do not reflect on any statement he has made. We have talked frequently on this subject and he knows how I feel about it. He knows that I am opposed to going on with this thing as a secret remedy."

Dr. F. W. Parham asked the following question:

> "Would Dr. Koch be willing to make known this remedy, patent it and turn the patent over to Tulane University or some institution that we regard as reliable? Of course, **we understand in the case of insulin that that was the necessary thing to do to prevent the remedy from being improperly prepared and hastily used.** After the period of probation it had met with the requirements and it then became a generally accepted remedy. Now we have insulin, which we all regard as one of the most valuable remedies, under certain conditions, that we have.
>
> "If Dr. Koch has a remedy of value, as medical men, we ought to have nothing to do with it until he patents it and turns it over to an Institution. I do not believe the profession can be got together and acknowledge Koch's remedy as a good thing until he has removed the veil of secrecy."
>
> "Answer by Dr. Allen:
>
> "Dr. Koch has discussed some plan for an Institution which I will mention in closing, but he does not think the remedy should be made public until better understood."

During this long discussion period, the issue of secret remedy came up several times and had become more important to the members of "official medicine," as controlled by the American Medical Association, then the actual proof of therapeutic effect of the Koch treatment for cancer.. Subsequent to this report on his investigation of Dr. Koch's cancer treatment, Dr. Allen was called before the judiciary committee of his local medical society for his investigation and use of an "alleged secret treatment for cancer" in violation of the Principles of Medical Ethics of the American Medical Association. Although Dr. Parham had already publicly stated at the April 27, 1925 meeting that: "it is not professional for a physician to prescribe a secret remedy; **many of us do it sometimes,**..." it was heresy for Dr. Allen to investigate the Koch Treatment. He was told that if he continued to investigate this remedy further, he should resign from his medical society. If he were to resign from his local medical society he would have to resign from the American Medical Association and this would mean he would lose all his rights to use the A.M.A. controlled hospitals and his standing in the A.M.A. controlled medical community. On June 26, 1925 the following letter was sent to Dr. Allen:

The College of Medicine
School of Medicine
TULANE UNIVERSITY OF LOUISIANA
1551 Canal Street
New Orleans, La.

OFFICE OF THE DEAN

June 26, 1925

Prof. C. W. Allen, M.D.
City

Dear Dr. Allen:

I wish to inform you that at a meeting of the Executive Faculty of the School of Medicine, held on June 24, 1925, your reappointment for the session of 1925-26, was considered.

A copy of the letter from Prof. Matas to you, dated June 23, 1925, and your reply to Prof. Matas, dated June 24, 1925, relative to your connection with the Koch Cancer cure were read.

There was considerable discussion and expressions from different members of the Faculty indicating their recognition of the importance of the situation and the discredit and criticism of yourself, the School of Medicine and particularly the Department of Surgery in which you have served, that has resulted from your association with Dr. Koch as a promoter and endorser of the secret remedy of cancer.

The following formal action was taken:

"That re-appointment of Prof. Allen be postponed until after he has sent a copy of the same letter addressed to Prof. Matas under date of June 24, 1925, to Dr. W. F. Koch and also to the Orleans Parish Medical Society and the same has been acted upon by the Orleans Parish Medical Society."

It is sincerely hoped that your renunciation of the Koch secret remedy for cancer will, in some measure at least, remedy the harm that has been done.

It is also the hope of the Faculty that there will be no occasion to recall this unfortunate circumstance again.

Yours very truly,

C. C. Bass, M.D., Dean

On July 2, 1925 the following letter was written to the Judiciary Committee by Dr. Allen.

New Orleans, La.
July 2nd, 1925

Judiciary Committee
Orleans Parish Medical Society
1551 Canal Street
New Orleans, La.

Gentlemen:

Fully recognizing the incompatibility of my duties as a member of Organized Medicine with any professional or business relations with secret or proprietary remedies as opposed to the principals of ethics which govern a liberal and humanitarian profession, I hereby declare that I have severed all professional and business relations with Dr. W. F. Koch of Detroit, Michigan, as the inventor, manufacturer and promoter of a specific treatment of cancer. I hereby make it also clearly and unequivocally understood that I shall have no further connection with the said Koch Cure as one if its advocates and endorsers, and that henceforth I shall cease to administer or distribute this treatment or recommend its administration to my patients or those of other practitioners as long as its composition and manufacture remains a secret monopoly, and only resume its use, if I deem proper, after its composition and manufacture has been wholly, clearly and definitely revealed to the profession through the recognized organs of the medical press.

I wish, however, to qualify in this otherwise absolute renunciation of the Koch treatment with the request that I be permitted to complete the observations on the patients to whom I have administered the treatment in a purely experimental way, and for which treatment there will be no fees charged or payments collected for services relative to the Koch Cure.

In making this declaration I trust that the objection to my continuance as a member in good standing of Organized Medicine will be removed.

I will furnish your Committee at an early date the list of cases now under treatment.

Yours very truly

Carroll W. Allen

This letter was followed by the following letter to the Editor-in-chief of the N. O. Medical and Surgical Journal.

July 30, 1925

Editor-in-chief
N.O. Medical and Surgical Journal
Whitney Bank Building
City.

My Dear Doctor:

In reply to your communication regarding the publication of my paper on the use of the Koch cancer remedy I feel it better for all concerned that this not be published, which request I have made before.

There are two sides to this question -- the ethical and the scientific and my discussion deals entirely with the scientific. I had been impressed with the merits of Koch's discovery and urged that something be done to make it right, feeling that if Koch did not have as effective a remedy as he thought, he at least had something that profoundly effected cancer tissue and my hope was that after putting the matter right it might serve as a key or starting point to the elaboration of something more effective when worked up and studied in our large laboratories. I did not pretend to defend the unethical side of the treatment but discussed the scientific side exclusively. The above views are amply brought out in my paper and the discussion that follows.

I feel that there are sufficient developments to bear me out in the statement that the treatment has merit. There are several cured cases here and others which have been tremendously benefited and look as if they may get well. In addition to this, other physicians, who visited Dr. Koch, came to the same conclusion I did and recently the Detroit City Council took action in the matter and requested their Board of Health to conduct an investigation. I enclose a letter received from the Board of health, which explains itself.

A careful consideration of the facts as revealed by this letter must suggest to your mind a situation, which is to say the least, very unusual in view of the fact that the treatment has already been twice condemned by both the local and national medical societies, which should logically be best qualified to pass upon such matters.

It is not necessary here to recite the details of how the investigation came about or character of evidence produced. Many of these facts I can give you if wanted. It would, however, seem sufficient that the common council of a city of a million and a half people would take such action and incur the political animosity of the medical profession and place themselves in a ridiculous light, subject to the severest criticism, if the evidence produced before them had been convincingly and overwhelmingly in favor of Dr. Koch.

It is also quite significant that the Board of Health, composed of such able men as make up its personnel, should have acceded to the request of the council if they could have taken any other course. One fact in connection with the action of the council I feel I should state as it has been said that if Dr. Koch has accomplished anything those in his own community should be in a better position to know the true facts. This investigation was confined to what had been accomplished within the City of Detroit with residents of the city as the council could not concern itself with outside affairs.

It is also of interest to know that Dr. Koch was not in favor of the above procedure as he preferred to have the matter straightened out within the profession, but could not afford to stop it without having it appear that he was

afraid of an investigation or wished to continue in his present status.

A notable feature in this affair is the absence of any newspaper publicity. A charlatan would have capitalized this to the fullest extent.

Immediately following the meeting at the Orleans Parish, at which I read my paper and feeling that the profession was not inclined to take any particular steps likely to result in righting the matter I wrote Dr. Koch and informed him that I had discontinued the treatment. I some time later wrote a more positive letter at the request of Tulane and agreed to absolutely discontinue both its use and advocacy in any way except to continue on the cases then under treatment, which was to be done under certain conditions.

Having renounced the further use of the treatment, on ethical grounds, I feel that publication of my paper will only have an unfavorable effect and may bring the Journal into discredit. It will certainly be gotten hold of by the lay press and as there is certainly enough to it to justify anyone trying it and there are a great many arguments that can be used which may be very hard to answer. There is also a great deal else that I feel will come out if it gets in the lay press, which I feel is very much better left out.

I cannot help but feel that careful consideration of the subject must convince you that the above view is correct.

I will be glad to hear from you as to what action is taken in the matter.

With appreciation and thanking you for any trouble I may put you to, I am

Very truly yours,

CARROLL W. ALLEN

The average American does not know the full truth about the influence that the American Medical Association and its Journal has had upon the lives of all of us and the medical treatment we are all permitted to receive. The political power and influence of the American Medical Association and its Journal in the past, and possibly today, is beyond belief. It is like a two edged sword: with one blade it can destroy evil and with the other blade it can do evil by destroying good. When it tries to destroy good, because that good was contrary to the financial interest of certain A.M.A. members, evil results and we all suffer. The leaders of the A.M.A. and editors of its journal have a moral duty to all of its members, to the medical profession and to the public to be morally honest and upright and a credit to the principles established by Hippocrates.

The Journal of the American Medical Association is like a two edge sword: with one blade it can destroy evil and with the other blade it can do evil by destroying good. When the good that it has destroyed, because that good was contrary to the financial interest and policies of certain A.M.A. members' interest, evil results and we all suffer. The editors of this journal have a moral duty to the members of the American Medical Association, the medical profession and to the public to be morally honest and a credit to Hippocrates and the Hippocratic oath. When they misuse their position of power and authority, *as has happened in the past under the editorship of the J.A.M.A. of Dr. George H. Simmons and Dr. Morris Fishbein*, they bring discredit on themselves, their journal and to the medical profession in general and to the detriment of world health by their denial of modern medical science and truth.

SOME INFORMAL REMARKS ON THE TREATMENT OF CANCER*

CARROLL W. ALLEN, M. D.
NEW ORLEANS

Last October a patient of mine suffering from an inoperable cancer of the rectum asked my advice about the Koch treatment. I strongly advised him to have nothing to do with it, that it had been investigated and pronounced worthless, and that I regarded it as a fraud. He, however, was determined to go to Detroit and consult Dr. Koch. At that time he was emaciated, weighing less than a hundred pounds and was so weak that he had to be carried to the train on a stretcher. Two months later he returned to New Orleans weighing more than 130 pounds, and now weighs 170 and attends to business as usual though there is still some local evidence of his trouble.

I am frank to say that I was amazed at the wonderful improvement in this man. I then called on another patient here who was treated by Dr. Koch at the same time. After talking with these two afflicted persons I was deeply impressed, not only by their personal experience but also by statements concerning others with whom they came in contact while being treated.

A doctor friend whose wife was in a hopeless condition from carcinoma called on me to discuss the matter and as his wife was unable to travel we wired Dr. Koch and received a treatment. In a similar way I received a dose for a hopeless bladder case of Dr. Walther's. With these treatments Dr. Koch sent some directions and information as to what would happen following its use.

The results were so strikingly as he predicted that I became extremely interested.

I looked up Dr. Koch's earlier contributions to medical literature and learned that he had written several creditable papers on the parathyroid glands, such as one would expect from a high class laboratory man. Dr. Koch's method of procedure in the above work was quite original and his deductions and conclusions were at first not accepted but later were recognized and the proper credit given him. Paton of Glasgow won a triennial prize by a paper on the same subject in which he gave Dr. Koch due credit for what he had done. These papers will be found in the

Jour. Biol. Chem., 1912, XII. 313;

Jour. Biol. Chem., 1913, XV. 43-63;

Jour. Lab. & Clin. Med., 1919, 1,299; and,

Jour. Med. & Surg. Jan., 1918, 1-9;

that by Paton will be found in the

Quart. Jour. Phys. 1917 Nos. 3 and 4

In the A. M. A. Journal of 1913, Page 1049, there is a lengthy editorial devoted to Koch's work on the toxic bases in the urine of parathyroidectomized dogs. Dr. Lewellys Barker on the subject of tetany in a paper read at the Southern Medical Association, in 1922, quotes extensively from Dr. Koch. These papers, are however, of more than passing interest in this investigation as it was through the application of methods of reasoning in cancer similar to those that he used in his work on the thyroid that he feels he was able to recognize the specific toxin which formed the basis of his work on cancer.

Dr. Koch had a batchelors', a master's and a doctor's degree before he obtained the M. D. degree to give him clinical opportunities to pursue his study of cancer. He, however, does not care for the practice of medicine and is not a clinician but strictly a chemist and physiologist.

I was so deeply impressed with the conviction that Dr. Koch had discovered something that at least brought about certain more or less definite reactions indicating some direct or specific effect on cancer that I decided to go up there and make a personal investigation.

*Read before Orleans Parish Medical Society, April 27, 1925.

Detroit College of Medicine and Surgery
Detroit, Michigan

OFFICE OF THE SECRETARY
W. H. MACCRAKEN, M. D.

January 18th, 1918.

Professor W.F. Koch,
Detroit, Michigan,

Dear Professor Koch;

At a meeting of the Board of Trustees of the Detroit College of Medicine and Surgery, held Wednesday, January 16th 1918, President Sidney T. Miller advised the Board that the University of Michigan was unable to see it 's way to a consolidation with the Detroit College of Medicine and Surgery without the endowment, which had been specified in the original tentative agreement.

It was moved, supported and carried that the Faculty be instructed to prepare a plan or plans for the continuation of the school as an independent institution until such time as it may secure satisfactory university affiliation, municipal or otherwise. These plans will be submitted to the Board of Trustees at as early a date as possible.

A special meeting of the Faculty is called for this purpose. on Tuesday, January 22nd 1918, at 8 P.M.

You will appreciate the vital importance of giving this matter your full consideration and being present at this meeting.

Remember, this means you.

Very truly yours,

W. H. MacCracken Secretary.

Board of Education

THE CITY OF DETROIT

CHAS. A. GADD. BUSINESS MANAGER

DETROIT, MICH. September 3, 1918

Wm. F. Koch, Head of Department,
Detroit College of Medicine and Surgery,
Detroit, Michigan.

Dear Sir:-

The Board of Education at a meeting held August 22nd last, appointed you Head of Department of Physiology and Physiological Chemistry, of the Detroit College of Medicine and Surgery, for the fiscal year ending June 30th, 1919, at a salary of $250.00 per month.

Yours respectfully,

Chairman - Committee Detroit
College of Medicine and Surgery

RICHARD M. OLIN, M. D.
COMMISSIONER

HENRY L. OAKLEY
DEPUTY COMMISSIONER

COUNCIL:
GUY L. KIEFER, M. D., DETROIT
JAMES G. TURNER, M. D., HOUGHTON
C. C. SLEMONS, M. D., GRAND RAPIDS
FRANK M. GOWDY, M. D., ST. JOSEPH
LELAND W. CARR, LANSING

MICHIGAN
DEPARTMENT OF HEALTH
LANSING

October 9, 1919.

Dr. William F. Koch,
Care, Detroit College of Medicine and Surgery,
Detroit, Mich.

Dear Doctor:

This Department will publish in December a bulletin devoted exclusively to subjects relating to cancer. I am desirous of securing one or two good articles from leading physicians in this state on this subject and I am taking the liberty of asking you if you can furnish us such a contribution.

I have been informed that you have prepared some matter along this line and we would appreciate very much, if we could have an article for this number of our bulletin.

Copy should be in this office by November 1. Trusting that you will be able to favor us, I remain

Very truly yours,

Henry L. Oakley

Deputy Commissioner.

HLO-A

Detroit College of Medicine and Surgery

Detroit, Michigan

WM. F. KOCH, PH. D. M. D.
PROF. OF PHYSIOLOGY AND PHYSIOLOGICAL CHEMISTRY

Oct. 17, 19.

Board of Education,

Detroit, Mich.

Gentlemen:

In so far as the physiological research which I am now carrying on requires my whole time and be cause it appears that the Board of Education of the City of Detroit cannot support this work, I beg you to accept my resignation fromthe chair of physiologyof the Detroit College of Medicine and Surgery.

Sincerly,

Wm F Koch

A NEW AND SUCCESSFUL TREATMENT AND DIAGNOSIS OF CANCER

By WILLIAM F. KOCH, Ph. D., M. D., Professor of Physiology, Detroit College of Medicine and Surgery Research Pathologist at the Woman's Hospital; Director of Laboratory at the Jefferson Clinic.

Statistics show that there are over 200,000 cases of cancer in this country alone. The mortality is one out of eight for females, and one out of twelve for males, in spite of the great advances in diagnosis, surgery, and in the use of X-ray and Radium. It is hardly to be wondered at that the successful treatment of this disease should be sought in some other field of endeavor, as chemistry, for instance. I am glad to be able to announce that such a search has not been barren, and that indeed a number of inoperable cancer cases have already been clinically cured through a bio-chemical treatment with which a fair portion of the Detroit Profession is now familiar.

It is the purpose of this paper to explain briefly the history and principle of this treatment in order to engage interest and co-operation in this very necessary work.

In 1912 and 1913 (I), I reported the occurence of the toxic quantities of quanidine, methyl-quanidine and other alkylated quanidines in the urines of parathyroidectonized dogs, and concluded that these substances were responsible for the sypmtoms and death of such animals. In 1917, (II), this work was amply confirmed at the University of Glasgow. In the meantime, I was able to isolate from parathyroidectomized dogs' urines the precursor of the quanidines, namely, methyl-cyanamide. (III) This substance which is formed by other body cells than those of the parathyroid glands after parathyroidectomy quite quickly combines the amino groups liberated in the metabolism of amino-acids and thus becomes a quanidine.

I was never able to isolate quanidine from any normal tissue or unputrified protein. So it was presumable that whatever quanidine was formed in the body had its origin in a cyanamide. Now by preparing the protein of the various living organs so as to kill immediately all the ferments, dry it, and free it from all fats, those groups, which are metabollically active, are preserved for study. And by applying a certain chemical compound which readily binds the cyanamide group, it appeared that all normal tissue protieds contained this group. On testing cancer proteid, however, a peculiar behavior was observed which differentiates cancer and normal protein.

This substance when purified, taken up in water and immediately injected subcutaneously into a cancer patient, causes practically no local reaction; but instead, after about 24 hours, a very decided focal reaction takes place. Wherever the cancer tissue may be, its' cells are killed, their ionic concentration increases, the osmotic pressure increases, they take up water, swell and disintegrate. The swelling causes pain and the absorbed, disintegrated products are oxidized causing fever.

Those two things, focal pain and fever, constitute a reaction which lasts all the way from 6 tot 48 hours, depending upon the amount of cancer tissue killed, and of course this depends upon the quantity of substance injected. Such a reaction occurs only in cancer cases and only in the presence of cancer tissue. After the cancer tissue has disappeared, no more reaction can be elicited, no matter how large an injection is given, an important diagnostic aid. The specificity of the substance for cancer is evidenced by the fact that while giving these injections in rapid succession (that is daily or every two days for a period of five weeks), a blood count will rise from 2,850,000 to 4,600,000 red cells and the haemeglobin from 37% to 82%. Thus the delicate red cells are not injured. At the same time a mass of cancer tissue, the size of a large cabbage, will entirely disappear, and all the signs and symptons of the particular cancer will disappear with it, function return, and the patient become clinically cured.

Stomach, liver and rectal cancer clear up the quickest. Uterus cancer responds slightly more slowly. Squamous cell carcinoma responds about one-half as fast as stomach cancer. No cases of cancer that have previously received X-ray or Radium treatment respond to this treatment at all since these agencies have altered the chemistry of the cancer cell. I therefore, cannot make any statements regarding breast cancer, since those breast cases that I have treated have all been previously rayed.

Before presenting a few brief case descriptions, I wish to express my gratitude and appreciation to Dr. Carstens, Dr. Judd, Dr. Paterson, Dr. Irvine, Dr. Palmerlee, Dr. Palmer, Dr. Blain, Dr. Watkins, Dr. Hewitt, Dr. Friedlander, Dr. Hackett, Dr. John Burleson, Dr. Ash, Dr. Van Baalen, Dr. Hurst, for the excellent cases they have offered and for their kind co-operation in the treatments of their cases. I think that interviewing them would prove more interesting and instructive than any mass of details that I could here append.

Case I: Mrs. McG———— referred by Dr. Alexander Blain, age —, weight, 97 lbs., red blood count, 2,850,000. History symptoms and examination led to the diagnosis of cancer of the Uterus, Laparotomy (July 11th, 1918), revealed carcinoma of the Uterine body and cervix with extensive pelvic envolvement. Specimen confirmed the diagnosis. The fundus was amputated and the cervix cauterized, but a large quantity of cancer left. Two weeks after the operation, she was treated with my compound, receiving six injections in the buttock. Each treatment was followed by a reaction, the focal pain was severe,

and the fever reaching 104. The seventh injection gave no reaction, so the patient was allowed to return home for a rest. Blood count, 2,900,000. Two weeks later, blood count, 3,896,000. She returned for three successive trial treatments. To none of them did she give a reaction. She has been clinically cured now for a year, nolding a weight of 131 pounds. Her maximum normal weight some years ago was 136 pounds. This case was prognosticated to have terminated at the latest six months after the operation. So far the treatment has added six months longer of perfect health. She is well to date.

Case 2: Mrs. N, age 47, referred by Dr. Blain, weight 90 lbs., bloods count, 2,200,000. Came to Dr. Blain, having been previously given up to die of gastric cancer by several Detroit physicians, was too weak and cachectic to walk or to risk a general anaesthetic, vomited everything, very marked bloody ascites—3 gallons per week—continuous abdominal pain, with acute exacerbations palpable mass as large as a loaf of bread in upper abdomen. Prognosis, about ten days to live. August 4th, Laporatomy, under local anaesthesia and abdomen explored, showing extensive carcinoma of the stomach, liver and whole upper abdomen apparently about 20 pounds of neoplasm. A small piece was taken from the liver for microscopical examination. Diagnosis returned, adenocarcinoma of pyloric origin. She was immediately given two small injections of the compound. Was having such violent reaction that her relatives took her home to die. Eight months later, she called upon Dr. Blain for another injection, because although she had rapidly recovered and did all the housework and washing for a big family, nearly the whole eight months, her stomach pain had returned the last week and she wanted further treatment. The mass in the abdomen was still palpable and about the size of a grape-fruit. Four more injections were given. Each was followed by severe pain and high fever. At present (four months after the last series of treatments began), the mass is the size of an egg, and the ascites amounts to about two gallons of clear fluid in three weeks. She feels younger, eats everything without any gastric pain distress or vomiting, and does as much hard work as any healthy woman. Her weight is now 130 lbs., showing a gain of 40 lbs. since treatment started. Blood count, 4,200,000.

Case 3: Mrs. B. ———— referred by Dr. Hackett, weight, 70 lbs. This case is a post-operative recurrence of uterine carcinoma, involving the whole pelvis, and causing a vagino-vesicular fistulae with much discharge and considerable hemorrhage. She was taking varyingly three grains of morphine per day, very weak, very anaemic and

cachectic. She was given nine small treatments, from May 3rd to June 1, responding only with slight reaction. The highest fever was 101.2'. Her recovery was gradual. The patient has no more pain, takes no more morphine, hemorrhage stopped early, there is no more odorous discharge. She is up and about, quite strong, weight 94½, showing a gain of 24½ lbs. in seven weeks. The only remaining sequel is the fistula. There are no palpable or visible signs of carcinoma.

Case 4: Mr. L————, referred by Dr. Hewett, age 56, weight (no record), blood count (no record). This patient had a squamous cell carcinoma, the size of a grape fruit, of the right cervical region, extending from above the ear to below the clavicle and involving the glands of the opposite side. Very severe pain, and frequent, copious hemorrhage had left him moribund. Several physicians had prognosticated his maximum length of life to be seven or ten days. His first injection was given January 14, 1919. He started to pick up immediately. After 16 injections he was apparently cured, no longer giving reactions. The mass was gone and the patient strong and buoyant. His neck was explored by Dr. Hewitt, who found no cancer tissue present. Allowed to go home where he has enjoyed several weeks of "life worth living."

Case 5: Mrs. S, age 72, referred by Dr. Watkins, weight (no record), blood count, 2,850,000 haem., 37%. Diagnosis of carcinoma of the stomach was made from clinical history, symptoms and clinical findings. No palpable tumor. Patient had serious gastric hemorrhage pain and inability to retain food. Treatment started May 9, 1919. Given six injections at intervals of two or three days. Reactions, rather violent. Daily blood counts showed a steady rise, till at discharge, June 9, 1919., Blood count, 4,576,000, haem., 78%. No more stomach pain, can eat anything, strength returned, cachecia disappeared and feels better than three years ago, looks ten years younger, and gained nearly 2,000,000 red cells per cu. m. m., while under five weeks' treatment and doubling her haemoglobin content; also increasing her diet in that period from ½ oz. each of milk and cream hourly, to finally bread, vegetables with meats.

Case 6: Mrs. Z, age 63, referred by Dr. Friedlander, weight (no record), blood count (no record). Diagnosis of carcinoma of the stomach by clinical history, symptoms, signs, and exploratory operation, at which a mass as large as a large cabbage was found involving the upper abdomen. Patient quite weak, could not even hold milk or toast on stomach, pain very severe. After nine injections, mass completely disappeared so far as palpation can reveal. Reactions were severe, fever reaching 104.3. All gastric symptons are gone. She eats any food, including raw onions, without any signs of distress. Gained weight and strength. Not easily fatigued.

Case 7: Mr. McK, referred by Dr. Burleson, of Grand Rapids. By examination, clinical history and symptoms, diagnosed massive carcinoma of the rectum. Patient very weak but took a room in a squalid basement in a poor quarter of the city. Diet, bananas, when he felt well enough to go after a few. He was given four treatments in the early part of June and went back home much younger and happy. On his way, stopped in at Burleson's for examination. I immediately received a visit of congratulation from Dr. Burleson, who stated that he had three of his associates examine this case after treatment and that they all agreed that all traces of the cancer were gone.

It appears from these brief case histories, that each injection does its work and that the growth does not become immune to the treatment, that destruction of the cancer removes all its noxious activities as eroding blood vessels, nerves, etc., and that the toxic products are no longer generated, so that the cachecia disappears and a return to the normal strength, body weight and blood count ensue.

I believe that you will appreciate the importance of this cancer work and believe that you are all interested in my request for co-operation. I wish to work up very fully several hundred cases for final report. I shall be glad to interview anyone regarding this matter, but for reasons that you will appreciate, wish only cases, that have not received Ray treatments.

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II. Paton, Findlay, Watson, Burns, Sharp, Wishart, Quart. Jour., Phys. 1917, Vol. X., Nos. 3 and 4.

III. Koch Jour. of Med. and Surg., Jan., 1918, pp. 1 to 9.

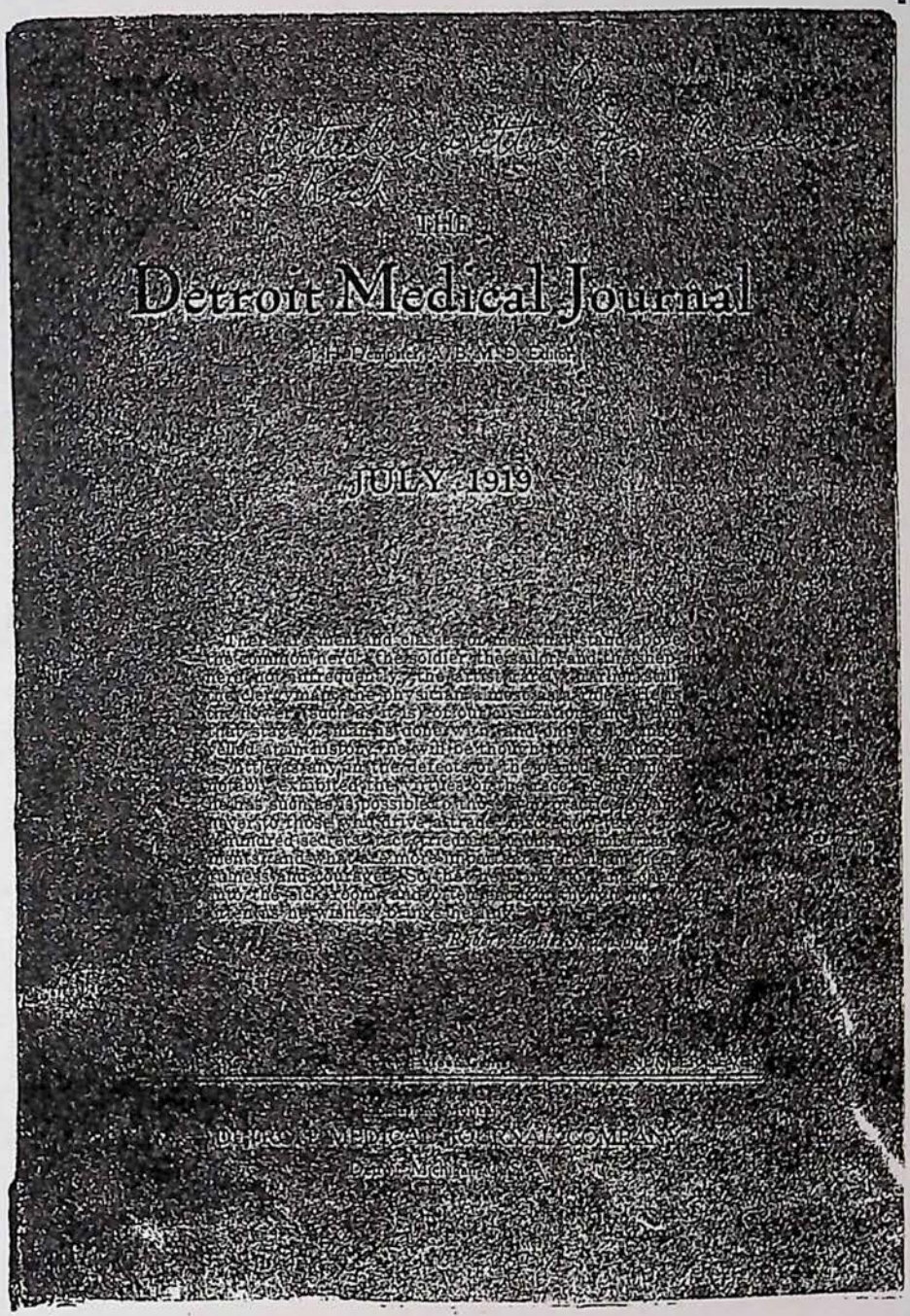
NOTE ON THE COMMON CAUSES OF PERSISTENT HEADACHE AND THEIR DIFFERENTIAL DIAGNOSIS.*

By KENNETH CLARKE.

Probably in the course of a single day's work there is no symptom which is brought more frequently to the notice of a general practitioner than that of headache. With the greatest regularity he is called upon to treat this symptom, to discover, and if posible to remove, the cause from which it springs.

The man with a busy practice, with long surgery hours, and with a crowded waiting room is only too often tempted to treat the symptom and to disregard the cause. In 99 cases this is satisfactorily relieved,

*Selected from The London Practioner.



REPORTS NEW CANCER SERUM

Professor at Detroit College Stirs Medical Profession by Announcement.

Members of the medical profession in Detroit have been stirred by the announcement of a new treatment of cancer by Dr. William F. Koch, professor of physiology at the Detroit College of Medicine and Surgery, and the statement he has already clinically cured a number of inoperable cancer cases.

Dr. Koch's announcement is made in the issue of the Detroit Medical Journal, in a paper entitled "A New and Successful Treatment and Diagnosis of Cancer."

He describes the treatment as "a sub-cutaneous injection of about 10 drops of a bio-chemical compound."

RESULT OF LONG STUDY.

This compound, Dr. Koch told a reporter, is the result of nine years of study and experiment which began, in the chemical laboratory of the University of Michigan, with his study of the function of the parathyroid glands, four glands, about the size of a small pea, lodged deep in the neck.

"The function of the parathyroid glands," Dr. Koch said, "was a mystery from the time these glands were discovered until some years ago when I cleared up the matter to a point where a very important disease, eclampsia, and the change which constitutes cancer could be studied. Eclampsia frequently will be reported soon in some medical journal." (Eclampsia is an intoxication resulting from insufficiency of the parathyroid glands.) It occurs in pregnant women and is quite rare.)

"The parathyroid glands are necessary to life. If they are injured the afflicted person dies in a characteristic way—in convulsions.

"The first contributions in this country were made at Johns Hopkins university, and unfortunately they were erroneous and only made the mystery deeper. It was when I discovered that when these glands are injured several poisonous substances develop from a previously useful substance, that we were placed on the right track again. The poisonous bodies are certain guanidins and they develop from a hormone, which I found to be methyl-guanidin.

DISTURBING ACTION.

"While testing the various organs for the presence of this compound and also testing cancer tissue in this way, I noted the difference between cancer and normal tissue, and it is this difference that forms the basis of my cancer treatment."

The action of this compound, which, Dr. Koch asserts, destroys cancerous tissue and has no effect on normal tissue, he describes as follows:

"The serum is carried to the cancer by the blood. The cells are killed. Their osmotic pressure increases and they become waterlogged and swell. The pressure of the swelling causes pain, pain until the killed part has been disintegrated and absorbed, and the absorption of burning up causes fever, usually occurring about 12 hours after the injection of the serum. Cancer tissue so absorbed also serves as double insult to the patient. There has been developed a long time history of the stomach, a large cancer, [illegible] once killed, it supplies food [illegible] and actually gives strength to the patient. Cancer is treated with X-ray or radium, however, is killed by the serum treatment, gives no indication [illegible] and [illegible] the patient [illegible] Koch treatment will not be a cure for cancers that have previously had X-ray or radium treatment.

TRIED THIRTY CURES.

"I have treated 30 such cases and in every instance the treatment has been successful," he said. "Except that it is a matter of absolute certainty, I am in the dark as to the exact nature of the change in the cancer chemistry induced by X-ray or radium treatment, and am now trying to solve that problem.

"I believe all Dr. Koch says that physicians will agree with me that cancer of the breast, [illegible] cancer, [illegible] and stomach cancer, [illegible] skin cancer, several times," he said, "but I have not had enough experience with it to say that my compound will cure it. The compound was not constructed according to the chemistry of such growths. The material I used, for analysis, is in treating the work of a rattle and stomach cancer. The report that 'tapping' best to the treatment are vaccels of the liver, stomach, intestines, testicles and uterus, which are apparently liquified and completely cured. [illegible]

About ten injections of the serum, Dr. Koch says, will completely cure a stomach cancer. A big cancer in the head and stomach cancers are greatly always inoperable.

BAD CASE CURED.

[illegible] woman patient [illegible] who, he said, "with a cancerous growth as large as a watermelon, she was too weak to walk with and wanted to live, only until her son returned from France, I did not expect her to live a week. Today she is as well as any of us. It is the same with all stomach cases I have treated; they are either [illegible] quickly treatment [illegible] and the same is true of [illegible] cancer [illegible] treated with X-ray or radium.

"In Dr. Koch's cases, have been well advanced. It makes no difference in the success of the cancer treatment how weak death the patient may be, he asserts.

"Just as long as the blood is circulating to carry the serum from the site of the injection through the growth, the compound will do its work," he said. "Of course some patients may be so completely exhausted as to die, anyhow, or they may have some other fatal malady. Cases of the patient's vital organs is destroyed, curing the cancer obviously, will not save him life. It is likely to die before the cancer is cured.

CONFIDENCE OF PHYSICIANS.

The stomach, Dr. Koch says, although important is not necessarily a vital organ.

According to Dr. Koch, not one case of cancer in the history of the world had been cured by medical treatment, until he discovered his compound.

Several British physicians whom Dr. Koch thanks in his paper for their co-operation in his cancer treatment, have confirmed Dr. Koch's statement that he has established clinical cures of cancer in special cases, [illegible]

Dr. Clinically cured, he insists, they explained, that insofar as can be determined without exploding the patient by operation to justify a positive statement that a trace of cancer remains, Dr. Koch waiting five years to consider that there is



DR. WILLIAM F. KOCH

HAS NEW CANCER TREATMENT

no recurrance of the cancer, the patient[illegible] have been cured.

Although all spoke of Dr. Koch's treatment with that reserve which, in discussing the value of another man's discovery of a disease-healing agent, marks the utterances of [illegible] physicians, jealous of their own professional reputations, they were unanimous in the opinion that Dr. Koch's treatment has shown remarkable results. That, from the viewpoint of the physician, caution in declaring a "cancer cure" is natural, is emphasized by the statement of Dr. J. H. Carstens, and solemnly echoed by two others of the physicians interviewed, that "the man who discovers a cure for cancer will be the greatest man in the world."

BRILLIANT CHEMIST.

Dr. Alexander W. Blain, surgeon-head of Jefferson clinic: "Dr. Koch is one of the most brilliant physiological chemists in the country. It is too early to say he has a cancer cure, and it should not be regarded as a 'cure-all' but as an adjunct to the treatment of cancer. No cure can be established until five years have shown there is no recurrence of the disease. But what he has done is this: He has made people well who were so far gone with cancer that they had only a few weeks to live. Several patients he treated for me are working hard and enjoying life a year after they should have been dead." Given it Dr. Koch said no further with his work than he is now—and he is experimenting now with his fifteenth [illegible], I believe—even if he has not discovered an absolute cure for cancer, he has added years to the [illegible]

tion I operated on her and took out such cancerous growths as were apparent. Later, the cancer grew again. Dr. Koch gave her four injections and she is now apparently entirely well. I have seen some excellent work done with radium, but never anything so remarkable as this. Dr. Koch should be given every opportunity to prove the value of his treatment."

Dr. C. Hollister Judd, president of the medical board, Women's Hospital: "When we stop to consider that one woman in every seven and one man in every 12 have cancer, the importance of the work Dr. Koch is doing can not be overrated, though it is too early to say that he has a cure for cancer. He has been working under many handicaps. The cases given him have been the 'hopeless' ones, where the surgeons saw the uselessness or impossibility of further operation, and his treatment has shown remarkable results.

SHOULD BE ENCOURAGED.

"Everything should be done to encourage him in his work. He should not be obliged to think, for instance, of expense. Yet his serum costs him $3 an injection, I believe. He ought to be given $100,000 to carry on his work and he ought to have a ward in a hospital where he could concentrate his patients. Women's Hospital is arranging to give him 12 beds. Dr. Koch's work, which is still experimental, is important in this sense, he is studying cancer physiologically rather than pathologically. That is, instead of working on the cancer tissue of a dead person, he is working on patients who are alive. There might be a question as to which method [illegible]

cancer, he has added years to the lives of cancer victims. There are nearly 100,000 victims of cancer in the country and if they could all have a few years of usefulness added to their lives the saving to the country would be enormous. What he has already done is a work in humanity and a great step forward in physiological chemistry.

CONFIDENCE IN KOCH.

Dr. Walter L. Hackett, visiting gynecologist and obstetrician, Women's Hospital: "There is no question of Dr. Koch's sincerity and ability. It will take five years to determine whether or not he has a real cure for cancer, but I have enough confidence in his treatment to let him inject his serum into any cancer patient of mine. I had, as a patient, an old woman who was very far gone. At Koch's suggestion I operated on her and took out such cancerous growths as were apparent. Later, the cancer grew again. Dr. Koch gave her four injections and she is now apparently entirely well. I have seen some excellent work done with radium, but never anything so remarkable as this. Dr. Koch should be given every opportunity to prove the value of his treatment."

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Girbal's ward in a hospital with a number of cases proved beyond the shadow of a doubt to be cancer. Then a commission of physicians should be appointed to watch the effect of Dr. Koch's treatments on the patients. If he had 100 cases of positively proved cancer and he established cures in 98 per cent of the cases, he would be getting somewhere.

If he can cure 75 per cent of his cases—even if he has not a positive cure for all cancer—his discovery is a boon to humanity, for the man who discovers a cancer cure will be the greatest man in the world. One of the difficulties of curing cancer is that ordinarily it is not discovered until the case is too far advanced to be operated. Operations are successful if the cancer is caught early enough and if all the cancer cells are removed. If, however, a few of the cells escape and spread through the body tracts or the blood vessels to other parts of the body, the cancer will break out again and it is obvious that only a certain amount of tissue can be removed from the body.

WITHHOLDS FORMULA.

Where a case has been operated and the cancer breaks out again, there is almost no curing it by further operation. The trouble with making any announcement of a cancer cure is that too much will be expected of it. Too much was expected of the X-ray and other innovations. The X-ray is of wonderful assistance in diagnosing, in locating foreign particles in wounds, obstructions of stomach or intestines and in discovering broken or dislocated bones, but it is not [illegible] as all people thought when its discovery was announced.

The establishing of a commission of physicians to study the progress

[illegible] a question as to which method is [illegible] but there is no question of which appeals more to the patient.

Dr. J. H. Cardichael: "He has apparently cured [illegible] but it is too soon to say this positively. I am against publicity in the matter, personally, do not want persons afflicted with cancer to flock to Detroit for treatment when they will not be able to be taken care of. Dr. Koch will get all the cases he needs."

TOO EARLY TO PREDICT.

Dr. C. H. Palmerlee: "Dr. Koch treated an old man for me. The growth seems to have reduced materially and the patient began feeling better after the first few treatments. It is too early to say that Dr. Koch has a cure for cancer. He should be [illegible] of the cases he treats it. Dr. Koch says, secretly what he wants [illegible] "I do not want to make the formula public just yet," he declared, "because I fear it might be misunderstood. The compound is difficult to make and it deteriorates rapidly. If I published it and quacks or unscientific men started mixing it and treating cancer with it, the results would be disastrous, not only possibly to the patients, but to the ultimate success of the treatment. Improperly mixed or administered the compound would fall to do the work. It would be discredited by the medical profession and it would take years to establish its value. When I have proved to the satisfaction of the medical world, that it does its work, it will be time enough to make the formula public."

THE DETROIT NEWS, SUNDAY, SEPTEMBER 7, 1919

REPORTS NEW CANCER SERUM

Professor at Detroit College Stirs Medical Profession by Announcement.

Members of the medical profession in Detroit have been stirred by the announcement of a new treatment of cancer by Dr. William F. Koch, professor of physiology at the Detroit College of Medicine and Surgery, and the statement he has already clinically cured a number of inoperable cancer cases.

Dr. Koch's announcement is made in the issue of the Detroit Medical Journal, in a paper entitled "A New and Successful Treatment and Diagnosis of Cancer."

He describes the treatment as "a subcutaneous injection of about 30 drops of a bio-chemical compound."

RESULT OF LONG STUDY,

This compound, Dr. Koch told a reporter, is the result of nine years of study and experiment which began, in the chemical laboratory of the University of Michigan, with his study of the function of the parathyroid glands, four glands, about the size of a small pea, lodged deep in the neck.

"The function of the parathyroid glands," Dr. Koch said, "was a mystery from the time these glands were discovered until some years ago when I cleared up the matter to a point where a very important disease, Eclampsia, and the change which constitutes cancer could be studied. Eclampsia treatment will be reported soon in some medical journal." (Eclampsia is an intoxication resulting from insufficiency of the parathyroid glands. It occurs in pregnant woman and is quite rare.)

"The parathyroid glands are necessary to life. If they are injured the afflicted person dies in a characteristic way – in convulsions.

"The first contributions to this subject were made at Johns Hopkins University. Unfortunately they were erroneous and only made the mystery deeper. It was when I discovered that when these glands are injured several poisonous substances develop from a previously useful substance that we were placed on the right track again. The poisonous bodies are certain guanidins and they develop from a hormone, which I found to be methyl-cyanimide."

COMPOUNDS ACTION,

"While testing the various organs for the presence of this compound and also testing cancer the same way, I noted the difference between cancer and normal tissue and it is this difference that forms the basis of my cancer treatment." The action of this compound, which Dr. Koch asserts, destroys cancer tissue and has no effect on normal tissue, he describes as follows:

"The serum is carried to the cancer by the blood. The cells are killed. Their osmotic pressure increases and they become waterlogged and swell. The pressure of the swelling causes more pain until the killed part has been disintegrated and absorbed, and the absorption, or burning up, causes fever, usually occurring about 12 hours after the injection of the serum. Cancer tissue so absorbed also serves as nourishment. If the patient has been starved a long time because of cancer of the stomach, a large cancer, paradoxical as it is, is a benefit since, once killed, it supplies food elements and actually gives strength to the patient. Cancers previously treated with X-ray or radium, however, if killed by the serum treatment, gives products that are very toxic, sufficiently so, in some instances to kill the patient.

Dr. Koch's treatment will not, he says cure cancers that have previously had X-ray or radium treatment.

TYPES READILY CURED,

"I have treated 30 such cases and in every instance the treatment was a failure," he said, "Except that it is a matter of electron vibrations, I am in the dark as to the exact nature of the change in the cancer chemistry induced by X-ray or radium treatment. I am now trying to solve that problem."

Neither will Dr. Koch say that his serum will cure skin cancer or breast cancer.

"I have had good results with skin cancer several times," he asserted, "but I have not had enough experience with it to say that my compound will cure it. The compound was not constructed according to the chemistry of such growth. The material I used for analysis when starting the work was rectal and stomach cancer. The types that respond best to the treatment are cancers of the liver, stomach, intestines, rectum and uterus, which are apparently rapidly and completely cured.

About ten injections of the serum, Dr. Koch says, will completely cure a stomach cancer as big as a man's head and stomach cancers are practically always inoperable.

BAD CASE CITED,

"I had a woman patient last August," he said, "with a cancerous growth as large as a watermelon. She was too weak to walk and wanted to live only until her son returned from France. I did not expect her to live a week. Today she is as well as any of us. It is the same with all stomach cases I have treated; they are either entirely well or getting well as quickly as treatment proceeds. And the same is true of rectum or uterus cancer that have not been treated with X-ray or radium."

All Dr. Koch's cases have been well advanced. It makes no difference in the success of the cancer treatment how near death the patient may be, he asserts.

"Just as long as the blood is circulating to carry the serum from the site of injection through the growth, the compound will do its work," he said. "Of course some patients may be so completely exhausted as to die, anyhow, or they may have some other fatal malady. If one of the patient's vital organs is destroyed; curing the cancer obviously will not save his life. He is likely to die before the cancer is cured."

CONFIRMED BY PHYSICIANS,

The stomach, Dr. Koch, says, although important, is not necessarily a vital organ.

According to Dr. Koch, not one case of cancer in the history of the world had been cured by medical treatment until he discovered his compound.

Several Detroit physicians whom Dr. Koch thanks in his paper for their co-operation in his cancer treatment, have confirmed Dr. Koch's statement that he has established clinical cures of cancer in specific cases.

By "clinically cured" is meant, they explained, that insofar as can be determined without exploring the patients by operation to justify a positive statement that no trace of cancer remains or by waiting five years to ascertain that there is no recurrence of the cancer, the patients have been cured.

Although all spoke of Dr. Koch's treatment with that reserve which, in discussing the value of another man's discovery of a disease-treatment, marks the utterances of reputable physicians, jealous of their own professional reputations, they were unanimous in the opinion that Dr. Koch's treatment has shown remarkable results. That, from the viewpoint of the physician, caution in indorsing a "cancer cure" is natural, is emphasized by the statement of Dr. J. H. Carstens, and solemnly echoed by two others of the physicians interviewed, that "the man who discovers a cure for cancer will be the greatest man in the world."

BRILLANT CHEMIST,

Dr. Alexander W. Blain, surgeon, head of Jefferson clinic: "Dr. Koch is one of the most brilliant physiological chemist in the country. It is too early to say he has a cancer cure, and it should not be regarded as a 'cure-all' but as an adjunct to the treatment of cancer. No cure can be established until five years have shown there is no recurrence of the disease. But what he has done is this: He has made people well who were so far gone with cancer that they had only a few weeks to live. Several patients he treated for me are working hard and enjoying life a year after they 'should have been dead.' Even if Dr. Koch gets no further with his work than he is now – and he is experimenting now with his fifteenth mixture, I believe – even if he has not discovered an absolute cure for cancer, he had added years to the lives of cancer victims. There are nearly 300,000 victims of cancer in the country and if they could all have a few years of usefulness added to their lives the saving to the country would be enormous. What he has already done is a boon to humanity and a great step forward in physiological chemistry."

CONFIDENCE IN KOCH,

Dr. Walter L. Hackett, visiting gynecologist and obstetrician, Woman's Hospital: "There is no question of Dr. Koch's sincerity and ability. It will take five years to determine whether or not he has a real cure for cancer, but I have enough confidence in his treatment to let him inject his serum into any cancer patient of mine. I had, as a patient, an old woman who was very far gone. At Koch's suggestion I operated on her and took out such cancerous growths as were apparent. Later, the cancer grew again. Dr. Koch gave her four injections and she is now apparently entirely well. I have seen some excellent work done with radium, but never anything so remarkable as this. Dr. Koch should be given every opportunity to prove the value of his treatment."

Dr. C. Hollister Judd, president of the medical board, Women's Hospital: "When we stop to consider that one woman in every seven and one man in every 12 have cancer, the importance of the work Dr. Koch is doing can not be overrated, though it is too early to say that he has a cure for cancer. He has been working under many handicaps. The cases give him have been the 'hopeless' ones, where the surgeons saw the uselessness or impossibility of further operation, and his treatment has shown remarkable results.

SHOULD BE HELPED,

"Everything should be done to encourage him in his work. He should not be obligated to think, for instance, of expense. Yet his serum costs him $8 an injection, I believe. He ought to be given $100,000. to carry on his work and he ought to have a ward in a hospital where he could concentrate his patients. Women's

Hospital is arranging to give him 12 beds. Dr. Koch's work, which is still experimental, is important in this sense, he is studying cancer physiologically rather than pathologically. That is, instead of working on the cancer tissue of a dead person, he is working on patients who are alive. There might be a question as to which method is more interesting to the physician, but there is no question of which appeals more to the patient."

Dr. J. H. Carstens: "He has apparently effected some wonderful cures, but it is too soon to say this positively. I am against publicity in the matter, as we do not want persons afflicted with cancer to flock to Detroit for treatment when they will not be able to be taken care of. Dr. Koch will get all the cases he needs."

TOO EARLY TO PREDICT,

Dr. G. H. Palmerlee: "Dr. Koch treated an old man for me. The growth seems to have reduced materially and the patient began feeling better after the first few treatments. It is too early to say that Dr. Koch has a cure for cancer. He should be given a ward in a hospital with a number of cases proved beyond the shadow of a doubt to be cancer. Then a commission of physicians should be appointed to watch the effect of Dr. Koch's treatments on the patients. If he had 100 cases of positively proved cancer and he established cures in 90 per cent of the cases, he would be getting somewhere.

"If he can cure 75 per cent of his cases – even if he has not a positive cure for all cancer – his discovery is a boon to humanity, for the man who discovers a cancer cure will be the greatest man in the world. One of the difficulties of curing cancer is that ordinarily it is not discovered until the case is too far advanced to be operated. Operations are successful if the cancer is caught early enough and if all the cancer cells are removed. If, however, a few of the cells escape and spread through the lymph tracts or blood vessels to other parts of the body, the cancer will break out again and it is obvious that only a certain amount of tissue can be removed from the body.

WITHHOLDS FORMULA,

"Where a case has been operated and cancer breaks out again, there is almost no curing it by further operation. The trouble with making any announcement of a cancer cure is that too much will be expected of it, as too much was expected of X-ray and other innovations. The X-ray is of wonderful assistance in diagnosing, in locating foreign particles in wounds, obstructions of stomach or intestines, and in discovering broken or dislocated bones, but it is not a cure all, as people thought when its discovery was announced."

The establishing of a commission of physicians to study the progress of the cases he treats is, Dr. Koch says, exactly what he wants.

"I do not want to make the formula public just yet," he declared, "because I fear it might be commercialized. The compound is difficult to make and it deteriorated rapidly. If I published it and quacks or unscientific men started mixing it and treating cancer with it, the results would be disastrous, not only possibly to the patients, but to the ultimate success of the treatment. Improperly mixed or administered the compound would fail to do its work. It would be discredited by the medical profession and it would take years to establish its value. When I have proved to the satisfaction of the medical world that it does its work, it will be time enough to make the formula public."

KOCH ASKS AID TO TEST CURE

"Won't Some One Pay Cost of Real Trial?" Is Plea of Cancer Foe.

Is there not some rich man in Detroit with enough interest in his fellow men to pay the bare expenses of the trial of a cancer cure that has already shown enough tentative cures to have attracted the attention of physicians of prominence in New York, Chicago and Detroit, as well as of minor practitioners in all parts of the country?"

This was the query Wednesday evening of Dr. W. F. Koch, whose assertion that he has discovered 52 chemical compounds useful in the treatment of as many different varieties of cancer, has been under investigation by the Wayne County Medical society. The investigation resulted in a disagreement that found an airing at last Monday evening's meeting of the surgical section of the society.

Wants Nothing for Self.

"I don't want a penny for myself," continued Dr. Koch, referring to the reported intention of the Wayne County Medical society of asking the city authorities to pay him a salary of $5,000 a year and place a full staff at his disposal for 12 months in an effort to fully test his claims. "What I want and what I am determined to get before I go ahead with any research is the right conditions.

"The Ford hospital, for instance, could easily place 50 beds at my disposal, or rather at the disposal of the test, for one year. The city could provide nurses and chemists and other attendants necessary for a proper investigation of the results of the treatments. It would cost probably $65,000, but this is an insignificant amount when you remember that Sir Edward Sheppey gave Ehrlich $1,000,000 and that the German scientist experimented with 915 compounds before he discovered the famous "606."

"I have an offer to go to Chicago, but have decided to refuse it because the conditions are not the ideal ones for which I am searching.

In Touch With Other Cities.

"I probably will read a paper before the February meeting of the American Congress of Internal Medicine in Chicago and I am in touch with New York doctors of prominence. If Detroit will not prove itself big enough for this thing I am sure some other city will."

Chicago offer

AMERICAN MEDICINE
18 EAST 41ST STREET
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H. EDWIN LEWIS, M.D., EDITOR
M. A. WILE, M.D., ASSOCIATE EDITOR

November 4th, 1920.

Dr. Wm. F. Koch,
355 Sheridan Ave.,
Detroit, Michigan

Dear Doctor:-

We have been much impressed with a most interesting and valuable article by you which appeared in a recent issue of the Medical Record, and are taking the liberty of writing to you to solicit a contribution from you on any medical topic for early publication in American Medicine.

As you may know American Medicine is one of the most widely read and quoted medical journals in America and assures you an audience that is not exceeded by that of any other high class medical monthly.

We are constantly striving to make American Medicine helpful and inspiring to the thinking medical men of the country and it is because we believe any article you may send us will aid us in these efforts that we are asking you to become a regular contributor to our pages.

Hoping you have something in hand you can send us in the near future, and assuring you that we will "leave no stone unturned" to make our relations most pleasant and satisfactory, we remain,

Faithfully yours,

The Editors of American Medicine

H. Edwin Lewis

Editor-in-Chief

HEL/RR

A NEW AND SUCCESSFUL DIAGNOSIS AND TREATMENT OF CANCER.

By WILLIAM F. KOCH, PH.D., M.D.,

DETROIT, MICH.

THE mortality from cancer has not been changed essentially by all the treatments ever used to combat it. The death rate still stands one out of eight for females, one out of fourteen for males, dying over forty. So far as the efficiency of the various treatments for cancer is concerned then, we make this observation, that no treatment yet devised meets the essential pathology of the disease.

It is the purpose of this paper to present certain physiological deductions which locate the essential pathology of cancer, and to describe a treatment that simply corrects the pathological condition on a physiological basis, and thus establishes cure. A few histories and microphotographs are selected to illustrate the various phases of the treatment.

In 1912, 1913, 1916 and 1917, I reported* the occurrence of toxic quantities of certain guanidine bases and other products of tissue degeneration in the urines of parathyroidectomized dogs. This finding has since been confirmed by Paton at Glasgow and by other observers. My autopsies showed in

*See Bibliography appended.

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these animals extensive antemortem coagulation of the blood and also a coagulation of the tissue cells in the liver, lung, spleen and brain.

Such extensive coagulation of blood and tissues ensuing upon the loss of one physiological substance is suggestive that normal functional tissues are incoagulable so long as they receive and can build into their structure all the elements necessary for functionally co-ordinated activity, and that as soon as this balanced nutrition is disturbed they become coagulable. In this case after parathyroidectomy the tissues had lost a necessary special element and had become coagulated just as blood withdrawn from its endothelial encasement becomes coagulable.

Now, two types of substances are active in the coagulation of drawn blood, the thrombokinase and the thrombin.

The thrombokinase is a product of tissue-cell injury and blood plasma is constructed to have unsaturated affinity for it, so that when this product is liberated it can react with the blood plasma and initiate clotting. Therefore, thrombokinase produces intravascular and extravascular coagulation. This is a physiological function of the plasma to prevent hemorrhage. Likewise the plasma of tissue cells clots by reaction with a product of injury to tissue cells. This function of tissue-cell plasma coagulation serves to wall off destructive processes and also to lay a bed for ingrowth of angioblastic organization tissue, thus preparing for and promoting the healing process. This coagulation process is evidently, then, a highly specialized function in all normal tissues and an activity of their functional substrate.

The type of injury that leads to the production of thrombokinase may be an active, physical or

chemical one, or a passive one, as occurred in my parathyroidectomized dogs, where failure to supply certain necessary elements (because of absence of the parathyroid activity) prevented the completion of the restoring of the cell functional substrate, and therefore the elements of this substrate already present, not being usable, were set free and were active as tissue injury or degeneration products, and initiated clotting not only of the tissue cells but of the blood as well.

The condition necessary for the initiation of coagulation in a tissue plasma, then, is the presence of a certain product of tissue-cell degeneration for which the plasma has unsaturated affinity.

The Thrombin. Now it happens in any physiological intracellular function that the initiation of a state of change and the propagation of this state are mediated by different substances, the propagation of the state being carried on by the products of the change induced, whether energy is liberated or not. We observe this in muscle and nerve cell function, and a good example is offered by blood clotting.

The process of clotting having been initiated by the kinase, some thrombin is formed by the clotting process, and this substance propagates the change of state in the fibrinogen. After blood is shed its functional substrate is removed from the nutritional support of its endothelial encasement and therefore is in the predicament comparable to the tissue of my parathyroidectomized dogs, and subject to thrombin activity. As stated above, coagulation of tissue plasma is a function of the tissue and therefore an activity of its functional substrate. The kinase acts on this functional substrate, starting the process; the thrombin, a product of the

state initiated in the tissue functional substrate, propagates the process. Thrombin cannot act on an unchanged functional substrate as is illustrated by the fact that it will not change the coagulability of circulating blood where a state of coagulation has not been initiated. It can act only on a plasma associated with a change of substrate.

Since cancer is deficient in functional substrate, at least insofar as any specialized highly differentiated function is concerned, it was suggestive that this variation from the normally constructed substrate might constitute a susceptibility to coagulation and therefore to the action of tissue thrombin. That is, the change necessary to induce coagulation existed, but the functional substrate being deficient, no thrombin product could be evolved to propagate a coagulation state throughout the cancer cell plasma, and therefore the cancer cell plasma remained unclotted until it might receive the propagator of the state that virtually existed in it.

In line with this supposition, then, thrombokinase could not initiate coagulation in a cancer cell, although not clotted, being already prepared for the activity of the thrombin.

To test out this hypothesis cancer patients were treated with tissue thrombokinase and with tissue thrombin. Amounts varying from 1/100 grm. to ½ grm. of tissue kinase and tissue thrombin being injected subcutaneously, generally in the patients buttocks, the substance being dissolved or suspended in normal salt solution in from 1 to 10 c.c.

The kinases will first be disposed of.

Quantities of the kinase insufficient to cause extensive intravascular coagulation of the blood, and therefore immediate death in the patient, were found actually to increase cancer growth and, moreover, to cause so great a negative coagulation phase of the patient's blood that hemorrhages were profuse and the continuance of such treatment threatened the patient's life. The site of the injection



FIG. 1.—Section taken from the untreated squamous cell carcinoma.

showed tissue death. Therefore such therapy was discontinued as useless and harmful.

The use of the tissue thrombin, however, brought very different results. Locally, where injected in the hip, no sign of disturbance was produced—no more than if normal salt solution were injected.

There was no change in the patient's blood coagulation time, as the following experiment shows:

Fifty mgms. of tissue thrombin were injected subcutaneously into a healthy man of 157 lbs.

	Coagulation Time
Before injection	2 min. 40 sec.
10 min. after injection	2 min. 40 sec.
1 hr. after injection	2 min. 42 sec.
12 hr. after injection	2 min. 40 sec.
24 hr. after injection	2 min. 43 sec.

Fifty mg. of tissue thrombin were injected into a cancer patient who had not had any severe hemorrhage.

Before injection	3 min. 12 sec.
1 hr. after injection	3 min. 20 sec.
12 hr. after injection	3 min. 14 sec.
24 hr. after injection	3 min. 8 sec.

The microphotographs show the effect of the injected tissue thrombin upon cancer cells. These sections were taken from a large squamous cell carcinoma of the neck (Case IV, reported in the *Detroit Medical Journal*, July, 1919). The usual dose of 50 mgms. was given in the hip.

Section 1 was taken before treatment and shows the normal squamous cell carcinoma. Fig. 2 shows a low power magnification, and the series 3, 4, 5 and 6 show the details of the changes induced after two treatments. The most pronounced changes are firstly, a disappearance of the cells lining the basement membrane. These are the cells closest to the blood supply, the germinal cells of the cancer. Naturally the tissue thrombin reaches them first and they are the first to be destroyed. As rapidly as they disappear angioblastic tissue replaces them. Apparently the carcinomatous clumps are being devoured by angioblastic tissue just as takes place in the development of bone and in the organization of a blood clot. Investigation of the chemistry of these three phenomena reveals that they are essentially the same process.

The changes preparatory to organization of the cancer tissue are first as shown in Fig. 6, nucleolysis and a fibrin formation in the cells, and as is shown in Figs. 3, 4 and 5, a swelling of this fibrin which produces a hyalinization of the cancer protoplasm.



FIG. 2.—Section from the squamous cell carcinoma, removed 24 hours after the second treatment (low power). The disappearance of the malpighian layer of cells, the hyalinization of the protoplasm, and the disappearance of the nuclei of the remaining cells and ingrowth of fibroblastic tissue are shown here.

This is a digestive change in the clotted protoplasm which accompanies the ingrowth of the angioblastic tissue (shown best in Fig. 3 and Fig. 4 at x). Fig. 7 was taken from a piece of the carcinoma removed after the fourth treatment. It shows the practically

complete replacement of the carcimona by fibroblastic tissue. Whatever carcinomatous debris is left has undergone a calcification. This calcification change also occurs preliminary to bone absorption in the development of bone. Here it occurs in the



FIG. 3.—High power magnification of section (Fig. 2), showing chromatolysis, fibrin formation, and hyalin change in the cancer cells. This section shows the ingrowth of angioblastic tissue, the organization of the coagulated cancer.

last remnants of the clotted cancer which have lain unabsorbed sufficiently long to have taken up lime salts. This change is a conclusive testimony to the complete death of the cancer moreover.

CLINICAL.

The clinical features that accompany this change

induced in the cancer are for the first twenty hours after injection practically negligible. There is no change in the heart beat, in the respiration, or in the comfort of the patient. Locally, in the hip where the injection is given, there is no reaction at all. After twenty hours the injected material has been taken up by the circulation and lodged in the cancerous tissues where it now shows its work. The cancerous parts become swollen, more painful than usual, and reflexes associated with the part are augmented and fever develops, especially between twenty-four and thirty hours after injection, generally lasting from two to six hours, and as this subsides the affected parts become smaller and less tender than before treatment, and there is less pain. The patient, however, may be quite tired out for the next day, but the following day finds him much more normal and buoyant. As a rule, after two injections hemorrhages have stopped, not to return, and pain ilkewise, as treatment proceeds, rapidly passes away.

CASE I.—The first case is selected to illustrate the healing of a vesicovaginal fistula large enough to easily admit three fingers following upon the disappearance of the cancer tissue. It also illustrates the usual reaction features. This patient came under my care April 24, 1919, referred by Dr. Walter Hackett of Detroit.

Mrs. B., age 53, housewife. Normal weight, 125 pounds, five years ago. Patient's family state weight at present to be 70 pounds, having been weighed several weeks previously. *Family history*—Father died of cancer of stomach, age 61. Mother died of heart disease, age 57. No history of tuberculosis, insanity, or alcoholism in family. Four children alive and well. *Past history*—Two years ago (1917) patient noted vaginal discharge, which gradually became excessive, odorous and bloody. More notable were the occasional hemorrhages without period of menstruation. This bleeding was initiated by sudden movements, and even

came on during sleep in bed. At this time her weight was 107 pounds. In March, 1919, patient was examined by Dr. Garber, Dr. Hurst and Dr. W. Hackett, who gave the diagnosis of carcinoma of uterus. Wassermann, negative; R. B. C., 2,700,000; Hem., 50 per cent.; urine, albumin, trace; sugar and casts, negative.

April 5, 1919, laparotomy and hysterectomy by Dr. Walter Hackett. As much of the carcinomatous tissue as possible was removed, although the subrenal lymph glands were infiltrated. Tissue was examined microscopically, and proved to be adenocarcinoma of endometral origin. On April 30 I found the patient very weak and anemic. She could not sit up in bed without help. It was impossible to get a satisfactory drop of blood by several deep punctures of the finger, and the attempt to withdraw blood by syringe failed, as the vein collapsed. Patient took about 8 ounces of milk per day and very little other food. The pain was severe enough to require between 3 and 4 grains of morphine per day. The discharge was excessive, of strong odor, and accompanied by the escape of urine from a vesicovaginal fistula large enough to easily admit three fingers. At the orifice of the vagina carcinomatous nodules were visible. Moderate but exhausting hemorrhages had occurred several times a week. She was given an injection of 50 milligrams of tissue thrombin in 2 c.c. of normal salt solution, April 30, 1919. Temperature, 96.2°; pulse, 110. The next day, 24 hours after treatment, her temperature rose to 101.4°; the pulse became feeble and 134. The pain in the back and abdomen was intense for 4 hours. Two grains of morphine had to be given by hypodermic injection to control it. The next day the temperature was 97.2°, and in the succeeding night an exhausting hemorrhage occurred. The blood clotted readily. This was the last hemorrhage. May 3 a similar treatment was given. Temperature, 98°; pulse, 120. In 24 hours the temperature rose to 102°, and was maintained for 8 hours. The discharge had increased considerably and had become more acrid. The patient suffered so much pain that 2 grains of morphine were necessary. On May 6 the third treatment was given, the discharge still increasing, but with less odor and no blood, accompanied by less pain than the former treatments. After 24 hours the temperature rose to 101.6°, the pulse to

103. The fever was maintained for 6 hours. The appetite started to improve after this treatment, and in four days she was able to sit up in bed without help. The succeeding treatments brought on similar reactions, but each time the fever and pain were less, so that after taking the ninth treatment, June 5, neither pain nor fever could be elicited and the patient has suffered none since, having also discontinued the



FIG. 4.—Shows the same changes as in Fig. 3.

use of morphine. The discharge had completely disappeared, and the patient was able to walk about the house and sweep the floor. She then weighed 94.5 pounds. Treatment was discontinued.

On June 30 the patient weighed 112 pounds, a gain of 42 pounds in eight weeks (since treatment was started). At this time there was slight and controllable escape of urine through the

vagina. She was examined in the middle of July by Dr. J. H. Carstens, who stated that he found no evidence of cancer, and the vesicovaginal fistula was closed so as not to admit a finger. This region he found indurated. On August 8 examination was again made and fistula found entirely closed; weight, 116 pounds. She was then active at her household duties. The blood was taken for analysis: R. B. C., 3,970,000; H.,



FIG. 5.—Shows the same changes as Fig. 3 and at x the ingrowth of angioblastic buds into a coagulated mass of cancer.

70 per cent.; noncoagulable nitrogen, 29 mgms. per 100 c.c.; alkalinity, 47 c.c., CO_2 per 100 c.c.

The alkalinity was normal and not increased, as is the rule in cancer patients. The noncoagulable nitrogen was normal, hence there was no diminution of kidney function. The patient had no symptoms of cancer, and examination elicited only some slight induration

at the region of the previous fistula, which was to be expected as a result of the healing process. She was therefore pronounced tentatively cured, and remained so until November 5, 1919, when she suddenly dropped in an apoplectic stroke and died November 6 of apoplexy. Unfortunately, I was not notified of her death until two weeks later, and then an autopsy was out of the question.

CASE II.—The following case illustrates a variation from the usual type of reaction. Instead of the reaction coming on 24 hours after the treatment, in this case no febrile response occurred until twelve days after the first treatment and seven days after the second treatment. During this period a large carcinoma of the stomach, practically stenosing the pylorus, disappeared.

Mrs. P., aged 58, referred by Dr. Heavenrich of Port Huron, Mich., November 1, 1919. *Family History.*—Father died at middle age of heart trouble. Mother died at 85 years of old age. Brother died of typhoid. One sister died of pneumonia. Two sisters alive and well. No history of tuberculosis, insanity or cancer. *Chief Complaints.*—Pain in abdomen and right back, vomiting and tender mass in upper abdomen.

Past History.—Measles, whooping cough, chickenpox in childhood, well otherwise until present illness. Menses began at 14, have been normal until menopause at 49, were somewhat painful first day or two. Pregnant once; child died in infancy. No miscarriages; denies venereal infection. For past three or four years patient has been troubled with indigestion, pain coming on from two to three hours after eating, with burning pain and eructation of gas. *Present History.*—On this subject Dr. Heavenrich of Port Huron writes as follows: "She was taken ill August 1, 1919, with what was diagnosed gallstone colic. Needed opiates for relief of pain. During the following six weeks had repeated attacks—pain, nausea, jaundice. Was seen by several doctors, all of whom agreed in diagnosis and need of operation. I first saw her in September in one of these attacks. I found her emaciated and anemic, suffering severely with typical gallstone colic. Deep jaundice over entire body. Itchy skin, clay stools, and vomiting bile. Unable to retain any food. Temperature 98.4°; pulse, 112. Abdomen so tender as to

make palpation impossible. I also advised operation and was requested to do so at once. I had her removed to the hospital, where she was operated on the following morning by Dr. Aldridge and myself. To our surprise we found the liver and gall bladder perfectly normal—no stones, no thickening of duct walls, etc. But the lesser curvature of the stomach was one large



FIG. 6.—Shows same changes as Fig. 3, but more particularly the fibrin formation in the cancer protoplasm.

sausage-shaped tumor, hard in consistency, with some nodules at various spots. So much of the organ was involved and the patient was in such a weakened condition that we were both of the opinion that gastroenterostomy or any modification of such operation would be of no avail. We closed the wound and about November 1 sent her to you. At this time (August 8, 1920) she appears to be in splendid health, does her

own work, and eats everything, and certainly is grateful to you."

On admission to the Womens' Hospital, Detroit, November 1, 1919, her weight was 119 lbs.; R.B.C., 3,100,000; H. 60 per cent.; Wassermann negative, urine negative to albumin, casts and sugar; volume 7 oz. in 24 hours. Stools loose, scanty and tarry, occult blood negative. Retention of food very slight, apparently all food ingested was vomited. Physical examination revealed mass in epigastrium raised to a level of an inch and one-half above the costal level. Palpation showed mass to be hard and very tender, which prevented outlining its borders. Light percussion showed the dullness to extend to the umbilicus.

For descriptive purposes her stay of forty-one days at the hospital is divided into three periods. The first, of eleven days, was reaction-free, although an injection of 50 mgm. of tissue thrombin was given on the first and fourth days. Temperature running from 97° to 98°, with at times severe abdominal pain and vomiting the daily food ingested. The second period started on the eleventh day, seven days after the second treatment, with a fever of 102°, dropping in 36 hours to normal and rising for three successive days to 100°. On the third day of this period (the fourteenth day), a third injection was given, followed in 48 hours by a fever of 102°, which returned to 99° in the course of 24 hours, rising again for four more days to 100° and again to 102° for a number of hours. After a rest of two days she was given another treatment, and in 48 hours another fever of 102° was elicited, returning to normal within 24 hours and remaining there ever since. During this period there was much pain in lower right chest and shortness of breath and cough coming on in daily spells and accompanying the epigastric pain. With the disappearance of the fever at the end of this period all pain left. During the last six days there was no vomiting, nor has there been since. The appetite and digestion rapidly improved, and no epigastric mass was evident on inspection. The third or convalescent period of 14 days was painless and without vomiting or gastric distress, the patient taking the regular tray. Temperature running 98° to 98 3/5°. She rapidly gained strength. On the sixth day of this period a

treatment of 50 mgms. was given, without any focal or febrile reaction. Examination of the epigastrium showed neither dullness nor rigidity and only slight tenderness. On deep palpation a suggestion of a tumor rather soft and not outlinable was found. She was kept in the hospital for eight days longer and her abdomen again examined. This time the examination was entirely negative. R.B.C. 4,000,000; H. 80 per

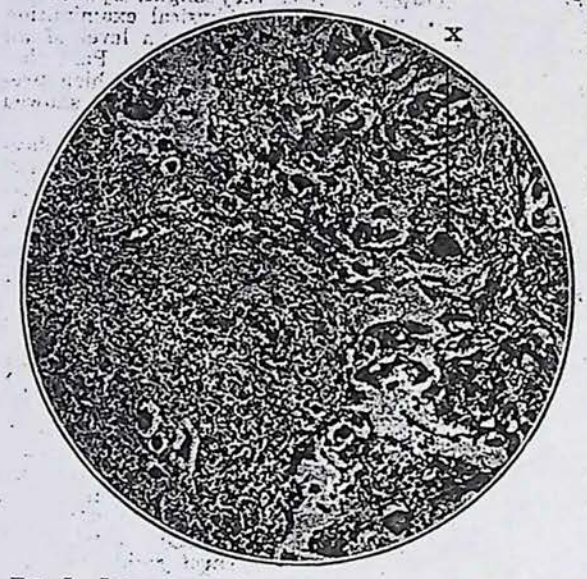


FIG. 7.—Low power view taken from a section removed after the fourth treatment, showing the fibroblastic replacement of the killed cancer. Also calcification (x) of as yet unabsorbed debris.

cent.; weight, 126 lbs. Blood analysis: Non-coagulable nitrogen, 43 mg. per 100 c.c. Alkalinity, 40 c.c. CO_2 per 100 c.c. She was discharged, tentatively cured.

In March, 1920, the patient was requested to present herself for another examination. She appeared to be in splendid health, had a good appetite, ate everything,

and weighed 142 lbs. She complained of slight distress after eating for the past week. She was given two more treatments four days apart, with slight focal reaction and a temperature of 100.2° in response to the first treatment, but no febrile reaction to the second. Within a week the indigestion had disappeared and has not returned to date. In July, 1920, her weight was 152 lbs., and she reported no trouble. Examined again August 1. Weight 159 lbs. She is still in excellent health.

CASE III—This case, with its control case and the case following, are submitted to illustrate the effect of doses of various amounts of tissue thrombin. These three cases came from the same region in Michigan, two from Bay City and one from a neighboring town. The first two are in patients of normal weight of about 200 lbs., the third a normal weight of 160 lbs. The first two have similar carcinomata of the large bowel, and the third a gastric cancer.

Mrs. B., referred by Dr. H. J. Meyers of Saginaw, Mich., January, 1920. *Family History.*—Mother died of heart failure at the age of 69 years. Father died of cancer of stomach, age 71. Two sisters died of tuberculosis. She has one son living and well. *Past History.*—Scarlet fever at 8 years, and a cervix repair operation about 25 years ago. *Present illness*, reported by Dr. Meyers, as follows: "Mrs. G. B., housewife, age 52, was first seen by me in consultation with her home physician in Bay City. This was in October, 1919. The story was as follows: A few days before, Mrs. B. had been very suddenly seized with intense abdominal pain, most marked in the upper left quadrant. There was nausea but no vomiting. The pulse became rapid and weak. There was great prostration, and the patient bordered on collapse when Dr. K. arrived and administered morphine and stimulants. This attack occurred about 3 P. M. The next morning at 2 o'clock the patient had a large hemorrhage from the bowel. Two hours afterward a second bloody stool was passed. There was no recurrence of the pain. At the time of consultation, a few days after the above attack, inquiry elicited the fact that the patient, who had been a very strong, robust woman, had lost 20 lbs. during the last few months, and that she had had a feeling of weight distress and pain in the left upper

quadrant of the abdomen. Examination failed to disclose more than a feeling of rigidity over the left rectus muscle. There was also a tender area that could be mapped out on deep pressure, but no tumor could be definitely found by external diagnostic methods. Rectal investigation for a possible source of the hemorrhage was negative. *X*-ray investigation of the upper digestive tract with the bismuth and barium meals was negative, but tracing the meal through the colon we were impressed by the fact that there was marked angulation at the splenic flexure of the colon, and that shadow seemed to thin out markedly at this point, and also that the appearance of the chemical in the descending colon was appreciably retarded. A tentative diagnosis of probable malignant trouble was made and an exploratory laparotomy was advised. On November 4, 1919, the operation disclosed the following pathology: A large irregular fusiform tumor situated at the splenic flexure of the colon. This mass was in and surrounding the lumen of the bowel, and was bound down to the posterior abdominal parieties. The mesocolon and mesenteric glands were infiltrated. The entire mass was practically inaccessible to surgical interference, and after due investigation it was decided that the tumor was inoperable. The abdomen was closed and the patient returned to bed. When the patient regained consciousness there was an excessive amount of pain resembling in character the pain she previously suffered just previous to the hemorrhage at the beginning of her trouble. The subsequent convalescence was uneventful, and she was then referred to you for treatment."

Physical examination December 8, 1919. Weight 201 lbs. Urine negative to albumin and sugar. R.B.C., 3,400,000; H. 70 per cent.; stools tarry. Wassermann negative; temperature 97°-98°. Inspection revealed upper left quadrant of abdomen to be fuller than other side. Palpation revealed same to be very tender, rigid and with dull percussion note. Patient complained of inability to lie on the left side or to touch same with her arm, and also of severe pain most of the time in that region.

Treatments of 5 mgms. each were given on December 20, 22, 29, 30, and January 2. The reaction temperature at no time rose above 99°. On January 5,

50 mgms. were given. This was followed in 24 hours by a fever of 102.5°, accompanied by the severe focal pain that had previously called attention to her sickness. Twenty other treatments were given up to July 20, each of 5 mgms. In no case did a reaction follow with a fever of over 99.4°. The last four treatments elicited no reaction whatever. On January 20, she could lie on her left side and the tenderness to pressure was very much diminished. On February 9 the soreness had entirely disappeared. By May 12 her stools had lost the tarry color. On July 6 palpation of the abdomen, as deep as the posterior parieties, elicited neither tenderness nor pain, and no suspicion of a mass could be found. She weighs at present 219 lbs., and is apparently in perfect health.

CASE IV.—As a control case Mr. H., referred by Dr. Tupper of Bay City, is selected. Occupation, banker; age 56; normal weight about 200 lbs. *Family History.*—Negative to cancer. *Past History.*—Besides fevers of childhood, was well until present illness. This came on early in 1919 with constipation, pain and tenderness in lower right quadrant of abdomen. Iliocolostomy was performed by Dr. Tupper in November, 1919, to sidetrack a large obstructing carcinoma of the ileocecal region. Examination December 1, 1919. R.B.C., 3,200,000; H., 60 per cent.; weight, 162 lbs.; pulse, 130; temperature, 95.2°; tarry stools. He was quite exhausted from his trip to Detroit. On December 3, the first treatment of 25 mgms. was given. On the next day he tried to walk but suffered a sinking spell. Twenty-four hours after treatment was given the temperature remained at 97°, pulse 110. Succeeding treatmentss of 50 mgms. of tissue thrombin given at intervals of three and four days were followed by temperature elevations which gradually came, after the ninth treatment, up to 102.5°. Two more such treatments were followed with a fever of 101.5° and 100° respectively, and the following treatment elicited no reaction at all. During this period the tenderness gradually left, and on December 31 examination could elicit neither tenderness, rigidity, pain nor mass. The patient was able to go about as he pleased, having gained 45 lbs., and holding a temperature of 98°-98.4°. Treatment was then discontinued. In March, 1920, three trial treat-

ments of 50 mgms. were given in one week, with neither febrile nor focal reaction, abdomen apparently normal. Weight 205 lbs. R.B.C., 4,200,000; H., 85 per cent.

The case of Mrs. B. shows that small doses are effective, but require a longer period and a larger number of treatments. This case gave the usual response to the ordinary dose. The control case of Mr. H. demonstrates that after the exhaustion had been overcome, the 50 mg. dose of tissue thrombin brings on the usual reaction, with fever at 102°, and that with larger doses fewer treatments are required.

CASE V.—The following case demonstrates the activity of large doses as 100 mgms. of the thrombin:

Mrs. Z., age 53, referred by Dr. Friedlander, March, 1919. *Family History.*—Father died of dropsy at age of 71 years. Mother died of rapidly growing tumor of uterus when 71 years old. One sister died of cancer, age 65; one brother died of cancer of the stomach at the age of 63 years. Two brothers are living, one well, age 52; the other has heart trouble, age 56. Four children, one died as baby of "cramps," one boy died of scarlet fever, age 7½ years; two children living and well—a boy, 24; a girl, 23. *Past History.*—Scarlet fever at 6; la grippe and bronchitis at 25; repair operation after childbirth, age 34; hysterectomy for malignancy, age 47; otherwise well until 14 years ago. Had burning pains in stomach after and before eating, vomited often and occasionally vomited blood, one-half pint at a time. Stomach improved somewhat until present illness. *Present History.*—February 4, 1918, had attack of severe pain, doubled up and not relieved without morphine. The spells came on every two weeks until March 24, 1919. At that time her weight was 126 lbs. Gastric analysis at this time showed absolute achlorhydria. The stools were tarry, and practically all food ingested was vomited.

On March 24, an exploratory operation by Dr. Friedlander showed a very large mass involving the liver, stomach, gall bladder and intestines. From its physical characteristics it was diagnosed carcinoma of pyloric origin by Dr. Friedlander, Dr. Israel and some other surgeons who happened to be present. No specimen was removed for microscopic confirmation because there could be no doubt of the diagnosis, and belief in the inadvisability of such procedure.

Treatment started April 8, 1919. At this time the patient could take small quantities of liquids and even this diet caused vomiting. Examination revealed a hard triangular area 11 c.m. long and 12 c.m. wide at its base just below the costal margin and extending over the epigastrium. This area was very tender and the seat of the pain. At first 50 mgms. of tissue thrombin was injected. In 24 hours a fever of 102.2°, lasting 8 hours, was elicited. There was very severe pain and vomiting of much mucus. Six days later a second injection, this time of 100 mgms., was given, followed in 24 hours by fever of 104.2° and lasting 10 hours, accompanied by very severe pain in abdomen and aching in limbs and head. Every "bone felt broken," she complained, and there was vomiting of mucus. Four days late 200 mgms. was injected, the fever rose in 24 hours to 105.4°, and after an hour dropped to 104.4°, when it soon dropped to 103° and remained for 14 hours. The pain was again severe and the universal aching was very distressing. She was then given a vacation of two weeks. On her return she weighed 136 lbs., was much stronger, having eaten fairly well and vomited mucus only twice, but no food, during the two weeks. The tenderness in the abdomen was much reduced and the tumor palpable through the abdominal wall felt about the size of an orange. She was then given three treatments of 50 mgms. at three-day intervals. The reaction started 24 hours after treatment, fever being 103.5°, 101° and 100.2° respectively, and with less severe pain and no vomiting. After the last treatment the mass on very deep palpation was about the size of an egg. Five days after the last treatment the patient developed a tetanoid condition, with stiff neck and laryngeal spasm which I cannot explain unless it was due to some guanidine products absorbed from the killed cancer or possibly to a mild tetanus infection. The former diagnosis was favored by those physicians who examined the patient. This lasted for four days, but recovery was complete only after two

weeks. At this time no mass was palpable on examination by Dr. Friedlander, Dr. Israel, Dr. Watkins and myself. She returned home in June, 1919.

In October, 1919, I examined her. No palpable mass or tenderness was found. She had no pain up to that time, was doing all her work, never felt fatigued, and her digestion was perfect. Stools, normal color. Weight 149 lbs. A sample of gastric juice was taken showing 0.9 per cent. free HCl. R.B.C., 4,450,000; H., 90 per cent. Blood analysis: Noncoagulable nitrogen, 33 mgms. per 100 c.c.; alkalinity, 52 C.C. CO_2 per 100 c.c.

March, 1920, weight 161 lbs., feeling perfectly well, no palpable mass or tenderness. She was given two injections of cephalin (0.5 gm.), which I believe promotes cancer growth. This was done to light up any hidden cancer tissue, if it were present. Patient remained well until June, 1920. Two more injections of cephalin (0.5 gm. each) were given. I heard from from her July 29, 1920. Weight 163 lbs., feeling well in every way, and her stomach perfectly well except that she complained of having had pain in lower abdomen at times and occasional diarrhea, which at present has nearly cleared up. She will be examined in due time and treated with tissue thrombin, if required.

This case illustrates, in support of the former, that the size of the dose determines the extent of the reaction, and that with larger doses fewer treatments are required.

These experiments show, then, that the tissue thrombin does not behave as a ferment but acts quantitatively. Moreover, the chemical properties are not those of a ferment. This is a matter of some interest, since ferments can induce the production of antibodies when injected into the animal body. Nevertheless the conversion of at least two pounds of cancer tissue by less than ½ gm. of tissue thrombin qualifies this substance, in some measure, as a catalyst.

CASE VI.—This case is presented, with the case following, to differentiate, by the type of reaction, a gas-

tric carcinoma and a gastric ulcer; that is, a carcinoma and a precarcinomatous condition.

Mrs. S., age 72, referred by Dr. Watkins of Detroit, May 9, 1919. There is no history of cancer, tuberculosis, or insanity in the family. *Past history* shows, besides measles in childhood, a history of gastric ulcer, indigestion, intense hyperacidity, several hemorrhages 15 years ago, and the development since that time of a peculiar arthritis in the fingers and in the bones of the feet, which more recently made walking difficult and limited digital motion. *Present illness* started with abdominal pain after eating and the inability to retain food for several weeks, and, in addition, several severe gastric hemorrhages repeated at intervals of a few days. She was admitted to Grace Hospital May 6, 1919, after a severe gastric hemorrhage. The diagnosis was made by Dr. Watkins from the clinical history, *x*-ray findings and physical examination as follows: Carcinoma of the posterior wall of stomach, involving the pylorus and causing considerable stenosis. He also gave a prognosis of only a few days to live. Examination of the abdomen showed some tenderness in the epigastric region, but no mass could be palpated. Because of the anemia a transfusion of 500 c.c. of blood was given. This raised the blood count to 2,850,000, and the hemoglobin to 37 per cent. The Wassermann reaction showed slight inhibition. Patient had been having a cardiac irregularity for some time. At this time her pulse was irregular and weak, and under the control of digitalis. She was able to take a half ounce of milk and cream hourly.

She was given an injection of tissue thrombin (50 mg.) May 9, 1919. In 24 hours a fever of 101.2° developed, and the abdominal pain was intense, the heart showing signs of failure. With sufficient stimulation the heart was kept going, and three days later another treatment was given of 50 mgms. tissue thrombin. In 24 hours the temperature rose to 102.8°, with considerable gastric pain for six hours, and some cerebral disturbance, perhaps due largely to the anemia, and with pains over the body as in la grippe, for 12 hours. This typifies the reaction in this patient. She received four more treatments at intervals of several days, to which the response was less for the second last, and *nil* for the last treatment. During this period of four

weeks' treatment there was no hemorrhage, nor has there been any since, and the diet was increased to the regular tray. The pain rapidly disappeared, and she has not vomited nor had any hemorrhage since treatment started. In August, 1919, she was given a trial treatment, but neither pain nor fever could be elicited. She remains well to date, a period of 15 months, and is up and about, feeling better than she did five years ago, and without gastric symptoms, and the gainer of considerable weight.

CASE VII.—This is a gastric ulcer case, referred by Dr. H. Ulbrich of Detroit, who presents the following case history: "Mr. G., age 47 years; occupation, paint grinder, handles white lead. Father died at 73 or 74 of carcinoma of stomach (?). Mother died at 73 of pneumonia. *Past History.*—Smallpox at 12 years. Rheumatism in 1900 and in 1916. Lighter attacks in between times. *Present Illness*—Started two months ago with vomiting. Mucus aggravation morning on arising. wakens at night with dryness of mouth. Rolling in stomach ends up like a ball in hepatic region, with pains in right chest, followed by eructations, after which he feels relieved for five or ten minutes, and then the process repeats. Pain in the lumbar regions. Arises from chair with difficulty. Headaches—frontal. Vertigo. Malaise. Lost 5 lbs. that he knows of. Urination $\frac{4 \text{ D.}}{\text{O N}}$ Bowels, constipated. Sleep poor; appetite gone. Nauseated. Distress after eating. Eats bread and milk. Small amount of coffee—three cups a day and one cup of tea. Pain comes on from one to one and a half hours after meals, worse mornings than afternoons, and lasts until the following meal. Food relieves for one to one and a half hours. *Physical Examination.*—Teeth poor. Pyorrhea. Post-pharyngoceles. Enlarged turbinates, chronic rhinitis, abdomen-liver dullness at lower rib. Some pain in right iliac, slight over gall bladder. No tension of muscles, no tumor.

January 22, 1920.—Urine: Slightly acid. Sp. gr. 1030. Albumin and sugar negative. Temperature 98°. Pulse, 80. Bl. P. 128-78 sitting. Bl. P. 128-90 standing. Heart: Apex, fifth interspace inside nipple. Dullness ½ c.m. outside nipple. Heart not enlarged. Sounds

normal, no murmurs. Lungs: Nothing abnormal found. Abdomen: Some tenderness, right duodenal region. Pressure below ensiform cartilage causes pain to gall-bladder region. No tension of muscles. Genito-Urinary: Normal, except for slight varicocele. Rectum: No hemorrhoids seen. Extremities: No varicosity. Differential Count: Poly. 65.3; small, 17.3; Large, 16; transi., 1.5. *X*-ray findings: February 1, 1920. The barium meal passes through the esophagus without note. There is a slight retardation at the cardiac end of the stomach. The barium readily settles to the fundus of the stomach, the greater curvature of which is lying on a level with the umbilicus. The barium readily enters the duodenum. There is no dilatation of the stomach. No niche or incisura is visualized. The pars pylorica shows a persistent spasm which does not interfere with the passage of the barium. The duodenal cap does not show the typical appearance, but is slightly flattened. However, no niche or incisura is visualized. The peristaltic action of the stomach appears normal. The duodenum is situated in the usual position and is movable, showing no adhesion around the duodenum. Palpation over the pars pylorica causes pain. The plates verify the deformity at the pyloric end, which is persistent in all the plates taken. The further examination of the intestines and colon do not show any deviation from the normal. Roentgen Conclusions: Pyloric ulcer or carcinoma, (beginning carcinoma), most likely an ulcer."

When patient presented himself for treatment he was not able to work and felt scarcely strong enough to come to the office. Treatments of 50 mgms. of tissue thrombin were given March 3, 10, 17, 21, 24, and April 5 and 12. The first four reactions consisted only of pain in epigastric region, with increased gastric symptoms for about 6 hours during the day following the treatment. But the temperature did not vary, running from 97° in the morning to 98° in the evening. The fifth treatment brought no response, and the patient was well enough to go to work, not having vomited and having had only mild gastric distress for a week. The treatments given April 5 and 12 brought on no reaction, and at the time the patient felt as well as he ever did, being able to eat anything on the table with-

out any distress. He has had no hyperacidity, pain or vomiting since, and has gained 17 lbs. in weight.

This case demonstrates that in gastric ulcer focal pain and hyperreflexia are the only reactions to treatment, and that a febrile reaction is not attained in this condition. Contrasted with the preceding case, this fact is well brought out and the diagnostic value as well as the curative value of the treatment emphasized.

CASE VIII.—This case illustrates the reaction in a carcinoma of the breast, associated with Paget's disease.

Mrs. P., housewife, age 47. *Family History.*—Father died of old age, at 81 years. Mother died of old age at 79. One brother died of heart disease at the age of 55; another died of apoplexy at 42 years. One sister and three brothers are alive and well. One child, age 22, alive and well. *Past History*—Chickenpox before 10 years of age. One attack of rheumatism nine years ago and another two years ago, neither of which lasted more than a week. No other sickness until onset of present illness. Menstrual periods regular and not very painful. *Present Illness.*—In March, 1919, first noticed pain in the right arm, shoulder-blade and right breast, which grew worse, so that by June she could not use the right arm at housework. By this time she became rather weak and "inexpressably tired all the time," and the pain in right breast just behind nipple interfered with sleep. She became short of breath on slight exertion and coughed considerably. The tumor was first noticed in April, 1919, four weeks after the pain set in. It was about the size of a walnut, and she became cognizant of the fact that the nipple appeared fissured and smaller than the left one. She was examined by Dr. J. Davis in August and October, 1919, as well as by several general practitioners, who diagnosed the condition as carcinoma and recommended immediate radical amputation of the breast.

I first saw the patient on November 5, 1919, and found the right breast larger than the left, the nipple fissured and retracted, and exuding some blood and a slight amount of thin pus. The upper right aspect of

the nipple was eroded and the areola and surrounding area converted into a characteristic Paget's condition. Behind the nipple a very tender and hard mass about the size of an egg was found. Two other small masses, one along the outer edge of the pectoralis major muscle and one at the inner end of the third interspace of the same side, were both found to be tender and immovable. Only slightly enlarged glands could be palpated in the deeper axillary region. The left breast was normal. Her weight at this time was 157 lbs., temperature 97.4°. Wassermann negative. Blood, alkalinity, CO_2 combined, 84 c.c. per 100 c.c.

A treatment of 50 mgms. of tissue thrombin was given November 5, followed in 24 hours by a chill, fever of 102.4°, dyspnea, incessant dry cough, severe headache, smarting eyes and nausea, and a very severe burning pain in the areolar region and a severe aching pain in the tumor. This lasted five hours and eased up gradually until it disappeared. For the next few days there was less pain than she had before treatment. The second treatment was given November 9, followed by a similar reaction on the next day for four hours. After this treatment the Paget condition looked much less angry and the discharge had stopped. A third treatment was given November 14, and a similar reaction set in in 24 hours but was not as severe as the former two, and there was no dyspnea. The bleeding had stopped when she presented herself for a fourth treatment, and the Paget condition now looked like a mild eczema that was nearly healed. She still had a mass about the size of a walnut behind the nipple, but it was less painful and did not interfere with sleep, and the pain in the arm and shoulder had practically disappeared. Palpation could not locate another mass. After eleven more treatments with rather mild reactions, the pain, tenderness and mass had entirely disappeared, the nipple had gradually returned to its normal position, and the entire areolar region had become normal. A slight deficiency was left in the upper right corner of the nipple and the breast as a whole is noticeably smaller than the left breast.

I sent her to Dr. R. Wollenburg on March 5, 1920. He reported that he found her in perfect health, with normal breasts. I also sent her to Dr. James Davis, January 25, May 5, and July 26, 1920, for examination.

He reported not being able to find any suspicious tissue after thorough examination.

Patient has been given several treatments at intervals of four weeks without any reaction following, and has now remained tentatively cured six months. She has gained six pounds, and reports that she is not fatigable and can use her arm at washing cloths, etc., without any pain and as well as she ever could. Blood alkalinity, CO_2, combining power 57 c.c. per 100 c.c.

CASE IX.—The following case is presented to illustrate the type of response elicited in a rapidly growing squamous-cell carcinoma in a young patient.

Mrs. W., age 33, normal weight 130 lbs., three years ago. Referred by Dr. F. E. Thompson. *Family History.*—Father alive and well, age 75. Mother, age 68, alive and well. Mother's sister died of cancer of the stomach at the age of 68. Two sisters died in infancy, one of colera and one of dropsy. Another sister died of diphtheria when 5 years old. One brother died of diphtheria, age 8. *Past History.*—Measles, mumps, pertussis and diphtheria in childhood. Well until present illness. *Present Illness.*—Started in June, 1919, with severe pain in lower back and a urinary frequency of every 30 minutes, accompanied with severe pain on micturition, and severe, constant headache. Patient was "very tired and weak all of the time." Several times a day deep, cutting pains occurred in lower abdomen. Discharge was excessive, somewhat bloody, but not very odorous. She consulted Dr. F. E. Thompson and also Dr. Wm. Donald on October 1, 1919, who diagnosed the condition as carcinoma of the cervix. A specimen was removed by Dr. Donald for microscopic confirmation. The diagnosis returned was squamous-cell carcinoma of the cervix uteri.

On November 19, a vaginal hysterectomy was performed by Dr. F. E. Thompson. The tissue removed was examined microscopically and diagnosed squamous-cell carcinoma. For the first two weeks after operation, patient appeared to improve, but in the following two weeks this improvement gave place to a rapid decline. The rectum became so painful that the sitting posture was impossible. The very severe pain that developed in the abdomen increased, so as to cause reflex paralysis of the limbs and inability to either walk, turn over in bed, or reach for things. This was accompanied

by intense pain in the hips and thighs, constipation and loss of appetite. The patient was examined by Dr. Thompson on December 20, as well as by myself, and found to have carcinomatous recurrence between the vagina and the rectum, in the rectum, and symptomatically in the region of lumbar and sacral plexes, and in the liver.

She presented herself for treatment December 21, 1919. She could not walk; weight 115 lbs. A treatment of 50 mgms. of tissue thrombin was given at 9 P. M., December 21, 1919. On the next day at 10 P. M., 25 hours after treatment, the patient awoke with fever of 104.3°; pulse, 120; intense headache, backache, grippy pains all over the body, and nausea all night until 10 A. M. next day. Within 3 hours after its onset the temperature rose to 105.2°, and did not fall below 104° until after 9 A. M. the next day. A drenching sweat followed the fever and the patient then felt much better than she had for the past four weeks. December 23, a second treatment of 25 mgms. was given. This was followed in 24 hours by a fever of 102°, lasting from 11 P. M. to 5 A. M. of the next day and accompanied by the other features of the former reaction, but not so severe. After the reaction subsided the patient could turn over or lie in bed on either side and was able to take a few steps. On the next day she could limp about, had a better appetite, and her bowels moved without so much pain. On December 28, 5 days after the second treatment, she walked ¼ mile without limping, and was without any pain whatever. Temperature 98.2°, pulse 80. On December 30, 1919, January 2, 6, 10, 12, and 27, 1920, she received additional treatments. The reactions gradually let up in severity after four of these treatments and then did not occur again.

She was examined by Dr. Thompson April 5, 1920, and no suspicious tissue could be found. She was likewise examined May 18 and July 1, and pronounced cured by Dr. Thompson (tentatively cured, of course). She was given a trial treatment July 16, 1920, but no reaction was elicited. The patient is perfectly well to date, her present weight being 149 lbs. She works hard all day without fatigue, pain, discharge, or any signs or symptoms of cancer.

DISCUSSION OF CASE HISTORIES.—*The Reaction.*

Every carcinoma case presented, generally 24 hours after the treatment, developed a febrile reaction, accompanied by increased focal pain and hyperreflexia of the affected part. Moreover, a systemic intoxication is expressed in the grippy feeling accompanying the reaction. These phenomena are no doubt due to the swelling of the coagulated tissue and to oxidation of the absorbed products. That these products are to some extent toxic is illustrated in the case of Mrs. Z., who had severe reactions from the large doses given and who developed a temporary tetanoid condition.

I might cite briefly in this connection a case of very extensive carcinoma of the ovary. Mrs. W., referred in August, 1919, by Dr. Larson. This patient, from sheer exhaustion, was barely able to move about in bed, and after receiving three treatments died in a reaction from the intoxication of absorption of the killed cancer tissue. Autopsy showed that the large mass was entirely caseated and could be torn to bits without resistance. This toxic reaction has a diagnostic value, since it occurs constantly in cancer patients. I have not been able to obtain either a focal or a febrile reaction by injecting as much as 2,000 mgms. of the tissue thrombin in healthy men, or in noncancerous patients with gummata, tabes or tuberculosis. Moreover the focal reaction is of value in determining the distribution of the cancer tissue. For instance, those cases of breast cancer with pulmonary involvement develop dyspnea and dry cough during the reaction, as in the case of Mrs. P. I may cite as an illustration of the possible severity of a focal reaction the case of Mrs. S., referred by Dr. J. H. Carstens in October, 1919. This patient weighed about 170 lbs. *X*-ray plates showed marked

pulmonary involvement in both lungs and a dilatation of the heart, especially on the right side. In her right breast was a hard mass 9 c.m. long and irregularly 4 c.m. thick. The skin was movable above it. In the left axilla were a mass as large as a lemon and also several smaller masses. The left breast had been removed two years previously; the scar remaining appeared healthy.

This patient suffered quite severe dyspnea, the respiration running generally around 38, while the heart rate was variably 140. She was very cyanotic and the slightest exertion brought on intense dyspnea. Cough was incessant. The patient could not repeat more than two letters of the alphabet without taking breath. She was given six treatments, of 10 mg. each, weekly. The improvement in respiration was so marked that she could get up and walk about, only breathing twenty-eight times per minute. In the meantime the mass in the right breast disappeared, and the mass in the left axilla had diminished in size to that of a walnut. During the reaction periods she required constant stimulation, and even then the cough and dyspnea were almost unbearable. Her reaction temperature varied between 101° and 102°. After having improved so markedly, I risked a treatment of 50 mg., which proved to be too much for the patient, and she died in a reaction of cardiac failure. There was sufficient cancer left in the lungs, no doubt sufficiently swollen during the reaction, to obstruct the pulmonery circulation and cause failure of the right ventricle. An autopsy was not obtainable.

This illustrates that in very extreme cases the focal reaction also may be dangerous and that here the dosage must be guarded.

The gastric ulcer case showed no febrile reac-

tion. We therefore now possess an additional means of characterizing cancer by the febrile reaction elicited by this treatment and, since this depends upon the chemical and physiological properties of the cancer tissue, it depends upon the intrinsic essential structure of the cancer and is therefore more valuable as a diagnostic feature than the microscopic characteristics. Furthermore, a good thermometer is the only instrument needed to estimate the fever and the personal equation for error cannot be so great as that to which the pathologist is subject.

The Results of Treatment.—These are, as illustrated by the cases presented, disappearance of the tumor and its attendant cachexia, return to normal of the blood chemistry—the alkalinity, for example; increase in the blood count and hemoglobin content—a doubling of the blood count in four weeks, for instance; increase in weight to normal or above normal, as in the case of Mrs. W.—often an increase of 40 lbs., cited in Cases I and IV; complete disappearance of pain and soreness and return of function, as in the case of Mrs. Z., where a previous achlorhydria gave place to a 0.9 per cent. HCl content in the gastric juice, incident, of course, to the return of the blood alkalinity to normal. The rapid recuperation of the patient after the carcinoma has disappeared, and the loss of easy fatigability, as demonstrated by these cases, are also significant.

The Sequelæ.—The sequelæ are also physiological. In a region as the breast of Mrs. P. (Case VIII), a deficiency exists in place of the cancer tissue. In a region where there is a necessity for replacement of the cancerous area by scar tissue this takes place, as in the case of Mrs. B. (Case I), where a

large vesico-vaginal fistula was entirely replaced by scar tissue and the deficiency made good.

That the tissue thrombin itself is not injurious to the patient is illustrated in the cases presented by failure to obtain a reaction after the cancer tissue has disappeared, by the steady gain in weight during treatment and by the increase in the blood count and in the hemoglobin content during and after treatment, and by the normal noncoagulable nitrogen content of the blood after treatment, which indicates that no injury has been done to the kidney.

The isolation of the thrombin free from products that are injurious and that promote cancer growth is a matter of great difficulty and only after over three years of constant experiment have I succeeded in working out the only two possible methods that can yield a useful product.

The chemistry of the thrombin, its isolation and certain synthetic work will be reported in some chemical journal. I owe my deepest gratitude to the clinicians who have cooperated with me so kindly in this work.

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355 Sheridan Avenue.

AMERICAN MEDICINE
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H. EDWIN LEWIS, M.D.
EDITOR
IRA S. WILE, M.D.
ASSOCIATE EDITOR

November 4th, 1920.

Dr. Wm. F. Koch,
355 Sheridan Ave.,
Detroit, Michigan

Dear Doctor:-

We have been much impressed with a most interesting and valuable article by you which appeared in a recent issue of the Medical Record, and are taking the liberty of writing to you to solicit a contribution from you on any medical topic for early publication in American Medicine.

As you may know American Medicine is one of the most widely read and quoted medical journals in America and assures you an audience that is not exceeded by that of any other high class medical monthly.

We are constantly striving to make American Medicine helpful and inspiring to the thinking medical men of the country and it is because we believe any article you may send us will aid us in these efforts that we are asking you to become a regular contributor to our pages.

Hoping you have something in hand you can send us in the near future, and assuring you that we will "leave no stone unturned" to make our relations most pleasant and satisfactory, we remain,

Faithfully yours,

The Editors of American Medicine

H. Edwin Lewis

Editor-in-Chief

HEL/RR

DOCTORS SEE PROGRESS IN CANCER FIGHT

Wayne County Medical Society Plans to Give Serum to the World.

The Koch cancer remedy is to be given a thorough test by the Wayne County Medical society, it was announced last night. The society, which is composed of physicians of Detroit and suburbs, has appointed a committee of [illegible] to confer with Dr. Koch and his associates in the laboratories of the Detroit College of Medicine and Surgery.

Mayor Couzens is expected to ask permission of the board of commissioners to use the Harper hospital for the test, it was understood last night.

No claims have been made that the serum will cure cancer. But it is definitely stated that it will relieve pain. It is also claimed that it will prolong life. Doctors say that the serum will cause the cancer to disappear, and that the patient will recover. Dr. Koch has declared that he has cured cancer in dogs.

Recently, through publication in a medical journal of an article by Dr. Koch, news of the discovery spread abroad. Cancer specialists up the city will test the serum. Many sufferers from cancer will go to Detroit for treatment.

This fact, besides bringing the city's hospitals into the limelight, will give the Detroit College of Medicine and Surgery, where Dr. Koch is professor of physiology, a prominent place in the medical profession. Physicians everywhere will be given the opportunity to use the preparation under their own observation. Dr. Koch has declared that he will not patent the serum, but will turn it over to the medical profession.

Ask Koch and his associates to conduct

DETROIT, MICHIGAN, TUE

MAYOR OFFERS DR. KOCH HELP

Invites Physician To Discuss Cancer Remedy; Suggests Use of City Hospitals.

Mayor Couzens has invited Dr. William P. Koch, professor of physiology at the Detroit College of Medicine, whose new treatment for cancer was announced Sunday, to call at the City Hall for a conference looking toward the extending of municipal facilities to the physician to aid in the development of his treatment.

"If, through the city's hospitals or municipal departments, we can be of any assistance to Dr. Koch, we will offer them to him," the Mayor said.

STUDIED NINE YEARS.

Dr. Koch's treatment is the result of nine years' study and experiment, which began at the University of Michigan. Dr. Koch studied the functions of the parathyroid glands at the state university and developed his treatment.

The doctor said that his treatment will cure cancers of the liver, stomach, intestines, rectum and uterus. Ten injections of the serum, it is claimed, will cure a stomach cancer as big as a man's head.

FORMULA IS WITHHELD.

All of Dr. Koch's cases have been well advanced. For the present he is withholding his formula; fearing it might become commercialized or fall into the hands of quacks. He invited the establishment of a commission of physicians to study the progress of his cases. This may result from the Mayor's invitation.

Mayor Couzens is interested in the trustees of Harper Hospital he has come into contact with prominent physicians with whom he may discuss means of assisting Dr. Koch.

CURE FOR CANCER TO BE GIVEN TEST

Medical Society to Investigate Dr. Koch's Treatment.

Under the auspices of the Wayne County Medical society the cancer treatment recently perfected by Dr. William P. Koch, of the faculty of the Detroit College of Medicine and Surgery, has entered upon its decisive trial. A selected list of cases are now under treatment, or soon will be placed under treatment, with the consent of a group of Detroit physicians and surgeons interested in the subject, and will be closely observed.

It is not probable, however, that any definite opinion will be reached for a number of months. Dr. James E. Carstens, president of the faculty of the Detroit College of Medicine and Surgery, put this period of investigation at four months when questioned Thursday evening at his home.

"We do not intend to raise any false hopes," he said. "Of course, the treatment of Dr. Koch is promising, else we would not be bothering with it. It is not a serum, nor is it a vaccine, as has been frequently called, but a synthetic preparation, or compound.

"It will be thoroughly tried in Detroit by our own men for a period of three or four months. Then, if it has the results that are expected, it will be more widely distributed among physicians throughout the country.

"It will not be possible to tell anything definite about its curative qualities for some years—say five years. Cancer is not like scarlet fever that it can be cured quickly. It is a matter of slow development.

"DOCTORS SEE PROGRESS IN CANCER FIGHT"

"Wayne County Medical Society Plans to Give New Serum to the World"

"The Koch cancer serum is to be given to the world.

"Dr. James H Carstens, president of the faculty of the Detroit College of Medicine and Surgery made the announcement today.

"The Wayne County Medical Society, which is closely affiliated with the American Medical Association, will distribute the serum through a committee of five.[2] It will be manufactured by Prof. William F. Koch and his associates in the laboratories of the medical college (The Detroit College of Medicine).

"Mayor Couzens is expected to ask permission of the city council to turn over a section of the Herman Kiefer Hospital for Detroit tests. He discussed the matter with Dr. Carstens yesterday.

"No claim had been made as yet that the serum will 'cure' Cancer. But a nation-wide effort will be made to learn just what the preparation will accomplish. Really marvelous results have been achieved by Dr. Koch in Detroit, physicians report and the medical society is unanimous in the belief that the profession everywhere should be given the opportunity to try out the serum and report on its effects. In this way a successful march upon the dread disease at last may be accomplished. Again the attempt may fail. Time will tell.

"Recently, through publication in a medical journal of an article by Dr. Koch, news of the serum was spread abroad. Newspapers took up the cry with the result that today every train is bringing cancer sufferers to Detroit; every hour more telegrams and letters from the hopeful who, misled in the belief that a 'cure' actually has been found, hope to obtain some of the serum, or come to Detroit for personal care and observation.

"This rush of afflicted persons to the city perhaps has hastened the decision of Prof. Koch and his associates to give the serum to the medical profession. Physicians everywhere now will be given the opportunity to use the preparation under every conceivable condition and upon every variety of the disease. The serum will rise or fall upon the verdict of the profession in whole, and in this finding Prof. Koch and his friends are content to concur."

KOCH ASKS AID TO TEST CURE

"Won't Some One Pay Cost of Real Trial?" Is Plea of Cancer Foe.

"Is there not some rich man in Detroit with enough interest in his fellow men to pay the bare expenses of the trial of a cancer cure that has already shown enough promise to have attracted the attention of physicians of prominence in New York, Chicago and Detroit, as well as of minor practitioners in all parts of the country?"

This was the query Wednesday evening of Dr. W. F. Koch, whose assertion that he has discovered 22 chemical compounds useful in the treatment of as many different varieties of cancer, has been under investigation by the Wayne County Medical society. The investigation resulted in a disagreement that found an airing at last Monday evening's meeting of the surgical section of the society.

Wants Nothing for Self.

"I don't want a penny for myself," continued Dr. Koch, referring to the reported intention of the Wayne County Medical society of asking the city authorities to pay him a salary of $5,000 a year and place a full staff at his disposal for 12 months in an effort to fully test his claims. "What I want and what I am determined to get before I go ahead with any test are the right conditions.

"The Ford hospital, for instance, could easily place 50 beds at my disposal, or rather at the disposal of the test, for one year. The city could provide nurses and chemists and other attendants necessary for a proper investigation of the results of the treatments. It would cost probably $65,000, but this is an insignificant amount when you remember that Sir Edward Sperr gave Ehrlich $1,000,000 and that the German scientist experimented with 619 compounds before he discovered the famous "606."

"I have an offer to go to Chicago, but have decided to refuse it because the conditions are not the ideal ones for which I am searching.

In Touch With Other Cities.

"I probably will read a paper before the February meeting of the American Congress of Internal Medicine in Chicago and I am in touch with New York doctors of prominence. If Detroit will not prove itself big enough for this thing I am sure some other city will."

VOICE OF THE PEOPLE

TOLEDOAN TELLS OF KOCH CANCER CURES

To the Editor: Have read several articles recently in your columns relative to Dr. William F. Koch and have been informed that your columns are open for him to make any defense he has against his detractors. While there is really no defense to be made, as a man cannot be called on to defend himself until he is at least charged with wrong doing, I feel that I know much concerning him and his work that should be made public.

My first acquaintanceship with him and his work began in about 1918 or 1919 and in the following manner. Mrs. F. F. Fritts, whom with her husband and family had occupied one of our apartments for a long time, became afflicted with a cancer in the abdominal region, and of course her husband spared neither time nor money in her behalf, finally taking her to Flower hospital in this city where three leading physicians made an exploratory operation, found her so full of cancer that no removal of it, nor of any part of it, could be made, and proceeded thereafter to give her opiates only, to ease the pain until the apparently inevitable end should come. Her normal weight had been 172 pounds, but she had become reduced to 97 pounds.

A few months later Mrs. Holland, my wife, was a delegate to the triennial convention of the Episcopalian church, that year held in Detroit, and while there, through a Detroit physician, she learned of Dr. Koch and of his experiments in the matter of cancer. She immediately reported to Mr. Fritts who went to Detroit and arranged to place Mrs. Fritts in Herman Kiefer hospital where the experiments were then taking place, it being the only way to obtain the desired treatment. Mrs. Fritts was taken to Detroit, accompanied by a nurse, Mrs. Holland also going and staying for about a week. Mrs. Fritts took Dr. Koch's treatment, then in the course of development.

Three or four weeks later Mrs. Holland again went to Detroit and took Mrs. Fritts from the hospital to the St. Clair hotel, Mrs. Fritts walking to the street car and from the street car to the hotel and at the same time carrying a grip. About a month later Mrs. Fritts returned home to her family in our apartments where she gradually regained her strength and where she is still living in normal health. Physicians have several times examined her and can find no evidence of her former, or of any other, ailment. She can be seen and conferred with at any time.

Later my wife developed (or rather we learned of her having it) an internal cancer. She had been annoyed, not apparently seriously, for about six years with what seemed to be indigestion. She suddenly became worse, being either confined to her bed or having to be assisted in moving around the house, but we attributed it for a long time to being the result of an auto accident, she having been run into by a reckless driver. She decreased from her normal weight of 162 pounds to 110 pounds before we discovered the real trouble—that it was a cancer extending from the interior of the stomach through the pylorus into the duodenum, and that it was taking 20 hours for a cup of malted milk to pass through.

Having before us the experience with Mrs. Fritts, we had Dr. Koch treat Mrs. Holland. This was two years ago and she is now and for a long time has been apparently perfectly normal. She not only does her own work but assists in public institutions with which she is affiliated.

We are also engaged rather extensively in agriculture, and last January, Jesse Sullins, one of the farm tenants and a man of high standing, had an internal hemorrhage, vomiting blood until the physician from the neighboring village despaired of his life but managed to keep him alive by injections. Shortly thereafter he had another but less severe hemorrhage with a vomiting spell. He also had slow but constant internal bleeding as was shown by the excretions.

On learning of it I at once visited his physician, who told me that Mr. Sullins had an ulcer and a growth which he feared was malignant, and whether malignant or not, there were no prospects for him except what might possibly be done with such experts and equipment as the best of hospitals might afford, and that he doubted whether they could do anything for him.

Mr. Sullins not being able to travel to Detroit, I brought him to Toledo in a hearse sedan and had him examined by the Toledo & Ohio Central railroad company surgeon who pronounced it a cancer extending from the stomach back into the liver. At my request Dr. Koch came to Toledo and before consulting with the surgeon made a diagnosis agreeing with that of the surgeon, and then gave him a treatment. His hemorrhages and slow bleedings ceased. The doctors can find no evidences of the former growth. He seems fully recovered except that he has not had time to fully recover his strength, our main difficulty with him being trying to keep him from running the heavy farm machinery and working too hard, and thus overtaxing his vitality while convalescing.

These are only the specific cases within our own circle. If any one desires further specific information, I will be glad to give it to the extent of my ability.

RUBEN HOLLAND.
Suite 971 Spitzer building, Toledo, Ohio, June 21, 1924.

CONTRASTS COURTESY OF BUS TO CAR MEN

To the Editor: The announcement in a recent issue of the Free

VOICE OF THE PEOPLE

CURED, WOMAN LAUDS KOCH'S CANCER CURE

To the Editor: A few days ago I noticed Mr. Holland's statement in the press regarding the Koch cancer cure, also saw an article in our Kalamazoo paper, written by the Wayne County Medical association, and wished I might have the opportunity of letting this association and others know that nearly five years ago Dr. Koch cured me of cancer of the liver.

I was taken very ill, could not eat, was losing strength and flesh very rapidly and had a terrible cough. My doctor said I must be taken to the hospital at once, where an exploratory operation was performed and the doctors found a large cancer of the liver. They gave me 10 days and possibly two weeks to live.

Some may say that perhaps the doctors were mistaken in their diagnosis but my surgeon, Dr. McNair, of Kalamazoo, is a man of years of experience and when he says "cancer" you can depend on it that he knows.

As soon as I could be moved to Detroit I started the Koch treatment. What appealed to my family when they went to see Dr. Koch was, when they stated my case and asked him if he could cure me, he said "I don't know. I will do my best." He was honest and has always been the same, always ready to do all he could for humanity's sake, so when they call him a quack and a fake you cannot wonder I feel like telling others that I am positive that he has something wonderful.

Instead of criticising him and making false statements about him as the medical association has done, why not think of the poor sufferers they may be keeping away from this treatment?

If they have no faith in it, they could at least keep still until they could further investigate, but I am glad to know that there are doctors who are large enough to realize what Dr. Koch has and who are investigating it and finding out for themselves.

When Dr. Koch considered me cured he wanted me to go to my doctors for an examination. I hated to as both physicians were opposed to my going to Dr. Koch as they had not heard of him and thought he might be a fake, but finally I went and Dr. McNair gave me a thorough examination and when through said, "He surely is a 'miracle man.'"

I could tell you of many cases that I know of that I have been cured by Dr. Koch and am ready at any time to assist anyone with this disease.

I feel very grateful to Dr. Koch for being here as I know if it had not been for his treatment and wonderful care I would not be here today.

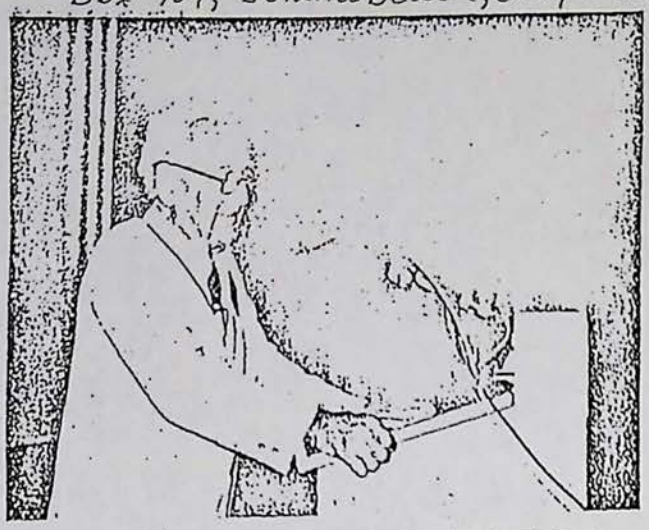
We know the knife has never cured anyone of this disease, so I urge everyone afflicted to look into the Koch treatment, for they will surely reap results.

MRS. D. M. VAUGHAN,
Plainwell, Mich.
227 Hicks avenue, Box 504.

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THE SEARCH FOR A NATURAL CURE FOR CANCER

Int'l National Association of Cancer Victims + Friends, Inc.
Box 707, Solana Beach, California 92075 — Phone (714) 755-9781



by Nobel Prize Winner Albert Szent-Gyorgyi, M.D., Ph. D.

There is a great need for a drug which cures or prevents cancer without harming the patient. Such an action can be expected only from a natural substance. I have to explain what I mean by "natural."

The cell is an exceedingly complicated and subtle machinery in which all functions are carefully regulated. A normal cell divides only when division is needed. A cancer cell divides also when no division is needed. The regulations are out of order. All efforts to show the difference between the chemical makeup of a normal and a cancer cell have hitherto failed. The cellular structures are identical; only the regulations are disturbed. Something has gone wrong which has to be repaired.

In order to be able to repair any mechanism, we must know how it is built and how it works. As told by Bernal, we can control only what we understand. To be able to repair, we must find out what has gone wrong – which screw is missing or which bolt has loosened. To replace it, a new part which takes over the function of the old one, is what I call a "natural cure." Only by replacing the failing part, can we expect a real cure which does no damage to the host. Putting in all sorts of substances which we take from the shelf, or synthesize are not "natural," even if taken from some plants. The same holds for high energy radiation. All these artificial therapeutic agents interfere with some basic function on which both the cancer and the normal host cell depend. They have thus to damage both.

For years my laboratory has worked in silence to find out how the living cell regulates its proliferation. We have arrived at a fairly clear concept and hope to be able to identify soon the part which is not working properly. In my opinion, this is the only hopeful approach. It is not an easy one because the living machinery is very complex and subtle. This is not a new approach either. It is the oldest approach but it is not a sensational one and so it is very difficult to find support for it. The National Institutes of Health, the main granting agency for biomedical research, rejected my application thrice. I had no luck with the cancer society either. Everybody wants a quick cure, but there are no shortcuts to basic research. There are shortcuts only to failure.

Life originated on a dark and airless globe on which there was no light and oxygen, and we can guess that under those very poor conditions life could develop only the simplest forms and could become continuous by proliferating as fast as conditions permitted. As the measure at which the globe cooled, the surrounding water vapor condensed and light could get through. Life utilized it and produced oxygen with it and oxygen made life develop, differentiate, build complex functions with complex structures. The problem is: How could oxygen do this? Oxygen makes oxidation, burning possible, and oxidation produces energy. Warburg, the great German biochemist, made energy responsible for the development. But energy cannot transform, build machines, it can only drive them. But if it was not energy which provoked the development, then it had to be oxygen itself which made the difference. "Oxidation" in scientific language means taking "electrons," electric particles from oxidized material. All matter is built of an atomic nuclei and electrons. Taking electrons from a substance means oxidizing it. The oxygen of the air does not take electrons from the living protein, but there are atomic groups, called carbonyls, which contain oxygen which can take single electrons from protein, bringing the proteins hereby into a most reactive form, called "free radical." The transformed proteins have very special properties, like electric conductivity. It is here in the electronic dimension that something is out of order in cancer. Carbonyls arrest cell division and my laboratory was led to the conclusion that it is still the carbonyls which arrest cell proliferation and it is the carbonyls which make the cell return to the resting state, after it completed division. If the carbonyls are missing, proliferation has to go on, and cancer results. We were not the first to be led to such a conclusion. A decade ago a very intuitive researcher, W.F. Koch, came to the same conclusion. Unfortunately, he did not leave us enough information to enable us to follow his trail.

By having carbonyls as regulating agents, the problem is by no means solved. We have to find out how the carbonyl fits into the regulation, how it is produced, destroyed and how it acts. There is still a long way to go, but I am very confident that this is the right way and the end is not too far. It is very unfortunate that the research worker on this line has to fight a battle on two fronts: one against nature to learn her secrets. This battle is interesting and hopeful. The other battle is against the narrow bureaucratic thinking. This fight is uninteresting, hopeless and very discouraging, and if not long ago a small group of people, the "Bethesda National Foundation" had not come to my help, I would have had to give up research altogether. What keeps me going is not only their financial support, but also the confidence of my fellow Americans.

Albert Szent-Gyorgyi, M.D., Ph. D. Tel Falmouth 548-3705
Laboratory of the Institute for Muscle Research Woods Hole, Massachusetts 02543
at the Marine Biological Laboratory

Laboratory of Muscle Research - see Center for old.

THE SEARCH FOR A NATURAL CURE FOR CANCER

BY Nobel Prize Winner Albert Szent-Gyorgyi, M.D., Ph.D.,

"There is a great need for a drug which cures or prevents cancer without harming the patient. Such an action can be expected only from a natural substance. I have to explain what I mean by 'natural'.

"The cell is an exceedingly complicated and subtle machinery in which all functions are carefully regulated. A normal cell divides only when division is needed. A cancer cell divides also when no division is needed. The regulators are out of order. All efforts to show the difference between the chemical makeup of a normal and a cancer cell have hitherto failed. The cellular structures are identical, only the regulators are disturbed. Something has gone wrong that has to be repaired.

"In order to be able to repair any mechanism, we must know how it is built and how it works. As told by Bernil, we can control only what we understand. To be able to repair, we must find out what has gone wrong, which screw is missing or which bolt has loosened. To replace the new part which takes over the function of the old one, is what I call a **'natural cure.'** Only by replacing the failing part, can we expect a real cure which does not damage the host. Putting in all sorts of substances which we take from the shelf, or synthesize are not 'natural,' even if taken from some plants. The same holds for high energy radiation. All these artificial therapeutic agents interfere with some basic function on which both the cancer and the normal host cell depend. They have thus to damage both.

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The problem is: How could oxygen do this? Oxygen makes oxidation, burning possible, and oxidation produces energy. Warburg, the great German biochemist, made energy responsible for the development. But energy cannot transform, build machines, it can only drive them. But if it was not energy which provoked the development, then it had to be oxygen itself which made the difference. 'Oxidation' in scientific language means taking 'electrons,' electric particles from oxidized material. All matter is built of an atomic nuclei and electrons. Taking electrons from a substance means oxidizing it. The oxygen of the air does not take electrons from the living protein, **but there are atomic groups, called carbonyls, which contain oxygen which can take single electrons from protein, bringing the proteins hereby into a most reactive form, called' 'free radical.'** The transformed proteins have very special properties, like electric conductivity. **It is here in the electronic dimension that something is out of order in cancer.** Carbonyls arrest cell division and my laboratory was led to the conclusion that it is still the carbonyls which arrest cell proliferation and it is the carbonyl which make the cell return to the resting state, after it completed division. If the carbonyls are missing, proliferation has to go on, and cancer results. We were not the first to be led to such a conclusion. A decade ago a very intuitive researcher, W. F. Koch, came to the same conclusion. Unfortunately, he did not leave us enough information to enable us to follow his trail.

"By having carbonyls as regulating agents, the problem is by no means solved. We have to find out how the carbonyl fits into the regulation, how it is produced, destroyed and how it acts. There is still a long way to go, but **I am very confident that this is the right way and the end is not too far. It is very unfortunate that the research worker on this line has to fight a battle on two fronts: one against nature to learn her secrets. This battle is interesting and hopeful. The other battle is against the narrow bureaucratic thinking. This fight is uninteresting, hopeless and very discouraging, and if not long ago a small group of people, the "Bethesda National Foundation" had not come to my help, I would have had to give up research altogether. What keeps me going is not only their financial support, but also the confidence of my fellow Americans."**

American Medical Association

FELLOWSHIP CERTIFICATE

This is to Certify that William F. Koch M.D. of Detroit Mich. is a Fellow, in good standing, of the American Medical Association, has paid his annual dues for the year designated hereon, and is entitled to all the privileges of Fellowship.

1919

Alex. R. Craig M.D. SECRETARY. George Lambert M.D. PRESIDENT

No. 2375

EDITORIAL DEPARTMENT

The Journal of the
American Medical Association

In your reply please refer to these initials | JFW

535 North Dearborn Street, CHICAGO Aug. 4, 1919.

Dr. William F. Koch,

Detroit, Mich.

Dear Doctor Koch:

Replying to your letter of the 1st inst.: If you will let us see the paper to which you refer, we will then be in position to write you definitely relative to its publication.

Yours very truly,

EDITOR JOURNAL AMERICAN MEDICAL ASSOCIATION.

1711 Sheridan Ave.,

Feb. 1, 1922.

Dr. Royal Copeland,

New York, N.Y.

Dear Dr. Copeland:-

I have developed a synthetic compound that cures tuberculosis in moderately advanced cases. The recovery takes from three to six weeks only one treatment of fifteen drops of a 2x solution being required and this is administered subcutaneously. I have not used it on moribund cases at all.

Would you be interested in its demonstration? I would gladly show you privately at first what it will do. In three or four weeks after the treatment is given you will be able to judge its value. Then if you are satisfied and willing we can have a demonstration to the profession which will teach what tuberculosis really is and how to cure it.

I am consulting you on this important step in search for the means to introduce the treatment without quackery and so as to avoid insult and hold-up on the part of the A.M.A. My identity could be withheld if desirable.

Very sincerely yours,

DEPARTMENT OF HEALTH
CITY OF NEW YORK
505 PEARL STREET
NEW YORK

OFFICE OF THE COMMISSIONER
ROYAL S. COPELAND, M.D.
COMMISSIONER

February 3, 1933.

Dr. William F. Koch,

1711 Sheridan avenue,

Detroit, Mich.

My dear Doctor Koch:-

We have so many tuberculosis cures presented, it is almost impossible to try out all of them. If you will send on any professional evidence you have of virtue or from treatment, I shall submit it to a committee which has been formed in the Health Department to investigate all claims of this nature. Personally I have believed that somebody would find a remedy for this dread disease, and I hope you have done it.

Very truly yours,

ROYAL S. COPELAND, M. D.

Commissioner.

The Function of Cancer*

By

Wm. F. Koch, Ph.D., M.D.

Detroit, Mich.

THOUGH we fully appreciate the contributions to the study of cancer by both pathologist and clinician, we might expect an investigation of the problem from the viewpoint of the physiologist to reveal something about the purpose and value of this deviation from the normal that is so commonly rated as turmoil and disorder.

The histological expressions of cancer impress us as a desperate attempt at gland production, characterized by its persistence, as a response to a persistent stimulus, by its equalization of cells in proportion to their malignancy, as indicating a singleness in the response type. While the loss of differential structure, and individualization of cells indicates a return to a simple balanced equipment in preparation for a new differentiation along lines so far not developed in the organism. Thus we may infer that the cells are responding to a new or not normal stimulus. Moreover, as the response persistently increases it cannot be adequate, and as structural differentiation has not been accomplished, the effort toward response appears to be only in the earliest stages of development.

Still the cancer process bears strong resemblance to the behavior of several glands of internal secretion, that are now established as indispensable factors in the animal economy.

* *Reprinted from the October "Cancer"*

In such simple glands as the parathyroids, we observe acini production by vacuolization and death in cells located farthest from the blood supply. This process is very perfectly imitated in the cancer behavior. Yet in a higher type of gland, as the thyroid, acini production occurs by death of cells close to the blood supply. Thus as cell death is an important phase in the production of the internal secretion of the thyroid, its survival as a method of choice illustrates the adaptation of processes acquired from states of disadvantage in the established service of the organism. Thus we may conclude that the process as occurring in cancer, predicts its future place among the glands of internal secretion. And as limitation and control of activity in an established gland indicates its adequacy, so we must again qualify the cancer effort as at present inadequate in its attempted service. We may therefore infer from the histologic manifestations that cancer has a function in the process of development.

Our chemical studies corroborate this surmise and indicate also the place and value of this function. Our earliest work on the chemical significance of glands of internal secretion was directed toward the explanation of the parathyroid activity. Parathyroidectomy was long known to be followed by a set of tetany symptoms that could be ameliorated by calcium therapy. So the parathyroid glands were universally credited with a vital place in the calcium metabolism. This supposition fell short of agreement with so many experimental facts that the theory could not be sustained. Should a farmer or even a pharmacist observe an animal in the tetany of parathyroidectomy, he would certainly say the animal was poisoned. And after a careful checkup of the calcium theory we choose to direct our research along the "farmer" hypothesis.

After developing a suitable method of isolation, we

were able to isolate uniformly from the urines of parathyroidectomized dogs, toxic quantities of guanidine bases. The concentrations of these poisons were proportionate with the rapidity of development and severity of the symptoms and the earliness of fatality. We proved them the responsible factors for the symptoms and death of the animals. Thus it appeared that the parathyroids protected from a toxic agent. Our work was amply verified by Paton at the University of Glasgow whereby he earned the Triennial prize in medicine awarded by Harvard University.

Yet the guanidine bases were only incidental to the loss of parathyroid activity as we later proved by the isolation of the guanidine precursors the cyanamides, very simple fundamental metabolic interproducts. These cyanamides easily took up an ammonia radical to become the guanidines in which form they were excreted. The cyanamides are evidently products of activity of other factors than the parathyroids and were not metabolized further after parathyroid removal. So we assume that the parathyroids disposed of the cyanamides in their activity for further benefit to the organism as a whole. We cannot go further into this subject here but cannot omit it as it exemplifies an established gland activity serving as a protection of the organism against a definite toxin. Likewise we shall find evidence that the cancer behavior is a protective response to a toxic product generated within the body. The localization of the cancer effort in congested areas indicates that the exciting stimulus is distributed through the blood stream.

Clinical observation discloses the persistence of toxemia over a period even as long as twenty years previous to the advent of the growth. After the growth has come these toxic manifestations disappear completely or nearly so. After a surgical removal of the growth they return;

and with recurrence of the growth again disappear. We designate these symptoms as the pregrowth symptoms, for they differ from those consequent to the activity of the growth itself.

The pregrowth symptoms caused by the toxin-stimulus are mainly manifestations of interference with normal nerve function, and predominately with certain mechanisms of the central nervous system. Thus in a series of two hundred cases distinct mental aberration, incorrectly diagnosed as paranoia, was observed in two per cent. of cases. But the prevailing disturbance is an interference with function of the second and third nerve mechanism. Thus an optic-migraine without much or any headache or aural disturbance, or an optic-vertigo with scotomata, might express the condition. I have not been able to find a discussion of this complex in the literature and propose to take it up in a further paper. However, I may indicate the main characteristics, as they occur in fully eighty per cent. of my cases.

The points of disturbance lay both in the perception centers for optic impulses and those centers where optic impulses are conveyed into paths of motor control, of both the optic apparatus and the general musculature.

Thus visual impulses, in one case, periodically caused muscle tremors and convulsions. Covering the eyes gave relief. In several cases teichopsia gave the impression that the patient persistently saw needles and pins wherever she looked, and she was diagnosticated to be a paranoiac. Difficulty in accommodation results in a large proportion of cases in a haziness of all objects closer than or beyond a distance of usually some ten feet from the patient. In these cases attempts at accommodation give rise to a sensation of sickness but not nausea particularly. Temporary blindness of the whole or part of the visual field is common, so that a patient may run into things without

seeing them. Or a sudden general loss of sensation with blindness and a complete loss of muscle control, causing the patient to drop to the ground, without loss of consciousness, giving the impression of dying. The muscle control may be only partly lost and movements consequently be incoordinate. During these spells pin-point pupils have been reported. Great changes in visual impulses, as occurring on turning out the light or waking up in the morning, may cause a dizziness with topsy-turviness of after-images or true images. In the former case turning on the light and fixing the eyes on an object relieves. In the latter case closing the eyes relieves. These occurrences come in spells of only short duration or lasting several weeks at a stretch and over a period of a few or as long as twenty years prior to the development of the growth.

Occasionally a peripheral neuritis is present. It may be mild or severe and may be associated with areas of anæsthesia and paralysis of one or more groups of muscles. But the percentage of such cases is small.

Since these symptoms, which occur in nearly ninety per cent. of my cases, let up entirely or in large part with development of the growth, its detoxicating function is evident, and resembles the detoxicating function of the parathyroids which remove the cyanamides from the blood.

The cancer cells absorb and hold the stimulus-toxin in combination without changing its chemical identity for the most part. That is, they store it. This is proven by the fact that with dissolution of the growth following our treatment, the stored toxin is again liberated with return of the pregrowth symptoms, until the growth has entirely been digested and eliminated.

The cancer cells, also in small part and continually,

alter the stimulus-toxin, but instead of changing it to a harmless or useful immune body, as the parathyroids are able to convert the cyanamides, these cancer cells only produce an even more harmful poison. Thus the cancer products cause loss of weight and strength and a progressive anæmia—the symptoms of the growth period. That this is the result of cancer-cell activity is proven by the quick cessation of these symptoms very shortly after our treatment is given. For within a week usually a gain in weight and blood count ensues, even before noticeable change in the dimensions of the growths take place. Moreover this cessation of activity is coincident with the uniform coagulation and calcification of every cancer cell in the body. And we recognize calcification to be the first stage in digestion of the body proteins. Thus the secreting activity of the cancer cells is cut short by the institution of their digestion shortly following treatment.

The type of disposal of the involuting cancer material also bears strongly on the interpretation of its function. For its digestion is the same as takes place in the development of bone or the organization of a blood clot, or even the digestion of milk. Here the first step is the production of a calcium-proteinate from which the protein can never again be reclaimed undenaturized. Thus to all intents and purposes the calcified cancer tissue is dead and prepared for removal, as occurs in the organization of a blood clot or the clearing out of the inside of the developing bone. Our slides of specimens removed at various periods following treatment show that calcification is uniformly established within two weeks and that the other steps that complete the removal process are associated with the ingrowth of angioblastic tissue, as occurs in developing bone and the removal of a blood clot. This process continues until all traces of the cancer tissue are cleaned out. Angioblastic tissue replaces the cancer

tissue and contracts down, and, undergoing autolysis, finally also disappears, only leaving a scar where mending of a destroyed wall is necessary.

The material absorbed from the involuting cancer is used in replenishing the exhausted tissues of the patient. This is exemplified in patients who, though unable to move their legs in bed from weakness, within ten days after treatment had gained sufficient strength to support their bodies, though not having been able to take food. Thus the method of removal and disposal of the involuting cancer tissue is exactly that used in serving other physiological processes.

The strongest and the sufficient proof that cancer is a response at protection against a definite toxin, however, rests with the fact that removal of the toxin from the body and destruction of the toxin source is followed by complete involution of all cancer tissue, complete healing of the regions involved, return to health with absence of growth and pregrowth symptoms, and the absence of recurrence. (Cases cured in 1918 still remain cured.) The cancer tissue then becomes obsolete and disappears when the function it attempts is performed for it.

The histologic, physiologic, and clinical relations in the development, behavior, and involution of cancer therefore, identify it with a physiological effort and a protective function, or immunizing attempt, which though inadequate at present, promises at some future time to be instituted in the animal economy as a definite function, perhaps as a gland of internal secretion like the parathyroid, and able to overcome one more opposing force in our environment. Cancer then represents an attempt at specialization of function in which all tissues now compete.

The chemistry and source of the toxin, the synthesis of

a successful anti-toxin, and the mechanism of immunity (a provision for conversion of a toxin into such chemical modification that it is harmless to the host, and destructive to its own source, the infecting agent), as exemplified in our work will be detailed in a further report.

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American Medical Association

Lincoln, Nov. 12, 1924.

Dr. Willaim F. Koch,
Detroit College of Medicine,
Detroit, Mich.

Dear Doctor:

I received the material sent me a few days ago from your laboratory. This I understand was through the courtesy of Dr. Lynch. The office girl tells me that a letter came from you before the package. I did not see the letter which came during my absence and was evidently mislaid or lost.

The case on which I expected to use the material is not in favorable condition at this time. Shall I return the tube to you or to Dr. Lynch or retain it myself? I have another case which I believe is a very favorable one. The case is from another city so that I see it only once in a month or six weeks. I shall be guided by Dr. Lynch in the use of the material. Have been watching his cases at Fairbury and am convinced that whatever the substance is, it is efficient. I had the pleasure of reading your article in the October number of "Cancer" and it is certainly the most intelligent and enlightening discussion of the subject I have ever read. For years I have been convinced of the utter uselessness of surgery in true cancer cases and have made myself disliked somewhat by my opposition to surgeons going about the country lecturing upon

American Medical Association

Lincoln,

a subject of which they themselves know nothing. I hope that a little more time will prove that your work is really an epoch making work and that you will ultimately secure the full credit and profit to which your service entitles you.

Very sincerely,

ARM:VH

if she can help it.

—o—

DECLARES BASIC CANCER CAUSES, BODY POISONS

M" Alumnus Says Education Will Aid in Eradication

Education of the masses of people on the basic causes of cancer is one of the most potent weapons for control of the dreaded disease which is taking more than 250,000 lives in the United States annually and steadily increasing its toll, Dr. William F. Koch, University of Michigan alumnus, nationally known biological chemist and head of the Koch Cancer Foundation of Detroit, declares in a review of late developments in the field of cancer.

It is an error to assume that the cancer growth itself is the cause of the disease, and the use of surgery, radium and X-rays for removal or destruction of

-S INTO

such growths results in very little benefit, Dr. Koch asserts.

Cancer is caused by toxins or poison within the body, and these basic causes must be cleared up to really help the sufferer, he states. Medical science must look to antitoxins for an effective remedy, Dr. Koch concludes on the basis of results obtained with a synthetic antitoxin now in use.

"The toxin that causes cancer is produced by germs that are able to multiply in certain recesses of the body, including tonsillar crypts, sinuses and in the constipated large intestines" Dr. Koch explains. "Proper diet and cleansing of the large intestines, the removal of persistently bad tonsils and infected teeth, healthful exercises, fresh air and sunlight—in other words the old fashioned way of living—will do much in the preventive or postponement of cancer. Education of the people in a healtful mode of living is vitually important in the fight to control cancer.

"We observe that each generation of an afflicted family develops cancer earlier in life. Where the grandparents developed the disease in the seventies or eighties, the parents developed it in the sixties and the children develop it in the forties or the thirties and we often see it in infancy or childhood.

"Perhaps the most important scientific advance of the last decade in the fight against cancer is the demonstration that the toxin that causes the disease can be changed from a deadly poison to an absolutely harmless and even useful substance simply by altering its molecular structure in a definite way. In setting up the cancer growth nature simply tries to evolve an antitoxin to combat the poisons, but does not go far enough."

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Who was Dr. Frank Smithies[1] and how did he first become interested in the medical research of Dr. William F. Koch?

In 1912 Dr. Frank Smithies, while at St. Mary's Hospital (Mayo Clinic), sent a post card to Dr. Koch, at the University of Michigan, requesting two copies of his research paper *"On The Occurrence of Methyl Guanidine in the Urine of Parathryoidectomized Animals."* On November 30, 1917, five years later Dr. Smithies, as associate editor of "Medicine & Surgery" of St. Louis, wrote to Dr. Koch and requested that Dr. Koch write a summary of his research work on the parathyroid gland for publication in "Medicine & Surgery" of St. Louis for the January 1918 issue of "Medicine & Surgery." Three days later, he also wrote a letter to Dr. Koch to congratulate him on the confirmation of his parathyroid work by the University of Glasgow. Dr. Smithies went on to write:

> Congratulations on the confirmation of your parathyroid work by the University if Glasgow. It is always a source of great satisfaction to know that one has been working along the right lines. It will be the source of a bitter pill, however, for the Ann Arbor crowd to swallow. Why is it that they give the young men so little chance at the University of Michigan? It defeats the primary aim of the University and it is gradually causing the medical school to occupy a very mediocre place.

In early 1918 Dr. Philip Skrainka, Editor of Medicine and Surgery of St. Louis, asked Dr. Koch to review Dr. Crotti's book on medical for Medicine and Surgery. In August of 1918 when Dr. Koch returned his review on Dr. Crotti's book, he made a reference to the success of his cancer research to Dr. Philip Skrainka. Dr. Skrainka, who was very pleased to learn first hand from Dr. Koch about this research, wrote: "Surely if I can 'scoop' this bit of 'news' I shall be the proudest editor in the country." Dr. Skrainka wanted to be able to publish Dr. Koch's first paper on his cancer research. At about the same time Dr. Koch wrote to Dr. Smithies, in Chicago, about his cancer research.

On September 9, 1918, Dr Smithies sent his first telegram to Dr. Koch in which he wrote:

> "FIND LOT OF CASES WAITING WOULD LIKE YOU TO TREAT THEM AT ONCE OR LET US TREAT THEM UNDER YOUR DIRECTIONS WIRE WHAT YOU WISH TO DO"
>
> DR FRANK SMITHIES

After Dr. Koch's first cancer research paper on his medical discoveries and treatment for cancer was published in the DETROIT MEDICAL JOURNAL in July, 1919,

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[1] Dr. Frank Smithies, a member of he American College of Physicians (and its 1927-1928 President), was the Chicago A.M.A. doctor who became very interested in Dr. Koch's medical research since 1912 and he became specially interested in Dr. Koch's cancer research in 1918. He sent his personal representative, Dr. Karshner, to interview Dr. Koch, in November of 1919, about Dr. Koch's cancer research and treatment. It appears that it was Dr. Smithies, who represented a Chicago group of A.M.A. doctors, that had offered Dr. Koch a million dollars if he would go to Chicago, Ill and work with them and take over control of Dr. Koch's cancer research and treatment for cancer. The BIRTH of a SCIENCE, The Lutheran Research Society, Inc., Detroit, Michigan, p. 56, 1949.

and his cancer research had received national attention, Dr. Smithies sent his second telegram to Dr. Koch on November 25, 1919 in which he wrote:

"MY ASSOCIATE DR CLYDE KARSHNER WILL CALL ON YOU FRIDAY AT THE COLLEGE"

DR FRANK SMITHIES

Dr. Karshner did visit Dr. Koch on November 25th. Dr. Koch told Dr. Karshner all about his cancer research and the successes and failures that he had with the different medications he was using and the problem he had with cancer patients that had received prior radiation treatments. Dr. Karshner then returned to Chicago to tell Dr. Smithies everything he had learned. Dr. Smithies was a very active member of the Chicago A.M.A. with many contacts within this organization.

On December 15th, 1919, Dr. Smithies wrote the following letter to Dr. Koch to encourage him to move his cancer research to Chicago, the home of the American Medical Association.

FRANK SMITHIES
CHICAGO

Dec. 15th, 1919

Dr. Wm. Koch
C/o Detroit Medical College
Detroit, Mich.

Dear Dr. Koch:-

Dr. Karshner returned an interesting account of your work with cancer.

Perhaps sometime during the Christmas holidays it would be well to come over and talk with me about the matter. If I go to New York to the American College of Physicians' meeting, I will try to stop off at Detroit but I cannot promise.

There might be a very good future for you and your form of treatment here in Chicago. We are willing to help, of course, must at the same time look out for ourselves in a business and a professional way. It would be very advantageous if we could arrange to have the general profession informed regarding your method at the meeting of the American Congress of Internal Medicine Feb.23rd to 28th, 1920, Chicago..

With best wishes and thanking you for your kindness to Dr. Karshner, I am

Fraternally yours,

Frank Smithies, M.D.

After very carefully considering Dr. Smithies' offer to go to Chicago and work with Dr. Smithies' group, Dr Koch decided that he was not interested in their offer and that he could continue his cancer research on his own. Thus on December 25, 1919, Dr. Koch wrote to Dr. Smithies advising him that he was not interested in Smithies' proposed deal.

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In late 1920 Dr. Koch wrote to E. R. Squibb & Sons, Research And Biological Laboratories about commercially preparing his cancer medications. On December 21, 1920, Mr. John F. Anderson, Director of E. R. Squib & Sons wrote the following letter to Dr. Koch.

Dec. 21, 1920

Dr. Wm. F. Koch
Detroit, Mich.

Dear Dr. Koch:

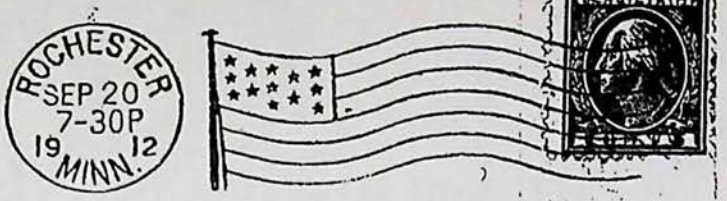
We have your letter of recent date concerning the preparation of your product for the diagnosis and treatment of carcinoma, and before sending a representative to talk the matter over with you, we would like to know whether the methods for the preparation of the product are in a condition to be adapted immediately on large scale production. We should also appreciate from you some indication as to your idea in regard to the marketing of this product.

Very truly yours,

J. D. Anderson
E. R. Squib & Sons
JOHN F. ANDERSON.
DIRECTOR.

JFA.E.

This letter was received by Dr. Koch just seven weeks before the editors of the Journal of the American Medical Association came out with their first of two vicious attacks against Dr. Koch and his cancer treatment; "THE WILLIAM F. KOCH CANCER REMEDY." on February 12, 1921 and February 19, 1921. There is no record of Dr. Koch having any further communications with Mr. Anderson. Was it this J.A.M.A. attack on Dr. Koch, his cancer research and his cancer treatment that brought all further communications between Dr. Koch and Mr. Anderson to an end? This is only one example on how the A.M.A. and its Journal can destroy any doctor and/or any medical research it wants to.



Ann Arbor, Mich.,

Dr. W. J. Koch.
Lab. of Physiologic Chemistry,
University of Michigan

St. Mary's Hospital (Mayo Clinic.)
ROCHESTER, MINNESOTA,
U. S. A.

Dear Doctor:

Will you kindly furnish me with two copies of your monograph, entitled On the Occurrence of Methyl Guanidine in the Urine of Parathyroidectomized Animals.

appearing in Journ. of Biolog. Chem. 1912 - Sept. p. 313

(Good work. Bill.)

With thanks for the courtesy, I am,

Yours sincerely,

Division of
Gastroenterology

Frank Smithies M. D.

FRANK SMITHIES
CHICAGO

CONSULTATION ONLY BY APPOINTMENT

LONG DISTANCE BELL TELEPHONES: { GRACELAND 082(
DIVERSEY 3811

Dec. 3rd, 1917.

Dr. Wm. Koch,
Department of Physiologic Chemistry,
Detroit College of Medicine & Surgery,
Detroit, Mich.

My dear Professor:-

Thank you very much for your kind letter of the 1st.

I think that it would be best to send on the article as you have it written and leave the portion on "Eclampsia" for a later paper. If you can give us a clinical summary of your results, I am sure that the paper will be highly appreciated. It would be well to send the manuscript direct to me at the Augustana Hospital and I will forward it.

Congratulations on the confirmation of your parathyroid work by the University of Glasgow. It is always a source of great satisfaction to know that one has been working along the right lines. It will be the source of a bitter pill, however, for the Ann Arbor crowd to swallow. Why is it that they give the young men so little chance at the University of Michigan? It defeats the primary aim of the University and it is gradually causing the medical school to occupy a very mediocre place.

I will keep an eye on research positions and should anything come up, I should be very glad to let you know. Have you ever thought of applying to Kendall at Mayo Clinic as an assistant? As you know, Kendall is doing epoch making work upon the chemistry of the thyroid and I know that he has only a couple of assistants.

With best wishes and again thanking you for offering to get ready your work on time, I am

Fraternally yours,

Frank Smithies M.D.

FRANK SMITHIES
CHICAGO

CONSULTATION ONLY BY APPOINTMENT

LONG DISTANCE BELL TELEPHONES: { GRACELAND 6826 / DIVERSEY 3811

Nov. 30th, 1917.

Dr. J. Koch, Prof. of Physiology & Chemistry,
Detroit College of Medicine & Surgery,
Detroit, Mich.

Dr. Doctor:-

Several years since, you did some very fine work on the parathyroid gland. It was published in the "Journal of Biologic Chemistry" I believe. I have always felt that the work was of such significance that the general profession ought to know more about it.

Can not you supply a summary of the work with its clinical pointings, etc. if possible for publication in "Medicine & Surgery" of St. Louis, January number? As you know, I am one of the associate editors of "Medicine & Surgery" and am very anxious to have each number of the journal include the highest type of medical investigation.

Let me know when I may expect your manuscript and please do not turn me down.

With best wishes, I am

Fraternally yours,

Frank Smithies, M.D.

MEDICINE AND SURGERY
METROPOLITAN BUILDING

PHILIP SKRAINKA, M. D.
Editorial Department

St. Louis, Mo. December 3, 1917

Dr. Koch
Detroit College of Medicine
Detroit, Mich.

My dear Dr. Koch:

Under separate cover, I am sending you a copy of the November number of MEDICINE AND SURGERY, so that you may judge of its merits in connection with the letter Dr. Frank Smithies wrote you, asking you to contribute to the Special Endocrinology Number for January, 1918.

In case you intend to write, will you kindly send me the title of your paper at once so that it can be listed in the December number among the papers to appear in January?

Both Dr. Smithies and I would be highly pleased if you were to write for this number, and on account of your knowledge of the subject, I am sure your paper would add considerably to the issue's worth.

Hoping to receive a favorable reply, I remain,

Yours very truly,

Philip Skrainka

Editor

PS/MCH

MEDICINE AND SURGERY

PHILIP SKRAINKA, M. D.
Editorial Department

St. Louis, Mo.

August 20, 1918.

Dr. Wm. F. Koch,
Detroit College of Medicine & Surgery,
Detroit, Mich.

My dear Doctor Koch:--

No, you are not the slowest book reviewer; that "honor" does not belong to you as yet--at least not from my standpoint--and surely I ought to know, being an editor ever on the look-out with my spour for reviewers who keep books for four months without sending me a review. No, indeed, you are one of my best both as regards the shortness of time which you take and the quality of your reviews.

I read with the deepest interest the lines in your letter about your new cancer cure. If you have found, or rather discovered a cure, and there is no reason for my doubting your assertions, you are to be congratulated, for you will place yourself in the front rank of the doctors of today, As regards my opinion of your work and value, that will grow until it will make you dizzy.

Everybody will be interested in your cure, and by everybody I mean at present every doctor of intelligence; and just because I feel that you have accomplished something, I want to throw the pages of MEDICINE AND SURGERY wide open to you for any paper you want to write on the subject. Surely if I can "scoop" this bit of "news", I shall be the proudest editor in the country.

You write that you want my cooperation. Of course, I am at your disposal for anything you demand. Do you want me to give the matter the publicity it deserves, or would you rather I wait until I hear further from you? I know a number of men connected with our best hospitals, and, of course, I shall bring the matter to their notice directly you want me to do so. In the meantime accept my congratulations and best wishes, and good luck to you for your great humanitarian act.

Awaiting your answer to this letter impatiently, especially your decision to publish your first paper on the subject in MEDICINE AND SURGERY, I remain with kindest regards,

Philip Skrainka

P.S. It was a happy thought on your part to write to Frank Smithies. He is a "peach", a good friend of mine, one of the best, if not the best.

WESTERN UNION

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DR W F KOCH 1980

DETROIT COLLEGE OF MEDICINE AND SURGERY DETROIT MICH

FINE LOT OF CASES WAITING WOULD LIKE YOU TO TREAT THEM AT ONCE OR TO LET US TREAT THEM UNDER YOUR DIRECTIONS WIRE WHAT YOU WISH TO DO

DR FRANK SMITHIES

Telephone No. Cherry 808 J

Telephone To

Time

By

To Be Mailed

Telephone No. Cherry 808 J

Telephone To

Time

By

To Be Mailed

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DR WM KOCH 1608

CARE DETROIT COLLEGE OF MEDICINE AND SURGERY DETROIT MICH

ASSOCIATE DR CLYDE KARSHNER WILL CALL ON YOU FRIDAY AT THE COLLEGE

DR FRANK SMITHIES.

FRANK SMITHIES
CHICAGO

CONSULTATION ONLY BY APPOINTMENT

LONG DISTANCE BELL TELEPHONES { DAY-SUPERIOR 0242
NIGHT-CRAGSLAND 0820

Dec. 15th, 1919.

Dr. Wm. Koch,
c/o Detroit Medical College,
Detroit, Mich.

Dear Dr. Koch:-

Dr. Karshner returned an interesting account of your work with cancer.

Perhaps sometime during the Christmas holidays it would be well to come over and talk with me about the matter. If I go to New York to the American College of Physicians' meeting, I will try to stop off at Detroit but I cannot promise.

There might be a very good future for you and your form of treatment here in Chicago. We are willing to help, of course, must at the same time look out for ourselves in a business and a professional way. It would be very advantageous if we could arrange to have the general profession informed regarding your method at the meeting of the American Congress on Internal Medicine Feb. 25rd to 28th, 1920, Chicago.

With best wishes and thanking you for your kindness to Dr. Karshner, I am

Fraternally yours,

Frank Smithies M.D.

FRANK SMITHIES
CHICAGO

CONSULTATION ONLY BY APPOINTMENT

LONG DISTANCE BELL TELEPHONES. {DAY-SUPERIOR 9232
NIGHT-GRACELAND 6820

April third
Nineteen
Twenty.

Prof. Wm. F. Koch,
Detroit College of Medicine & Surgery
Department of Physiological Chemistry,
Detroit, Michigan.

My dear Professor:

Reply to your favor of the 25th ult., has been unavoidably delayed.

From what you tell me and from what Dr. Karshner has told me, I feel sure that you are on the right track..I was very sorry to see the committee appointed by the Michigan State Medical Society (or was it the Detroit Medical Society?) give you such a black eye in the Journal of the Michigan State Medical Society.

I shall not have time before the middle of June to take up the question which you mention, but after the middle of June I shall be very glad to have you come over and spend some time with us. We can then plan a series of cases, can photograph them, give them your treatment, and can then check up our results.

If things turn out as you anticipate, I think that you will have no trouble in making suitable connections in Chicago for the proper employment of your therapeutic agent.

With best wishes and thanking you for your numerous courtesies, I am

Sincerely yours,

Frank Smithies M.D.

FS/M

E.R. SQUIBB & SONS
RESEARCH AND BIOLOGICAL LABORATORIES

JOHN F. ANDERSON, M. D.
Director

New Brunswick, N. J., Dec. 21. 1920

Dr. Wm. F. Koch,
Detroit, Mich.

Dear Dr. Koch:

We have your letter of recent date concerning the preparation of your product for the diagnosis and treatment of carcinoma, and before sending a representative to talk the matter over with you, we would like to know whether the methods for the preparation of the product are in a condition to be adapted immediately on large scale production. We should also appreciate from you some indication as to your idea in regard to the marketing of this product.

Very truly yours,

E.R.SQUIB & SONS
JOHN F. ANDERSON.
DIRECTOR.

JFA:E.

THE McWHORTER AFFIDAVIT

"TO WHOM IT MAY CONCERN:

"In order to put on record the facts we know concerning the illness, treatment and recovery of our daughter, Judnith McWhorter, here in after referred to as just Judy, we make the following statement of our own will and accord, without promise of or hope of any remuneration, and having previously received no remuneration of any kind

"After a normal birth, Judy, before the age of six weeks, showed signs of illness. Her abdomen was enlarged, she was restless, and her face did not show the repose of a healthy baby.

"Her physician who was a doctor in good standing, a member of the American Medical Association, and a man whom we trusted and still hold in high esteem, could not find anything wrong with her until his check up and examination at the end of her eighth week. At that time the doctor found her abdomen hard and much distended. During the period from August 20, 1948 to August 27, 1948 a tentative diagnosis of cancer was made and X-rays were given although the X-ray technician stated that it was hopeless to expect a recovery.

"By the time Judy was three months old that attending physician and another surgeon made an exploratory operation on Judy's abdomen at which time a biopsy was made. The physicians reported to us that the biopsy showed a high degree of malignancy which involved 85% of the child's liver. They told us that there was nothing that could be done to save Judy's life; that we should take her home and make her as comfortable as possible for few days that she could live.

"Her life expectancy was placed at 21 days. We were told not to remove the bandage from her abdomen lest the stitches burst out. It was the doctor's opinion that the incision in her abdomen would not heal.

"For some days prior to this time Mr. Joseph O. Noah, a neighbor and old friend of Mrs. McWhorter and her family, had been advocating the use of the treatment offered by Dr. William Fredrick Koch ... None of us had much confidence in his treatment.

"When our doctor was consulted he assured us it was useless. He said he would not give it to his own child under the same circumstances, and that it would be an unnecessary and useless infliction of pain on the patient. He also made the statement that he would believe in the treatment if he could see one case recover from the use of it where a biopsy showed positive malignancy.

"It was while we were considering this treatment that Time (magazine) published its defamatory article about Doctor Koch in the issue of September 6, 1948. This article was brought to our attention by both our physician and Mr. Noah. We found it very hard to take Dr. Koch's treatment seriously in the face of such criticism. Nevertheless when we had no other hope and since Mr. Noah made it possible for us to take the treatment without immediate cost to us, we decided to try it.

"Dr. Koch's therapy was given by Dr. N. T. Mulloy of Cisco, Texas. The dose was injected into Judy's hip on September 18, 1948. At this time and during the course of Judy's recovery, Mr. Noah took a series of

color pictures showing her progress. Previously he had taken two pictures at six weeks of age and before diagnosis of cancer. This series of pictures gives a good idea of her case.

"At the time the injection was given, Judy's abdomen was so much enlarged that she could hardly breathe due to upward pressure on her lungs. The circulation on the surface had greatly increased and she had a bluish cast from a diffusion of blood in and just under the skin. Veins under the skin of the abdomen were plainly visible. The abdomen was very firm, even hard. At the time the Koch's treatment was given, Dr. Mulloy expressed no hope of securing a recovery as he thought the case was too far advanced.

"Within ten days after treatment Judy showed definite reactions which raised our hopes. Shortly she began to pass large qualities of mucous with bowel movements. She also passed a large amount of water in the normal manner, sometimes requiring as many as twenty diaper changes per day. No medication was used after the injection of the Koch treatment and only minor changes were made in the baby's diet. Apple juice was substituted for orange juice, and Judy liked it. After treatment was given and until recovery was practically completed, only one doctor saw Judy. That was a doctor residing at Azle, Texas, who removed the stitches from the healed incision about the middle of October 1948.

"During the early days of the recovery process Mrs. McWhorter reported to the doctor who had previously cared for Judy and who had advised against the Koch Treatment, that she was apparently getting better. He admonished the mother not to entertain false hopes. He said that it was impossible for a dose of any chemical to 'destroy' such a large growth.

"On the other hand, Mr. Noah stated that the doctor's remarks showed that he had no conception of how the treatment was to work. He said one might as well say that a small match could not start a large fire and destroy a forest.

"Soon Judy began to gain weight and her abdomen rapidly reduced in size and became more soft and pliant so that she could breathe better. The hard growth receded towards the lower right side. By December 25, 1948, she had a healthy and normal appearance as the pictures mentioned before show, but some trace of the growth remained.

"Later, about May 12, 1949 I had her examined by a doctor in Paris, Texas. (Mrs. McWhorter told the doctor to make a thorough examination for trouble of any kind.) He could find nothing, after which he was told of the baby's former illness and he could still find no trouble.

"On November 11, 1949 Judy and her mother appeared before a group of physicians and surgeons especially interested in cancer who met at the Blackstone Hotel in Fort Worth, Texas. While before this group, more than one doctor examined Judy and nothing was found wrong with her.

"Mrs. McWhorter states that a more surprised group of doctors would be hard to find, when they first saw a rosy healthy child rolled out before them after having read a clinical summary of her case.

"An account of the meeting with a picture of Judy and her mother was published in the Fort Worth *Star-Telegram*. The piece was headed: *'Doctors Convinced That Little Judy Overcame Cancer Ailment Herself.'*

"This, in spite of the fact that all concerned knew the Dr. Koch Treatment had been given and that we gave it full credit for bringing about the baby's recovery. The only excuse we can offer for this is that undue excitement might have been raised by a publication of the true facts.

"On February 18, 1950 both parents and Judy attended a meeting of physicians and others at Tampa, Florida. Here Judy was again shown to a group of doctors. These were most friendly to the Koch treatment.

"Judy is now past two year old. She has shown a normal growth and development, normal mental development and absolute no abnormalities that we are aware of. She is a very active, mischievous and friendly. She has had practically no illness after taking the Dr. Koch treatment and recovering from cancer.

"Witness our signatures.

Mr. O. McWhorter Jr., Father
Mrs. Otis McWhorter Jr., Mother

"State of Texas . . . County of Park . . . Sworn and subscribes to before me this
28th day of June, 1950.

Jim Bob Nation
Parker County, Texas
Notary"



No. VIII, Taken September 1960, twelve years after treatment.

the side of the head with his hat. | clinic. | his hat.

Once Termed Hopeless Case

Doctors Convinced That Little Judy Overcame Cancer Ailment Herself

BY GRACE HALSELL.

Judy McWhorter is the one-in-a-million type.

Her parents think so. And a lot of doctors think the same thing.

Judy, coin and blond at 17 months, may be one of the few cases known to have cured themselves of cancer.

Doctors don't say for sure, as yet. They don't take credit for having cured her. Look at her smile, or see her romping around, and you know she feels wonderful. Once she was termed a hopeless case.

Thinking happily of the attention given her, Judy wowed 200 cancer experts when she appeared before them Thursday at the Blackstone Hotel.

While her physicians were busy using big words to explain her case, Judy was busy smiling and winning friends.

The daughter of Mr. and Mrs. Otis McWhorter, formerly of Ark. and now of Paris, Judy was born in June 1940 in Harris Hospital. When she was two months old, Judy had a swollen, hard stomach.

Doctors told Judy's parents the baby suffered with cancer of the abdomen, which had spread to the liver. They said 80 per cent of the liver was involved.

A series of seven X-ray treatments was given. An exploratory operation was made. Then doctors sewed the patient up again.

Doctors gave Judy only three weeks to live. They admitted Thursday that when they saw Judy being taken from the hospital, they never expected to see her alive again.

With Judy's appearance before the tumor clinic, she proved she was very much alive and feeling almost better than anyone.

Radiologists do not claim the credit for saving Judy's life.

They say there are a few cases recorded in medical journals of patients' being spontaneously cured.

Judy, perhaps, is one of those very rare cases.



(Times-Herald Staff Photo.)

JUDY WOWED 'EM—A rare little girl with even a more rare medical history of cancer, Judy McWhorter, shown with her mother, Mrs. Otis McWhorter, appeared before a cancer clinic in the Blackstone Hotel. Judy may have cured herself of cancer.

Phoenix Prisoner Fails In New Bid for Freedom

U.S. Dist. Court
Pltf. Ex.
Deft. Ex. 12

September 17th, 1926.

American Society for the Control of Cancer,
New York City,
New York.

Gentlemen:

The Conference that you are about to hold will make medical and human history.

For the past fourteen years, I have been making a special study of Cancer, following the same plan of investigation and the same line of reasoning which brought my research work on the Para thyroid glands to success, as attested by references in standard medical works (Oxford Medicine, Volume 3, P. 836; et al).

The writer seeks the privilege of presenting to the delegates gathered from the four ends of the earth the results of his studies on the subject of Cancer which have concluded in the development of a treatment for Cancer in the form of a synthetic Anti Toxin which has been successfully applied in a number of cases heretofore classed and regarded as incurable, and which cases have remained well for a period of seven years and longer.

In accordance with the ethics of the profession, after presenting my paper on the subject, I am prepared to submit to any fair minded, properly constituted Committee, appointed by the Convention, a detailed analysis of the Anti-Toxin, as well as the records referred to in my paper in full.

In the name of those whom we are trying to help, I hope that your program will be made elastic enough to permit of my presenting the advanced and new method of treating Cancer.

Respectfully yours,

THE AMERICAN SOCIETY FOR THE CONTROL OF CANCER

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Dr. Edmund B. Wilson, New York
Dr. Francis Carter Wood, New York
Dr. W. C. Woodward, Chicago
Dr. Hubert Work, Washington

Dr. Wm. F. Koch
Koch Cancer Foundation
3215 East Jefferson Avenue
Detroit, Michigan

September 27, 1926

My dear Dr. Koch:

Your letter of September 17th, asking for an opportunity to present the results of your studies on the subject of cancer before the Mohonk meeting was received on September 18th -- two days before the meeting opened.

You have apparently misunderstood the scope of the Mohonk meeting. It was not a suitable occasion for the presentation of new facts and opinions before the medical profession nor could such a presentation have been arranged for in the interval between the receipt of your letter and the opening of the symposium.

Very sincerely,

George A. Soper, Ph.D.
Managing Director

Sd



DR. ISAAC LEVIN, New York City: I wish to go on record in two matters of great importance to the future of the cancer problem, in connection with the paper of Dr. Blumenthal and the following remarks of Dr. Taylor.

Dr. Blumenthal presented the situation very clearly, and his conclusions are true, not only for Germany but for the rest of the world. I refer to his statement that the medical profession, and particularly the surgical specialists, maintain that the diagnosis and therapy of cancer do not constitute a specialty, and that a well equipped general hospital is fully capable of taking care of cancer patients. This in spite of the fact that specialization in medicine is drawn so fine today that, for instance, we not only have laryngologists, but tonsilologists and special tonsil hospitals.

It is impossible to conceive that cancer, a chapter in medicine which presents the most complex and difficult problems as regards research, diagnosis, and therapy, is not a specialty. While admitting that an individual surgical clinician of experience may be able to take care of any cancer patient in a correct manner, I wish to show the many reasons which make the organization of special cancer institutions or hospitals indispensable. Such cancer institutes must not only take care of cancer research but also actively care for and treat cancer patients. I shall indicate a few of the reasons why the establishment of cancer institutes is the most important step in the solution of the cancer problem.

1. At present there is no question but that the great majority of lay people fear the knife and hope that their particular cancer—and many of the cancer patients suspect, if they do not actually know, that they suffer from the disease—can be cured by another remedy than surgical intervention.

In the course of many years of clinical work at the Montefiore Hospital and particularly at the New York City Cancer Institute, which is known to be a clinic and hospital for cancer patients only, I have made over and over again the following observation: A cancer patient who has refused to be operated upon at the advice of a general surgeon and has entered the Institute with the hope of finding another remedy, readily undergoes the operation when so advised at the Institute. On the other hand, if recognized cancer institutions were non-existent, this would play into the hands of commercial establishments like the Koch Cancer Foundation, and many similar fake organizations which actually advertise their antitoxins, serums or what not, and claim to cure all cases of cancer. They bear pseudo-scientific names, claim to have special scientific departments, have physicians' names on their literature, which simulates in form real medical literature, and use all the slogans of scientific institutions. If scientific medicine refuses to maintain cancer hospitals and cancer institutes, then cancer patients will be thrown on the mercy of these quack institutes. That is undoubtedly a very important reason for the establishment of cancer hospitals.

2. Another reason for having cancer hospitals and cancer institutions is the educational influence which their mere existence would exert on the general public. The fact that a number of scientific institutions are organized for the treatment of cancer will impress the public as proof that cancer cannot be a hopeless condition, since otherwise there would exist only homes for incurables to which cancer patients would be sent to die.

3. The third and most important reason for such institutes is the following. A few surgeons of experience may know all the phases of clinical cancer. But the profession at large, in my estimation, recognizes only the late hopeless stage of the disease and misses the early hopeful stage, with a resultant pessimistic attitude toward the whole problem. Unfortunately, I find it to be true even when it concerns the physicians' own families. A young surgeon who obtains his training in a fully equipped cancer hospital and clinic has an opportunity to see, alongside of one another, all types of cancer patients.

In conclusion, I want to say that the public as well as the profession must realize that even 30 per cent of success, which was mentioned today, is after all not a hopeless

Free Press Aug 18 1948
1st Edition

Koch Trial Dismissed by U.S. Judge

The lengthy court case involving Koch Laboratories, Inc., ended Tuesday. Federal Judge Frank A. Picard dismissed two Food & Drug Act criminal indictments on the motion of assistant United States Attorney Frank X. Norris.

The Koch Laboratories and Dr. William F. Koch and his brother, Louis Koch, were charged with mislabeling their products.

• • •

THE INDICTMENTS were filed in early 1942. A trial began on Jan. 12, 1943, and ended on May 28, 1943, when the jury was unable to agree.

Another trial began Feb. 20, 1946, and ended with a mistrial on July 23, 1946, because of the illness of a juror.

The trial was the longest in Detroit Federal Court history.

Federal Trade Commission hearings still are pending on a civil suit in Federal Court involving advertising by mail.

THE DETROIT NEWS, WEDNESDAY, AUGUST 18, 1948

R Det News Aug 18 1948

U.S. Quashes Koch Charges

Dismissals Follow 2 Lengthy Trials

After two long drawn-out trials, which resulted in jury dismissals, the indictment against Dr. William F. Koch and his brother, Louis, charging them with marketing preparations falsely labeled as cures for cancer and other infections, was quashed today by Federal Judge Frank A. Picard.

Dismissal of the indictment, which was filed originally in April, 1942, was on motion of Frank X. Norris, assistant United States attorney.

In recommending the dismissal, Norris said that the defendants, who did business as the Koch Laboratories, Inc., were now conforming with the Federal food and drug laws in marketing their products.

Norris said also he urged the dismissal because of the unusually long period of time that had been required for the two trials, the first of which ended in a disagreement by the jury. The second trial resulted in a dismissal when one of the jurors became ill while the jury was deliberating on a verdict.

The first trial started in January, 1943, before Judge Ernest A. O'Brien, and continued until May 28 of that year. The second trial ended July 23, 1946, after five months of testimony. This trial was before Federal Judge Robert R. Nevin, of Cincinnati.

The Farmers' Federation of New Zealand has obtained government permission to buy nearly $1,000,000 worth of American tractors.

Times Aug 17 1948

LATE FLASHES

BRITISH BOLSTER FORCE IN REBELIOUS MALAYA

LONDON (UP)—The British war office announced it was sending a second brigade of guards to Singapore to cope with "prevailing conditions of unrest" in Malaya.

U. S. DROPS CHARGES AGAINST KOCHS

Five-year-old federal charges against Dr. William F. Koch and Dr. Louis Koch, brothers accused of marketing phony cancer remedies, were dismissed.

REDS ACCUSED OF MASS BURIAL OF 1,500

BERLIN (INS)—The Berlin newspaper Die Neue Zeitung accused the Russians of committing 1,500 inmates of a Soviet concentration camp to a mass grave between May and September, 1946.

Times Aug 17 1948

Koch Charges Dropped by U.S.

Five-year-old federal charges against Dr. William F. Koch and Dr. Louis Koch, brothers accused of marketing phony cancer remedies, were dismissed today.

Motion for dismissal of the two indictments against the brothers, tried twice in long and costly federal court proceedings, was granted by Federal Judge Frank A. Picard.

Dist. Atty. Thomas P. Thornton and Frank X. Norris, assistant, moved that the indictments be nolle prossed.

Dr. W. F. Koch On Stand, Tells Of Cancer Study

Dr. William F. Koch, one-time University of Michigan chemical professor, took the stand in federal court today to formally deny government charges of mislabeling self-concocted medical potions.

In a soft voice, frequently interrupted by warm smiles, the 57-year-old defendant calmly traced his medical career and said he had dedicated his entire career to the study of cancer.

"My whole object," he said, "was to learn something about cancer. I didn't expect to discover anything curative but I thought if I learned one fact, others could build upon it and I would have done something."

SHRUGS SHOULDERS

Dr. Koch, stocky, bullet-headed, with a thin crop of sandy hair, appeared to be nervous as he spoke. A "fidgeter," he frequently shrugged his shoulders. He was dressed in a neat, blue business suit.

Through the guidance of William Henry Gallagher, defense attorney, Dr. Koch, a native Detroiter, traced his education. He graduated from Detroit public and high schools and in 1909 received his Bachelor of Arts degree from the University of Michigan.

He remained at the University to do scientific research, particularly in cancer, and then taught for three years at the university medical school.

Dr. Koch said he worked "day and night" to delve into the mystery of cancer, its attack upon the body and resulting damage. In 1916 he received his doctor's degree in philosophy.

TAUGHT AT DET. COLLEGE

Between 1914 and 1920, Doctor Koch taught at the Detroit College of Medicine as professor of physiology and amusingly recalled that many government witnesses were once his pupils.

Doctor Koch received his medical degree from the Detroit College of Medicine in 1918 and served as pathologist on the staffs of Woman's and St. Mary's hospitals.

Doctor Koch said his contribution to medicine on parathyroid was recognized by the University of Glasgow and Harvard University.

The trial, now in its thirteenth week is being heard by a jury of eight women and four men before Judge O'Brien.

Dr. Koch said that many cancer patients, suffering from the most severe stages of the malady offered themselves as "guinea pigs" and it was through these experiments, he formed conclusions as to treatment.

An admitted strict vegetarian, the physician strongly defended his "apple juice diet" and said it helped raise body temperature—a factor in his pre-injection treatment.



DETROIT TIMES

3 Cancer Cures Put Into Record At Koch Trial

Doctor Testifies Koch Formulas Aided 16 Cases

Cancer Cured By Koch Drug, Farmer, 80, Says

Doctor Tells of TB Cure

Koch's Medicine Credited as Cure For Many Ills

Koch Medicines Credited With Rebuilding Lung

Koch Drug Praised By Nun

Cancer Doctor Says Koch 'Cure' Replaced X Ray

Cancer Linked to Allergy by Koch Witness

Malaria Added To Ills Claimed Cured by Koch

'Skeleton Boy' Reported Saved By Koch Remedy

Koch Witness Gives His 'Cure' For Tuberculosis

Cancer Victims Testify to Cures By Koch Drugs

Koch Cure Claimed In Heart Case

Koch's Remedy Cured Cancer, Nurse Says

Koch Cures Told

Heal Allied Victim, 41 Years Old, Has a Commando, Winnipeg Doctor Testifies in Court

The Detroit Free Press

Koch 'Cures' Seen as Boon to Medicine

Koch Drug Credited in Heart 'Care'

Koch Remedies Saved Her Life, Woman Says

Koch Drug Cured Baby, Says Doctor

Koch Remedy Saved Lives, Doctor Testifies

3 More Tell of Cures by Koch Drug

Koch Drugs Saved Her, Woman Says

More Cures Credited to Koch Drugs

Says Koch Drug Saved Dying Boy

More Cures Claimed for Koch Drugs

Koch's Medicine Cured Asthma, Doctor Testifies

Koch Cure Called Good on Gangrene

Juror Faints at Testimony in Koch Trial

Girl's Eye Saved By Koch Clinic, Mother Says

Texan Says Koch Drug Cured Half His Patients

Local newspaper article that were written during the 1943 F.D.A. trial. During the 1946 F.D.A. trial, the Government did not allow the local newspapers to report on the trial evidence.

Another "Cure" Exposed

Ever since cancer has been recognized as an outstanding problem of organized medicine and from the time that its treatment has been attempted there have been instances of abuse of public confidence by individuals or firms who have offered panaceas and have claimed widespread cures as a result of their use. Sometimes these so-called cures have been exposed by the American Medical Association, sometimes by Federal authorities, sometimes by the cooperation of both.

One of the most recent dramatic incidents of this kind which has just occurred has been reported in the Journal of the American Medical Association for April 18, 1942. It concerns the activities of members of the Koch family of Detroit, Michigan who have for some years under the corporate name of "Koch Laboratories, Incorporated" been offering and distributing at considerable profit a so-called cure for cancer. Here is the statement which the Medical Association makes under the heading: "Koch's Cancer Treatment Meets the Law."

KOCH'S CANCER TREATMENT MEETS THE LAW

The Journal has repeatedly called attention to the promotion of products by the Koch Laboratories. Again and again it has urged federal agencies to display an interest in the matter. The Detroit Free Press for Sunday, April 5, notes that "Federal agents took action Saturday against Koch Laboratories, Inc., 8181 E. Jefferson, by arresting Louis Koch, the concern's secretary treasurer, in Detroit and Dr. William F. Koch, president, in Delray Beach, Fla." It notes that the Kochs "will face charges of violating the Federal Food, Drug and Cosmetic Law on 11 specific charges." The Free Press reports that Dr. Koch was arrested on a removal warrant and was released on a $5,000 bond pending a hearing in Detroit on April 15. Assistant United States Attorney John C. Ray is quoted as saying with regard to the concern's synthetic anti-toxin "A thimbleful of this liquid sells for $25 to practitioners and they get as much as $300 from patients. Chemical analysis shows that the dilution is so infinitesimal that it would be like dumping a cocktail in the Detroit River at the foot of Woodward and expecting to get a kick out of the water going over Niagara Falls." The Free Press reports that "Doctors said it was something like a molecule, so tiny that it can't be seen, to every 300,000,000 gallons of water." The United States Attorney, it is reported, said that the Koch brothers were arrested after a prolonged investigation. The Free Press called attention to the fact that "Dr. Koch was named defendant in a malpractice suit in Detroit in 1934 and a jury returned a $25,000 verdict against him while he was head of the Koch Cancer Foundation. Later the verdict was held excessive and in a second trial a jury reduced the amount to $5,500. The suit was started by Alfred A. Fortner, who told the jury Dr. Koch diagnosed an infected knee as a cancer." The procedure of diagnosing as cancer a condition which is not malignant, and then expediting an effective treatment, is old in cancer quackery. For a number of years Koch has issued promotional material which contained reports of an unscientific character with regard to cases in which his preparations had been employed. More recently he circularized physicians with regard to what he refers to as "1:4 Benzoquinone," claiming without the slightest bit of scientific reference, that it is the effective ingredient in the sulfonamide preparations. Besides Koch there still remain a few other charlatans in the field of cancer who merit federal attention. Perhaps the Koch incident will seem to them a "handwriting on the wall."

Those who have been engaged in cancer research have been aware of the Koch "treatment" more than is the case in ordinary efforts of that kind. The reason for this is that those who claimed merits for the treatment frequently did so on a foundation of knowledge of chemistry and biology which enabled them to utilize the terminology and language of those sciences in such a way as to make it extremely difficult to pin them down. For some reason the Koch cancer "treatment" obtained a remarkable degree of support from socially prominent and wealthy individuals especially in the eastern part of the United States although repercussions of its claims have been encountered over almost the whole of the United States.

It is amazing to what an unhappy extent the support of sincere but misinformed individuals can maintain and increase the prestige of a "treatment" of any non-surgical sort. The public unfortunately, but very naturally, will always prefer inoculations with various material to the expense and difficulties of major surgical operations. That's human nature. This fact is always an asset and a stock in trade for those who have some serum, antitoxin or other supposedly beneficial substance to sell.

It is a well-known fact that at times injections of substances even as neutral and useless as distilled water under some trade name may have a temporarily beneficial and psychological effect on a patient suffering from cancer. No one knows why this is the case, but there are hundreds of examples which support this extraordinary conclusion. Of course, none of the benefits are permanent and none of them have anything whatever to do with the cure of cancer. They act, in fact, in quite the opposite direction and provide a false sense of security and hope which is eventually succeeded by tragedy even more grim and horrible than it would have been under the orthodox or approved treatments of surgery or radiology.

A vast amount of sincere but ignorant human effort has gone into the support of the Koch "treatment." It seems terrible that such is the case because if the same amount of effort and money had been put into the support of legitimate cancer research or treatment and if laboratories and hospitals needing that kind of loyalty and backing had received it one may fairly suggest that our knowledge of the disease would be distinctly more advanced than it is at present.

As the efforts of the American Society for the Control of Cancer continue and as more and more of the reading public becomes acquainted with the truth as it applies to cancer research and treatment we may hope and expect that chapters like that which has been written in the case of the Koch "treatment" will become more rare. We all have a duty to perform in this matter. We owe it to ourselves and to those who rely upon our opinion and judgment to be **absolutely certain** that our statements concerning any phase of the cancer problem are conservative and are based upon the years of patient study and practice which legitimate research workers and hospital staffs have spent in the fight against this disease.

All through the battle made by organized medicine and others to reveal the true nature of the claims made by the Koch Laboratories there has been met criticisms by lay individuals, who for some reason lacked confidence in the medical profession, that attempts to prevent the continued activities of those laboratories were due to selfishness and jealousy on the part of the individuals engaged in other types of research and treatment of cancer. This, of course, was nothing but slander and had to be borne by honest and industrious men and women who were already handicapped by the very nature of the disease which they were combatting. It will be a source of encouragement to all of them to realize that this particular menace has been recognized and is being once and for all removed. The Federal authorities dealing with infracture of Food and Drug regulations do not bring action unless and until they are well informed and realize that they have the necessary evidence to carry matters through to a satisfactory conclusion.

If any of the Bulletin's readers have been aware of the existence of the Koch "treatment" they should now make it their duty to use this opportunity, this breach in the enemy's lines, to bring to the general public in greater amount than ever before the **accurate facts and information concerning cancer.** The public will be more receptive following such an exposure than it was in the past. There is in this line of action some chance, by prompt and effective response, of salvaging something from the otherwise completely destructive history of the Koch Laboratories.

C. C. L.
Clarence Cook Little

Psychological Warfare On Cancer

The past twenty-five years have witnessed important developments in the technique of applying recognized principles of psychology to education. The psychological approach to the educational phases of the cancer problem has been pioneered by the medical profession. In the beginning physicians were fearful that detailed information concerning the signs and symptoms of cancer would create cancer phobias which would lead to mental distress and confusion.

For years we have preached, "unreasonable fear and pessimism about the curability of cancer has caused countless people to delay treatment and thus lose their best chance for a cure." Physicians have generally thought it unwise to dwell upon the seriousness of disease and to add to the miseries of the sick by approaching the bedside with a grave face and a pessimistic attitude. The bedside manner of the family physician determines his ability to quiet the fears of the patient, to minimize the seriousness of the situation, to extend hopefulness and cheerfulness, and to instill determination to recover from sickness.

Patients do not respond well if told the exact diagnosis. On the other hand, experience has shown that there are certain individuals who recover more quickly if they are given some definite information. Once the exact diagnosis is known, the individual members of the family bear the added burden, willingly and quickly, and unite in massing all their strength to help the patient recover from the disease. This is reflected in many ways, by encouragement, by visits to the bedside, by the offer of financial aid, and by other attentions to the patient's welfare.

It is a well-known fact that cancer is the second highest cause of death in the United States. Heart disease, the leading cause of death, is rather gentle in its deadliness compared with cancer. The cancer patient proves a burden to the family and puts a strain on their emotions and financial resources. Cancer strikes one out of every ten people over the age of 40 and generally these are the people responsible for the foundation of the home. All of these facts and many more have been mentioned in cancer education but they have not been dramatized.

In the beginning of this second world war, it was believed that mass air raids and bombing of civilian populations would cause them to crack up mentally and physically. It was thought that the horror of sudden death would create hysteria and countless other manifestations of moral and physical disintegration. The British civilian population, Corregidor, and Malta, have proved that attacks of this character strengthen resistance to the limit of endurance. History proves that the American public is capable of bearing burdens, and in fact the average American only begins to fight when he becomes conscious of catastrophe and some inward fear of defeat awakens him to the full responsibility of the situation. Many authorities have commented that "Pearl Harbor" was the best thing the Japanese could have done for America because it succeeded in unifying the nation and awakening us to our responsibilities. **Factual information** and the **dramatization of danger** have generally **strengthened the physical and moral fiber of the race.**

A BRIEF HISTORY OF THE DEVELOPMENT OF THE KOCH SYNTHETIC ANTITOXINS

By Wm. F. Koch, PhD., M.D.

Detroit, Mich., and Delray Beach, Florida

This therapy started as an investigation of the toxins that cause convulsions after parathyroidectomy and in eclampsia. The purpose was to devise a means of destroying poisons that contained the guanidine and imidazole groups. Since the poisons of these types developed while the oxidations were seriously impaired we immediately set to work investigating methods of harmlessly oxidizing them within the body. We chose to use the normal oxidation mechanism, but first had to master it.

It might be stated in outline that the important steps cover some cardinal contributions to physiology. They also reduce the clinical features and the essential pathologies of the broad field of disease to a single basic fault in tissue chemistry. They include the application of a system of the direct oxidation of sugar and fat to the burning of pathogenic poisons whose structure they identify and whose origin was located in residual focal infection. These poisons we credited also with producing the various allergies, degenerative disease, and cancer. They are identical with the products of the same germs active in acute infections.

It must also be acknowledged at the start that the burning of sugar, and especially aerobic glycolysis, is still regarded a mystery. Back in 1914 when we began this research, practically no pertinent facts were known and besides the science of photochemistry that deals with the catalysis of such processes was in its early infancy. However, we formulated a system of aerobic glycolysis that worked out perfectly on paper and to our extreme satisfaction it served as a guide to the chemistry of immunity. As photochemistry developed and various laws controlling catalytic activities were learned, the correctness of our working scheme has been amply verified. It checked up physiologically too and so it stands a good chance of being the correct interpretation.

In order to bring the oxidations involved within the field of photochemistry we outlined the breakdown of glucose and fructose as accomplished by dehydrations with the formation of double bonds between carbon atoms. This provided free valencies able to activate oxygen as well as activate ethylene and carbonyl groups to take up the activated oxygen. Several important highly unsaturated structures with powerful catalytic properties were thus produced.

At first the simplest procedure of glycolysis imaginable was tested out. Thus glucose by a single dehydration makes a cyclic molecule, "Inosite," which as pictured below, may undergo full dehydration into the hypothetical substance I call Hexylene. And this can either fully saturate with peroxide oxygen and break up directly into six molecules of carbon dioxide or it may take up either two or three molecules of peroxide oxygen and split into two molecules of Malonide or three molecules of Glyoxylide as depicted below.

Since the hypothetical Hexylene is not practical experimentally we went back to the next most unsaturated structure that could be produced synthetically and that could also yield the Hexylene under proper conditions. The substance we worked with is 1:4 Benzoquinone. Let us call it BQ for short. This substance conforms to the rules of structure requisite to immunogenesis as I have formulated them. So it was put to work to see how much it could boost the oxidations of surviving tissues before and after they were poisoned by the pathogenic negative oxidation catalysts. It proved out very satisfactorily and without delay it was used to treat the sick in catalytic dilutions. We used one or two cc. of a dilution of $1x10^{-2}$ to $1x10^{-30}$ to find the most active solution. Thus BQ was our first synthetic antitoxin.

We next employed the two transition forms, Malonide and Glyoxylide and its closely related Ketene, since these bodies are also intermediaries in the other two schemes of aerobic glycolysis that we outlined. They were all found to act similarly in many respects, physiologically and therapeutically. With these four compounds and the closely related propargylic aldehyde we studied the recovery processes in the serious acute and chronic infections and in the so-called incurable diseases like coronary thrombosis, Buerger's disease, multiple sclerosis, progressive muscular atrophy, epilepsy, cancer, and certain forms of insanity. In these conditions and also in the gumma stage of syphilis, in tuberculosis, and leprosy, the recovery processes were found to be essentially similar, both in regard to their periodicities and in the order of correction of the symptoms and structural changes.

The first observations were made in 1917 in cancer and lues associated with sarcoma. Considering our great ignorance, the patients did remarkably well. Thereafter, the most thorough investigations possible were made on every incurable that came for help at our Detroit clinic. Many other physicians have contributed splendid observations.

The mechanism of allergy production had to be formulated also. It too is still regarded a mystery, but we outlined a process of allergenesis along photochemical lines that meets all the facts including the specificity and the failure of

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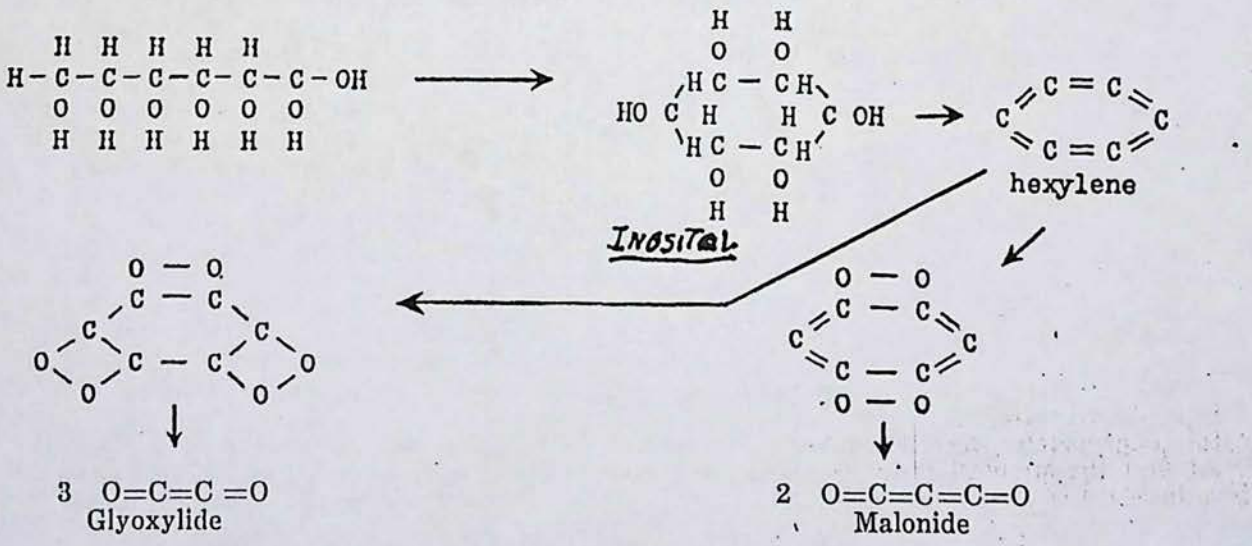
physiological control of the hyperactivities that constitute the disease. Most important of all, when the remedial catalysts were employed clinically, they worked very efficiently and the recoveries followed the same program as the recoveries secured in all other diseases. It seemed that we could best explain allergenesis as a matter of energy transfer accomplished by the fluorescence of the allergenic substance. The energy of the exothermic reactions going on in the cells was thus transferred into the chemical processes of such functional units as were able to accept such energy. The specificity of energy acceptance resides in the similarity of energy emission range and energy absorption range of the fluorescent substance and the functional unit. The energy accepted passes into and boosts its chemical processes and functional activity; and so the contractile, secretory, reproductive, or conductive units are forced to functionate beyond physiological control, producing the bronchial spasms and hypersecretion of asthma, the cell multiplication of cancer, etc.

After the therapy was reduced to something like an exact science, we instructed favorable European cancer institutions in our work. In 1934 the Cancer Institute of Louvain University under the direction of Professor Maisin adopted it for scientific research and clinical use and they have made some splendid contributions. In the meantime many American physicians have done nobly in the service of the afflicted and in accumulating data of great value. So today, not only in our hands, but in the personal experience of many astute observers, the great field of incurable disease has been attacked successfully by a single therapeutic principle and thus the singleness of the basic cause of disease in general has become evident. This has all been accomplished in a little over a quarter of a century.

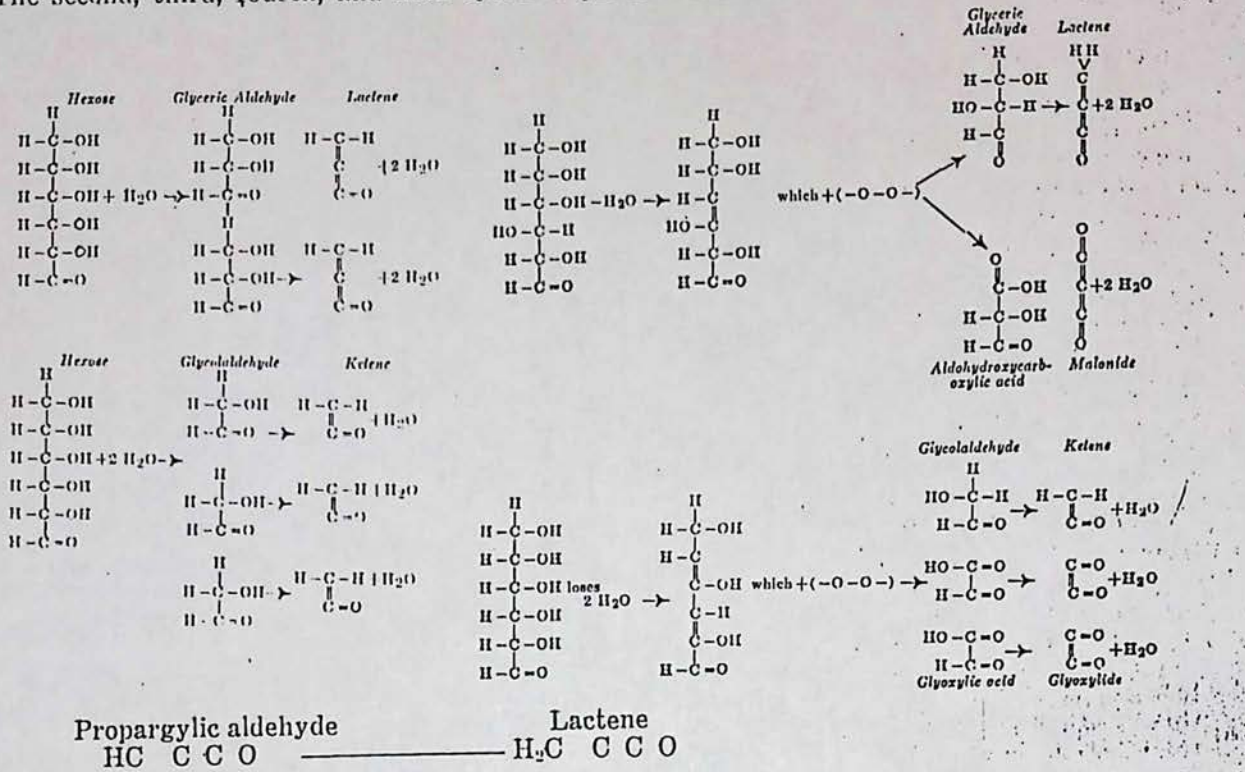
The pregrowth toxic period, its periodicity, the periodicity in the development of the growth and its metastases, and the periodicity of the recovery process which we have described some twenty years ago indicate how fundamental this therapy really is. The periodicity that Webster describes in the inevitable recurrence of cancer after surgical or radiological removal involves thirty-three and half thirty-three week cycles and their multiples, and these accord with our recovery periodicity very well. Thus on the basis that Webster can accurately predict the inevitable recurrence of cancer, and the deaths of the victims following old time methods, we have been predicting the recovery reactions and improvements as well as the full recoveries from cancer as the result of the removal of its basic cause. It is true that the same periodicity applies to other diseases. Disease has one basic periodicity of three hours, three and a half days, three weeks and their multiples, expressed in the pathogenesis and the recovery.

The aerobic glycolysis processes may be outlined as follows:

Glucose loses water at the terminal carbon atoms and forms a ring thus—



The second, third, fourth, and fifth systems proceed as follows:



Propargylic aldehyde $HC \equiv C\text{-}C\text{-}O$ ——— Lactene $H_2C = C = C = O$

Recoveries from cancer and the acute and chronic infections have been reported in this Journal in the past (1927) as secured by the various synthetic antitoxins as a group. The recent Compilation of proofs of the efficacy of the treatment set forth in the Transactions of the Ontario Cancer Commission which we have reproduced verbatim in a 400 page book, illustrates the results obtainable with Glyoxylide, Malonide, and Ketene. We have only mentioned results obtainable with propargylic aldehyde which is reversible with Lactene of aerobic glycolysis. A special paper will be devoted to its description and therapy in the near future. The illustrations given here refer entirely to our first synthetic antitoxin, BQ (1:4 Benzoquinone). It is inexpensive and very efficient, as the cases demonstrate. Its field of action is the whole realm of disease, for all disease is based upon infection, acute, chronic, or residual, and the toxins of bacteria, protozoa and viruses are built upon the same structural plan.

Cancer of the Breast

Mrs. P.—Age 32.

Family History—Father died of pneumonia, age 35. Mother well.

Past History—Mother of two children by caesarean operation.

Pregrowth Symptoms—Terrific headaches almost continuous since 14 yrs. of age.

Present Illness—Left breast struck at age of twelve. A growth the size of an egg was removed the following year from the bruised area. It appeared benign on section. Ten years later another growth appeared in the same region and spread rapidly envolving the cervical glands, the axilla, and liver to the extent to cause vomiting constantly and sometimes blood. The nation's most prominent cancerologists diagnosed her case as inoperable and utterly hopeless.

Physical Examination—The left breast was fully infiltrated by a fist size mass that was fully adherent. The axilla revealed a mass the size of a small hen's egg and several smaller masses. The cervical glands of the same side possessed tumors of various sizes from a hickory nut to a pea. The pressure of these tumors was effective in causing swelling of the tongue and throat. The liver was enlarged four finger-breadths. Hemolysis and general cachexia marked.

Treatment with two cc. of a solution of 1:4 Benzoquinone diluted 1 to a 1000 was given intramuscularly in November, 1927 by Dr. F. There was a febrile reaction twenty-four hours later and at the twelfth week. Recovery was rapid. The vomiting and headaches ceased within a week. Recovery was complete in six months and with restoration of perfect contour of the

breast and complete absorption of all tumefactions. She remains in perfect health today.

Cancer of Uterus and Lower Abdomen

Mrs. B.—Age 40.

Present Complaint—Started as foul uterine discharge and hemorrhage in 1934. Pain developed increasingly in the back and down the legs, hemolysis and cachexia gradually developed. Surgeons diagnosed malignancy of the uterus and confirmed it with biopsy. They gave radium and x-ray treatments, but these gave added impetus to the malignancy and the growth spread. Finally they sent her home to die. After she had become bedfast our Synthetic Antitoxin was given. Recovery progressed to completion.

Physical Examination revealed a frozen pelvis with the malignant mass involving the whole uterus and adnexia and reaching into the abdomen to an inch below the umbilicus. There was much bowel compression and bladder disturbance.

Treatment—Two cc. of the Benzoquinone solution (one to a million) were given intramuscularly by Dr. D. on April 6, 1936. There were typical three week reactions with some grippiness. All tumefactions have disappeared and her recovery was completed within sixty weeks. Her health is perfect today, gain in weight fifty pounds approximately.

Acute Salpingitis

Mrs. F.—Age 22.

Present Complaint—Started as double salpingitis with constant dull abdominal pain and continuous sharp stabbing pains in lower abdomen; foul, bloody, purulent discharge. Steady fever around 103 for three weeks before attendance by Dr. R. He gave her a course of Neoprontosil, 20 grs., 4.l.d. for two days and 10 grs., 4.l.d. for five days. The response was nil and it appeared that she developed a definite peritonitis with bloating. Moreover the cervix had become oedematous closing the canal so that it had to be dilated to let the pus out. Things grew worse.

Treatment—One dose of our Synthetic Antitoxin, 1:4 Benzoquinone, was given on April 18, at 6 p. m. Before April the 20th the pain and discharge were much reduced. On April the 20th there was no more pain or discomfort. The discharge had ceased, the oedema and swelling had disappeared and she had a normal temperature for the first time in about a month. On April the 21st there was swelling of the right inguinal gland. This disappeared completely on the 23rd. She has been well ever since and feels exceptionally well.

Cervical Adenitis

Mr. T.—Age 47, had enlarged lymph glands removed from the left side of neck twice. Two weeks before treatment the cervical glands on the left side of neck had reached a state of enlargement equal to a walnut and several peas. One dose of our Benzoquinone was given on April 14, at 10 a. m. Two days later the gland opened and in two more days was completely absorbed and healed. His health improved in various ways.

Unhealed Laceration of Cervix Uteri

Mrs. W.—Age 22.

Family History—Father died of cancer of the face at age 40.

Present Complaint—Developed as a laceration at childbirth two years ago. Instead of healing, a foul bloody discharge and menstrual complaints developed. Pain in the back and in the left hip were constant and she was always fatigued, anemia became marked, and some hemolysis was evident in the yellow color of eyes and skin.

Physical Examination revealed a cervix swollen to the size of a medium sized peach. It was cut across completely by a deep laceration with indurated edges. This laceration extended up into the left adnexia as a cleft indurated mass fixed and painful issuing blood and pus. No biopsy was made.

Treatment was given March 1, at 9 p. m., two cc. of 1:4 Benzoquinone, dilution, 1-1000. Examination one month later revealed a healed non-indurated shallow indentation and the mass at the left was no longer palpable. There was no more discharge whatever, no pain. The subsequent menstruation was normal too.

Measles and Mumps

Miss B.—Age 10 developed enlargement of both sides of neck and the parotid and submaxillary gland regions. There was fever of 103 on April 14. On the next day the measles showed up moderately distributed. On the 16th of April the measles were fully developed and the throat very sore. Fever running around 103.

Treatment of two cc. 1:4 Benzoquinone (1:1000 Sol.) was given at 6 p. m. on April 16th. On the 17th at 6 p. m. the temperature was normal and the mumps were nearly gone. The throat had improved considerably and the measles had faded quite a bit. On the morning of April 18th every bit of the measles, mumps, sore throat, etc., were entirely gone and the child felt very well indeed.

Discussion

Many other cases of mumps and other infec-

tions, tuberculosis, and even infantile paralysis have responded very well to this therapy. There is no doubt that the responses made are phenomenal and presages the new era in medicine. Our employment of the catalysts of aerobic glycolysis puts therapy within the realm of physiology where it belongs. This is not pharmacology with its poisonous pathogenic drugs, but the restoration of the normal chemistry that overcomes disease. I wish to thank the many medical men who have used my reagents since 1920 for their splendid cooperation.

COMPOSITION OF THE ATOM

THE JOURNAL

American Association for Medico-Physical Research

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Vol. 15 Lewistown, Pa.,—Chicago, Ill., June 20, 1941 No. 1

AGAIN—HOW MUCH PROTEIN?

The Present Mammoth Advertising Campaign for the Greater Consumption of Meat for Everyone Including Invalids, Tuberculars, and Infants, Brings Up Once More the Age-Old Question of How Much Meat Should We Eat?

Eugene A. Bergholz, M.D.,
Milwaukee, Wisconsin

The tremendous efforts being exerted by the American Meat Institute, occasioned by a falling consumption of animal flesh and organs, through every available channel of approach, the Packers, the Distributors, the Retail Butchers, the Restaurants, the Doctors, and especially the Public; by means of newspapers, magazines, radio, pamphlets, expensive literature, and even the press; bringing together every possible tantalizing enticement appealing to appetite and desire, and then topping off all with the delectably seasoned gravy of **better health,** which according to them is immeasurably increased by a liberal use of any kind of organic animal remains and harmed by a neglect in this direction; and then finally clinching their gigantic program with the persuasive recommendations of the highly reputed body of scientists on the Council of Foods and Nutrition of the American Medical Association—all marks one of the greatest up-to-the-minute physicians, has **complete** proteins, is **high** in minerals, a **good** source of vitamins, that pork has a huge quantity of Vitamin B-1, or thiamine, that white collar men and the girl who works **need as much** meat as heavy day laborers, that it should be eaten by patients with **Bright Disease, High Blood Pressure, Tuberculosis,** and **Arthritis, that babies of five months may have meat soups and eat bacon before they arrive at the age of one**—and a host of others; all presented with every eye, nose, taste, and sensual appeal possible, through appetizing color-pictures, taste-stimulating prose, and even delectable Guest-poetry; statements that are, in themselves, at times, indeed, truly **startling especially** in the light of the recommendation-seal appearing in connection with all advertising matter that "—all statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association!"

Unmentioned Facts!

On the other hand, we find, meat, while easily digestible, **rots** just as easily. It has **no** "Savory Value" in its originally slaughtered or decomposed condition, rather must be **given** such appeal through spices for appetite's sake or from necessity. It is stimulating, yes, but to wear out our tissues and organs faster. It may have complete proteins, but they are of decadent

Inositol 'Essential' for Cells

Special to Medical News

BETHESDA, Md.—A provocative metabolic concept, and new data on the importance of inositol—least understood of the vitamins—are among results of intensive tissue culture studies at the National Institute of Allergy and Infectious Diseases.

By charting the minimum nutritional requirements of cell strains, Dr. Harry Eagle believes techniques for growing tissue cultures can be simplified, making it possible to study in a relatively simple system the metabolic activities of normal and malignant cells.

While "blueprinting" the nutritional requirements of 20 types of normal and malignant cells, including 18 human strains, Dr. Eagle and his research associates have shown that the number of amino acids required by individual cells appreciably exceeds that required by the organism as a whole. Or what may appear to be a paradox, that the whole requires less than its individual parts.

Among the 27 substances thus far determined essential for survival and growth of such cells as normal human liver, bone marrow and conjuctiva, and a variety of malignant cells, are 13 amino acids and 8 vitamins—not yet including ascorbic acid. Surprisingly, however, inositol is one of the required ones.

Vitamin or Metabolite?

"Attempts to produce symptoms of inositol deficiency in animals have thus far yielded inconsistent results. Moreover, in man there has been no evidence of an inositol requirement," Dr. Eagle says. The demonstration of the importance of this substance is complicated by the possibility that it is synthesized by the intestinal flora; that it may result from partial biosynthesis; or that its effects may depend on the presence or absence of other B vitamins.

Whether inositol is utilized as a metabolite—for example for incorporation into phospholipids—or whether it functions strictly as a vitamin, remains to be seen, according to Dr. Eagle.

Medical News June 4, 1956 Vol 2 #12

WHEN INOSITOL IS FULLY OXIDIZED
IT FORMS THE CHEMICAL
"TRIQUINOYL"
ONE OF DR. KOCH'S MEDICATIONS.

QUESTION

DOES THE HEALTHY BODY
PRODUCE ITS OWN TRIQUINOYL?

IS THIS PARTY OF THE BODY'S
CHEMISTRY OF NATURAL IMMUNITY?

A Centre for the After-Treatment of Poliomyelitis *(Infantile Paralysis)*

GEORGIA WARM SPRINGS FOUNDATION, INC.

WARM SPRINGS, GEORGIA

March 16th, 1936

Dr. W. F. Koch,
137 Sea Spray Avenue,
Palm Beach, Florida.

Dear Doctor Koch:

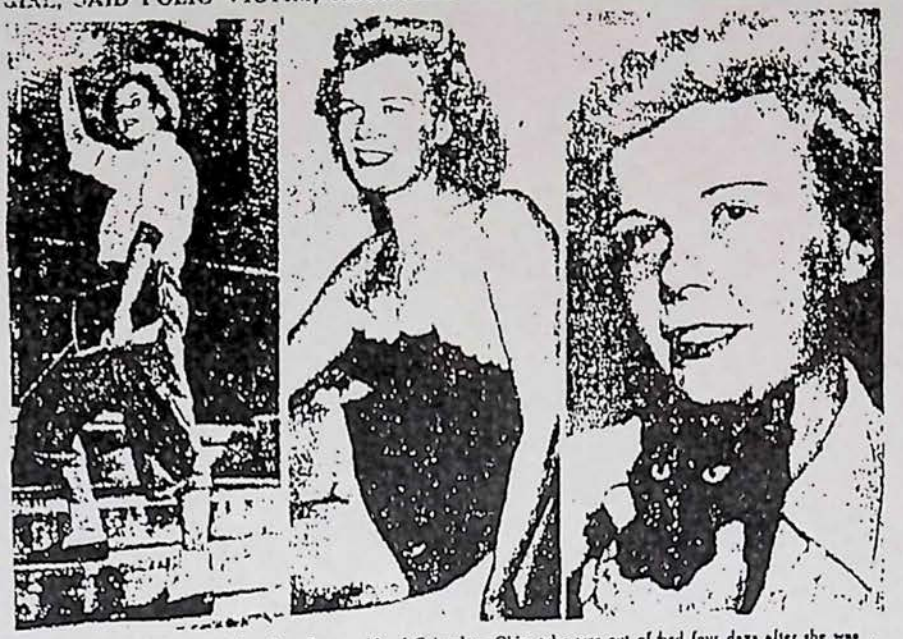
Let me thank you for sending me copy of your reprint "Natural Immunity." I had heard of your investigations from other sources, especially the late Mr. Hardcastle Pennock. Work of this kind interests me very much, though, of course, it is, strictly speaking, out of my bailiwick entirely. I like to keep in touch with new things, and as you have further publications I hope you will be so kind as to let me have such references.

With kind regards, I am

Sincerely yours,

MH:RR

GIRL, SAID POLIO VICTIM, RECOVERS AFTER BLACK-LISTED DRUG USED



EYES OF THE U.S. are on Mary Lou Barnes, 19, of Columbus, Ohio, who was out of bed four days after she was stricken with what her doctor said was poliomyelitis. She is seen in three poses. Doctors used drug called glyoxylide, X which said her recovery was "miraculously swift." But drug used in treatment is black-listed by American Medical association

CO-ED'S SWIFT RECOVERY MYSTERY EVEN TO DOCTOR

By HAROLD GREER
Star Staff Correspondent

Columbus, O., Aug. 22.—Golden-haired Mary Lou Barnes, a 19-year-old Ohio State university student here, has become the bewildered recipient of a nation's scrutiny. Four days after she was stricken by what her doctor said was poliomyelitis, she was out of bed; 10 days later she was back at her classes.

The physician, who used a drug called glyoxylide in his treatment and who said the girl's recovery was "miraculously swift" after he made one injection, has left on vacation, a worried and confused man. The drug, he discovered later, is blacklisted by the American Medical association and was developed by a doctor who has fought the association in court and out for many years.

The manufacturers of the drug, the Christian Medical Research League of Detroit, have declared emphatically they have never made any claims for glyoxylide, they have not advertised it, and that the league is a non-profit organization composed of ministers and laymen, numbering many doctors.

Have Antarctic Cases

The doctor said he had the drug on hand because the Detroit organization told him it had on file "a few authenticated cases where glyoxylide had been used successfully." He contacted the league originally because he had lost two herds of cattle on his suburban farm from Bang's disease—the same disease which is called undulant fever in humans—and had heard the drug was successful in fighting it. It saved a third herd.

Glyoxylide is described as an oxidation catalyst—an agent which increases the oxidation process of the body, one of the prime processes of life. It was developed by Dr. William F. Koch, who has not been connected with its manufacture for more than a year.

These are the principals on whom the curtain went up a few days ago, when a newspaper here made front page news of Miss Barnes' recovery. Its story was carried for the first edition only. A wave of protest from the medical profession —to the effect that the drug does not have the approval of the A.M.A. that it was not a cure for polio, and would therefore raise the hopes of victims of the dread disease and their relatives without justification —induced the editors to kill the story in later editions.

Carried on Wire Services

But it was too late to stop its spread across the country via the press wire services. Miss Barnes and the doctor, despite non-disclosure of his name, have been flooded with inquiries from a polio-conscious nation which has not yet forgotten the controversy which waged over Sister Elizabeth Kenny's method for alleviating the effects of the crippling paralysis which always accompanies polio in some degree.

For Mary Lou Barnes, as she goes back to her classes without any discernible ill effect, glyoxylide is simply a name for something she believes saved her from being a cripple and, perhaps, saved her life. She was dismayed to learn the drug is unknown to the medical profession's rank and file and is frowned upon by its leaders.

She answers: "It worked for me." Mrs. Laura Barnes, her mother, a business woman who owns her own fashion shop agrees. She said: "It was a miracle."

For her doctor, a successful 45-year-old general practitioner, who has been the family physician for many years, the use of glyoxylide may mean banishment to medical Siberia. Although his identity is generally known among his associates, the shine he fears most is publication of his name. He wants to avoid any suggestion he is advocating the drug as a "cure-all" for polio.

Delayed Reporting

He admitted he delayed reporting he had a patient with a communicable disease to the city health authorities until it was necessary to wait over the week-end until the following Monday. He did so, he said, in order to try glyoxylide, and has since squared himself with the board of health.

He described his attitude toward the apparent success of the drug as similar to that of a man turning on a light switch for the first time. "If the light goes on, all I can say is simply that I turned the switch and the light went on," he said. "If I can turn the switch dozens of times and every time the light goes on, then I am safe in saying that when one turns the switch the light may be expected to go on."

So he is a long way from believing glyoxylide is a cure for polio, he emphasized. But he does believe it should be given further trial. For this reason, when news of Miss Barnes' recovery leaked out, he asked newspapers to withhold the story for 24 hours while he endeavored to get permission from City Isolation hospital authorities to try the drug on more polio cases. Permission was denied, he said. It was then he learned the drug simply did not have the stated approval of the A.M.A. but was actually blacklisted.

Wife Sick With Anxiety

"I don't want to be a martyr," he said. "My wife, who is a nurse and familiar with the way the powers-that-be operate, is almost sick with anxiety. She thinks I stand a good chance of having my reputation ruined and our means of livelihood destroyed."

At the same time, he added, he was so impressed by the results of the drug in this one case that he would not hesitate to try it again should one of his own children be stricken by polio. He has one son and two daughters.

"I saw something happen which I believe to be cause and effect," he explained. "Mary Lou Barnes and her mother are good friends of mine. I have watched her grow up and have seen her through all the childhood ailments.

"To my knowledge, the symptoms she had could have indicated nothing else but polio. It began with a headache and a sore throat and coryza. Her right leg gave way under her. She described it as a "queer feeling" in her leg and said there was a tingling in her right hand.

Leg Was Paralyzed

"I saw her first in the morning, by evening the leg was completely paralyzed; she couldn't move a toe. There was considerable pain. She still had a weakness in the wrist, but it was not developing. I then administered two c.c.s of glyoxylide intra-muscularly. Later that evening, the paralysis of the leg was complete.

"But in the morning I found I could move the leg myself, although she had no voluntary control. Some of the stiffness had gone. She complained of a severe headache.

"In the afternoon she had a chill with a flare-up of fever. This was the result of the headache building up. The manufacturers of the drug told me both the headache and the chill could be expected.

"A short time later, I telephoned Mrs. Barnes. She said Mary Lou's leg was beginning to move and sensation was returning. I got over as soon as I could and found it to be true. She began to improve very rapidly after that and was able to go down to dinner the next day." That was a week ago yesterday.

TORONTO DAILY STAR!

Mon., Aug. 22, 1949

LAW OFFICES
WARREN E. MILLER
SUITE 1012 BARR BUILDING
910 SEVENTEENTH STREET N.W.
WASHINGTON 6, D. C.

TELEPHONE
NATIONAL 0995
IN REPLY PLEASE REFER TO

June 10, 1947

STATEMENT OF WARREN E. MILLER

This is to certify that while the undersigned was National Commander of the Army and Navy Union, U. S. A., during the winter of 1943-1944, he met and talked with Dr. William F. Koch, who explained his revolutionary treatments.

Among the deseases which Dr. Koch explained his preparation would cure was the desease of Malaria, which at that time was causing great concern among our troops in the South Pacific. The undersigned had previously been informed of Dr. K$_o$ch's work. As a result of conversation with Dr. Koch, the possibilities of his treatment if used by the government in treating Malaria among members and former members of the armed forces were apparent to the undersigned; and at my urgent solicitation, Dr. K$_o$ch agreed, on the spur of the moment, to accompany me to the Office of the Medical Director of the United States Veterans Administration, Dr. Griffith.

I introduced Dr. Koch to Dr. Griffith, explained briefly the possibilities of the government's using Dr. K$_o$ch's treatment, and Dr. Koch volunteered to make it available to government physicians. Dr. Griffith phoned one of the members of his staff, and Dr. Koch and I were ushered to their desks, where Dr. Koch explained his formula or method in technical terms to the physician on Dr. Griffith's staff and another who was sitting at the next desk. When they realized the claims Dr. K$_o$ch had made for his method of treatment, they asked if he had taken the matter up with Dr. Fishbein of the American Medical Association and suggested that he do so immediately. Dr. Koch then discontinued his enthusiastic explanation of his method of treatment and seemed chagrined that these high-ranking medical officers of the United States Veterans Administration should ask him to take the matter up with Dr. Fishbein. They went along to state that the Veterans Administration could not use on disabled war veterans a method of treatment that was in an experimental stage and had not been approved by the American Medical A$_s$sociation.

Dr. Koch's presentation of his method of treatment seemed to be beyond the comprehension of these physicians. He went into the chemistry of the matter, and apparently they could not follow him in his explanation.

Warren E. Miller
WARREN E. MILLER

The evening session included a dinner, with an address by Dr. Morris Fishbein entitled "Status of Medicine and Pharmacy In the War and After," and a formal discussion which was opened by Col. W. L. Fox of the Army Medical Corps, Fort Knox, Kentucky, and Dr. Walter A. Bastedo and Dr. Cary Eggleston of New York.

This joint meeting of the American Medical Association and the American Pharmaceutical Association is historic in that it is the first of its kind in the history of these two organizations. Agreement was general that the appropriate representatives of each association carry back a report of the meeting to their respective board of trustees, with the request that consideration be given to arranging another similar session. While the current meeting resolved itself into one of good will, a further meeting might serve as a basis for more concrete steps to improve medical-pharmaceutical relations and to orient certain common problems.

Current Comment

HAZARDOUS OCCUPATIONS FOR YOUNG WORKERS

The Fair Labor Standards Act of 1938 established a 16 year minimum age for employment in plants manufacturing goods for shipment in interstate commerce and also provided for the establishment of an 18 year minimum age in any occupation found and by order declared to be particularly hazardous for the employment of minors by the chief of the Children's Bureau of the U. S. Department of Labor. Reports and orders already issued by this bureau have dealt with the manufacture of explosives, driving of motor vehicles or serving as helper, coal mining, logging and sawmilling and the operation of wood working machines. Recently a sixth in this series of reports on occupations hazardous to young workers has been issued on radioactive substances, under the guidance of a distinguished list of medical and technical advisers. The recent review is concerned mainly with exposures and working conditions in plants preparing or applying self-luminous dial paint which is crystalline zinc sulfide activated by radium or in plants manufacturing incandescent mantles which are made from rayon mesh fabric dipped in "lighting fluid," a 25 to 50 per cent solution of 99 parts of thorium and 1 part of cerium nitrates. Surveys have demonstrated that unsafe practices persist, although the tragic custom of lip pointing brushes used in dial painting is no longer observed. Investigation in a plant regarded as representative showed concentrations of radioactive gas up to four times the most liberal recommended maximum permissible limit. Every one with substantial knowledge of these industrial processes, including the employers, concurs in the opinion that minors under 18 years of age should not be engaged in work of this description. They are not so likely to possess the qualities of carefulness, neatness, forethought and attention to personal hygiene essential to the observation of safe practice. Hearings will no doubt corroborate the findings in this report; an order will then be issued which will have the effect of eliminating exposure of this kind at least as far as minors under 18 years of age are concerned.

KOCH'S CANCER TREATMENT MEETS THE LAW

THE JOURNAL has repeatedly [1] called attention to the promotion of products by the Koch Laboratories. Again and again it has urged federal agencies to display an interest in the matter. The Detroit *Free Press* for Sunday, April 5, notes that "Federal agents took action Saturday against Koch Laboratories, Inc., 8181 E. Jefferson, by arresting Louis Koch, the concern's secretary treasurer, in Detroit and Dr. William F. Koch, president, in Delray Beach, Fla." It notes that the Kochs "will face charges of violating the Federal Food, Drug and Cosmetic Law on 11 specific charges." The *Free Press* reports that Dr. Koch was arrested on a removal warrant and was released on a $5,000 bond pending a hearing in Detroit on April 15. Assistant United States Attorney John C. Ray is quoted as saying with regard to the concern's synthetic antitoxin "A thimbleful of this liquid sells for $25 to practitioners and they get as much as $300 from patients. Chemical analysis shows that the dilution is so infinitesimal that it would be like dumping a cocktail in the Detroit River at the foot of Woodward and expecting to get a kick out of the water going over Niagara Falls." The *Free Press* reports that "Doctors said it was something like a molecule, so tiny that it can't be seen, to every 300,000,000 gallons of water." The United States Attorney, it is reported, said that the Koch brothers were arrested after a prolonged investigation. The *Free Press* called attention to the fact that "Dr. Koch was named defendant in a malpractice suit in Detroit in 1934 and a jury returned a $25,000 verdict against him while he was head of the Koch Cancer Foundation. Later the verdict was held excessive and in a second trial a jury reduced the amount to $5,500. The suit was started by Alfred A. Fortner, who told the jury Dr. Koch diagnosed an infected knee as a cancer." [2] The procedure of diagnosing as cancer a condition which is not malignant, and then expediting an effective treatment, is old in cancer quackery. For a number of years Koch has issued promotional material which contained reports of an unscientific character with regard to cases in which his preparations had been employed. More recently he circularized physicians with regard to what he refers to as "1:4 Benzoquinone," claiming, without the slightest bit of scientific reference, as noted in the most recent reference below,[1] that it is the effective ingredient in the sulfonamide preparations. Besides Koch there still remain a few other charlatans in the field of cancer who merit federal attention. Perhaps the Koch incident will seem to them a "handwriting on the wall."

1. J. A. M. A. **76**: 466 (Feb. 12), 537 (Feb. 19) 1921; **82**: 2051 (June 21) 1924; **86**: 1469 (May 8) 1926; **88**: 928 (March 19) 1927; **89**: 296 (July 23) 1927; **106**: 2189 (June 20) 1936; **107**: 519 (Aug. 15), 1405 (Oct. 24) 1936; **112**: 1460 (April 15) 1939; **116**: 2525 (May 31) 1941; **117**: 216 (July 19) 1941; **118**: 734 (Feb. 28) 1942.
2. J. A. M. A. **103**: 116 (July 14) 1934; **106**: 929 (March 14) 1936.

AN APOLOGHY OVER DUE

The American Medical Association still owes an apology to William F. Koch, Ph.D., M.D., and to all of the medical doctors who used the Koch Treatments to benefit their patients contrary to the fraud and the fraudulent representations of by Dr. George H. Simmons and Dr. Morris Fishbein, the past editors of the Journal of The American Medical Association, during the 20th Century. Will it take the American Medical Association and its local societies another 100 years to make amends for the wrongful and malicious acts of these two medical quacks?

ACROSS THE NATION

Apology issued for excluding blacks

The American Medical Association issued a formal apology Thursday for more than a century of policies that excluded black people.

"The AMA is committed to improving its relationship with minority physicians and to increasing the ranks of minority physicians so that the workforce accurately represents the diversity of America's patients," Dr. Ronald Davis, past president, said in a statement.

Dr. Nelson Adams, president of the National Medical Association, said the AMA's policies kept many black doctors from caring for patients. In many places, doctors couldn't work in hospitals unless they were members of local medical societies.

FROM OUR READERS

Cure health care disparities

Columnist Rochelle Riley's anger is palpable, and we understand its basis ("AMA missed chance to save black people decades of suffering," July 12). There is no excuse for a past history of discrimination, but we hope that our public apology helps heal the wounds of the past as we work to improve the future of health care.

Words aren't enough, though, which is why the AMA of today is committed to eliminating disparities in health care, increasing the number of minority physicians, and letting them know they are welcome and wanted at the AMA. In partnership with the National Medical Association and the National Hispanic Medical Association, we founded the Commission to End Health Care Disparities, which is working to eliminate all prejudice in health care. We're encouraging minority students to consider careers in medicine through the "Doctors Back to School" program, which arranges for physicians to visit schools, so that the physician workforce will better reflect the diversity of our nation.

The AMA also created the Minority Affairs Consortium to address the specific needs of minority physicians, and our philanthropic arm provides scholarships to minority medical students. Our goal is not only to right a wrong, but to ensure that all Americans have access to high quality health care.

Ronald M. Davis, MD
Immediate past president
American Medical Association
Chicago

63 Yale Law Journal Vol 63, May 1954 #7

Yale Law Journal Calls AMA Retard to Medicine

Secretary of Association Says, However, Findings Are Erroneous, Facts Missing

Special to the Post-Gazette

NEW HAVEN, Conn., Aug. 1—The American Medical Association exercises excess authority over medical practice but has failed to use this power as an "instrument of progress."

That conclusion was reached in a two-year study by student editors of the Yale Law Journal. Their 84 page report in the current issue, out today contains criticism and praise of the AMA, but mostly criticism.

Dr. George F. Lull, secretary and general manager of the AMA, shown an advance copy of the report, said it was received too late "for correction of basic and glaring errors of fact and omissions of vital facts." He said many sections of the text are based on false and erroneous information.

Wide Powers Claimed

"No other voluntary association commands such power within its area of interests as does the AMA," the Yale analysis determined. "It holds a position of authority over the individual doctors, wields a determining voice in medical education, controls conditions of practice and occupies a unique position of influence in shaping Government health policies."

The authors charge the AMA has blocked almost all plans for providing low-cost health and medical care unless subjected to AMA control. The AMA, the Law Journal declares, is opposing President Eisenhower's proposal for Federal Government reinsurance of voluntary health plans on the basis it might lead to socialized medicine.

Dr. Lull replied the AMA opposed the Federal reinsurance plan as unnecessary and an intrusion of the Government into a successful area of private enterprise.

The Yale Law Journal said the AMA does not tolerate conflicting opinions within its membership and despite its national income of $9,000,000 a year is not truly representative of the nation's doctors.

Dr. Lull replied the AMA is so representative that other organizations, including the American Bar Association, have modeled their organizational structure after the AMA.

Declare Doctors Ostracized

The Yale editors claim doctors who defy AMA authority may be subjected to professional ostracism, which could cut them off from patient referrals and consultations, deny them advancement in hospitals or bar them from professional appointments.

Dr. Lull branded this as false, said the AMA has almost no authority over individual physicians and added: "It is the county medical society that disciplines members guilty of unethical practices."

The article suggested that, to protect the individual doctor from unreasonable exercise of organized medicine's authority, the importance of AMA membership should be de-emphasized. The writers suggested hospital privileges should be made available to non-members. It also suggested the AMA be divested of control over the nation's supply of doctors.

JUDICIAL COUNCIL

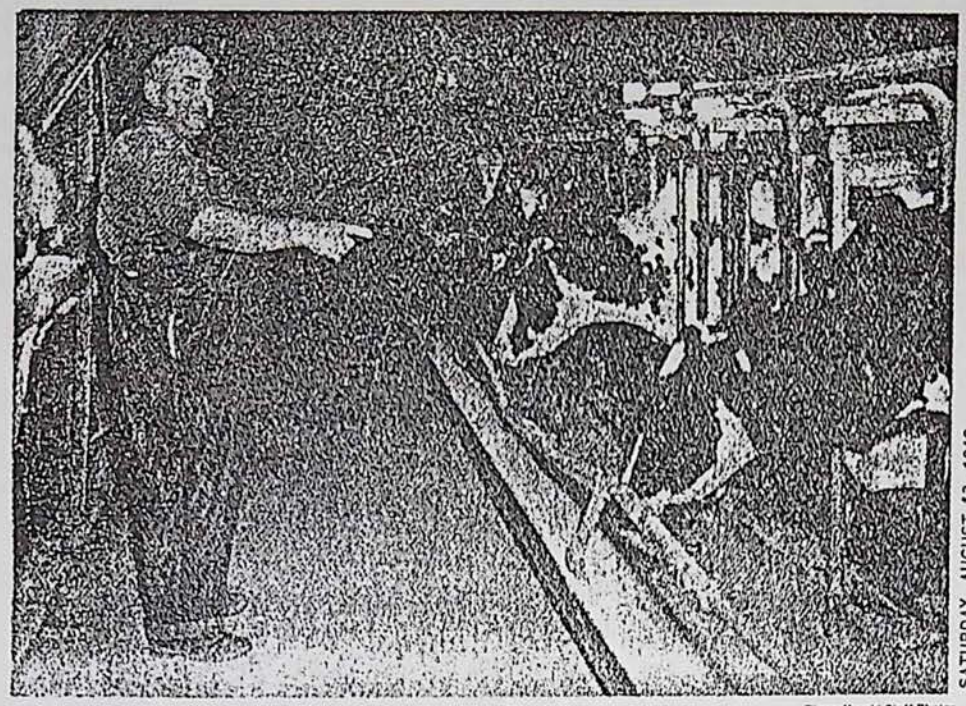
This is one of a series of brief statements explaining the work of the various departments of the American Medical Association.—Ed.

The judicial power of the American Medical Association is vested in the Judicial Council, whose decision, according to the Association's constitution and bylaws, is final. As early as 1871, it was recognized that a special council was needed to settle all questions of ethics and to interpret the laws of the Association. The Judicial Council consists of five members elected by the House of Delegates on nomination of the President for terms of five years. The individual physician's concern with medical ethics is practical as well as academic. It is fundamental to the high professional standards that characterize medical practice today. The Judicial Council serves the medical profession as the "supreme court" of the American Medical Association. It approves physicians for membership in the A. M. A. and has jurisdiction in all questions involving membership, its obligations, rights, and privileges.

The council has original jurisdiction in all controversies arising under the constitution and bylaws of the Association and the Principles of Medical Ethics to which the American Medical Association is a party. Controversies between two or more constituent associations or their members or between a constituent association and a component society or societies of another constituent association or associations or their members are decided by the Judicial Council. The council has appellate jurisdiction in questions of law and procedure but not of fact in all cases that arise between a constituent association and one or more of its component societies; between component societies of the same constituent association, between a member or members and the component society to which said member or members belong, or between members of different component societies of the same constituent association.

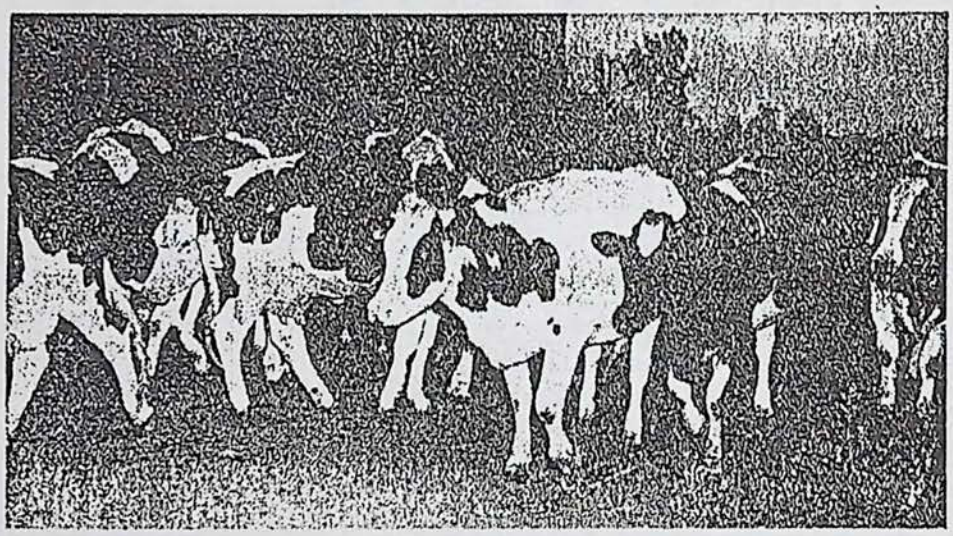
The council may request the President to appoint investigating juries to which it may refer complaints or evidence of unethical conduct that in its judgment are of greater than local concern. If on investigation probable cause for action is shown, the jury submits formal charges to the President, who then appoints a prosecutor to prosecute such charges against the accused before the Judicial Council in the name and on behalf of the A. M. A. The council may acquit, admonish, suspend, or expel the accused.

Capac Dairymen Claim New Drug Cures Mastitis



—Times Herald Staff Photos

Alvin Kersten, Capac, points to one of several cows in his Holstein herd which recovered from mastitis after treatment with glyoxylide. He praises the new drug highly.



Part of 23-cow Holstein herd of Max Grayhiel, Capac, which showed remarkable recovery from heavy infection with mastitis which had extended over a period of several years. Mr. Grayhiel, in background, had tried all known treatments without lasting results until his cows were injected with glyoxylide. Within a few days to a week, all affected cows had recovered. There have been no recurrence in 16 months.

SATURDAY, AUGUST 13, 1949

THE PORT HURON TIMES HERALD

One Injection Brings Rapid Recovery Also For Sterility, Ketosis

Capac, Aug. 13—Amazingly rapid and apparently permanent cures of mastitis and other diseases of dairy cattle with a new drug called "glyoxylide" over the last 18 months are claimed by several well-known dairymen in this area.

Lack of flareups of mastitis many months after first treatment in nearly all cases has made these men ardent supporters of the new drug. Almost to a man they say it is "much better" than any other treatment now known and tried by them.

A recorded interview with Arnold Wyss, Capac Jersey breeder, on the treatment will be broadcast at 12:15 p.m. Tuesday over WTTH and WTTH-FM. One with Alvin Kersten will be broadcast Wednesday, and one with Max Grayhiel Thursday at the same times.

More than a score of dairy farmers in this area and around nearby Imlay City are enthusiastic in their praise of it, not only for eliminating a great majority of both acute and chronic mastitis cases, but in overcoming vaginitis (sterility—inability to conceive) and ketosis (acetonemia—a serious disturbance of the nervous system of well-fed dairy cows, usually occurring at freshening time.)

In case after case of advanced mastitis—where udders had become lumpy and hard and milk secretion was stringy and very low—nearly complete softening of the udder, disappearance of the chronic inflammation and a considerable increase in milk production was noted by the herd owners within a few days after injection. The milk rapidly became free of garget.

One of the most startling feature of the treatment, developed by Dr. William F. Koch (pronounced coke), M.D., of Detroit, is that in about 85 per cent of the cases only a single 10cc injection of the solution is necessary for excellent results. The glyoxylide is administered hypodermically in the muscles of the lower neck.

Complete recovery in mastitis cases appears to depend on whether the treatment is begun before glandular (milk secreting) tissue is replaced by scar tissue.

Results of a number of cases of ketosis treated with the drug showed a rapid recovery in from 24 to 48 hours. Results in sterility cases, relatively uncommon, showed good responses.

No brucellosis (Bang's Disease) cases have been treated.

Interest in glyoxylide treatments for dairy cattle in this area began at a meeting of farmers and businessmen held April, 1948 in Imlay City. Dr. D. H. Arnott, M. D., London, Ont., presented highly favorable reports of its use in British Columbia under a plan authorized by the provincial Department of Agriculture

Upon request by a committee formed by this group, Dr. Louis T. Dawe, Capac veterinarian agreed to supervise field tests on two herds badly infected with mastitis—23 Holsteins of Max Grayhiel and 35 Jerseys of Richard Koning.

As a result of these tests which included control groups not treated and other treatments given at the request of other dairymen to their own herds, Dr. Dawe says he is "much encouraged," but feels there is a need for more research. He has used the treatment on 350 cows in 15 herds. Dr. William Mackey, Lapeer; and Dr. David J. Ellis, Memphis, have also used the drug to a limited extent. Dr. Ellis says he has observed some favorable results out of 40-50 doses but believes not enough controlled experimental data has been collected to determine the real value of the treatment.

Dr. Mackey says he has found the drug more effective than any other he has used in chronic mastitis cases — with recoveries in about half the cases. He reports less success with acute mastitis and very little success with Ketosis. He has used about 50 doses of the drug.

It is expected that the product will soon be available in commercial quantities through local veterinarians.

FURTHER INFORMATION: The article reproduced has been reprinted in booklet form along with the text of three radio interviews dealing with the use of the Koch Treatment in cattle diseases. The booklet also contains some explanatory notes. For a copy write to: Dr. D. H. Arnott, 226 Queens Avenue, London, Ontario, Canada, and ask for: "Koch's Glyoxylide Saves Pure Bred Dairy Cattle in Michigan" We suggest you enclose 25¢ coin to cover costs. Do not send American stamps. They are useless in Canada.

The use of the Koch Treatment in human ailments is remarkably set forth in the book of the year:

THE BIRTH OF A SCIENCE

Over 120,000 words of startling information, completely illustrated. Sent postpaid for only $1.00 per copy. Order directly from the publisher

THE LUTHERAN RESEARCH SOCIETY
Box 3301, Jefferson Station
Detroit 11, Michigan

NOTE: Up to 5 copies of this leaflet free with stamped addressed envelope. Quantities: 75 for $1.00

The Vancouver News-Herald
Saturday, Sept. 29, 1945 9

Koch Treatment Approved By B.C. Government

The Koch treatment inquiry came through with flying colors at conclusion of the British Columbia department of agriculture's 10-month investigation.

"I am gratified by the findings of the work carried on by the Koch treatment as a remedy for mastitus," Dr. K. C. MacDonald, minister of agriculture for British Columbia, told members of the B.C. veterinary profession who were gathered in the Court House Friday morning.

They met to discuss the final outcome of the investigation sponsored by the B.C. department of agriculture to ascertain benefits of the Koch treatment on cattle suffering from mastitus and sterility.

Present at the meeting were: Dr. J. B. Munro, deputy minister of agriculture for B.C.; Dr. D. H. Arnott, of London, Ont., representing the Koch treatment; Dr. F. W. B. Smith, president B.C. Veterinary association and representative of federal department for health of animals branch; Dr. R. E. Sergent; Dr. W. R. Gunn; Dr. J. E. Bennett; Dr. M. Sparrow; Dr. G. E. R. Barton; Dr. J. G. Jervis; Dr. S. N. Wood, department of animal husbandry, U.B.C.; Arthur Gooder; Lyle Atkinson; Harold Irwin; A. S. Mathews; B. J. O'Rourke.

71 CASES TREATED

During the test, 71 cases of cattle with mastitus were treated. Of this number, 71.9 per cent of the owners expressed satisfaction with the treatment.

Investigation further revealed that of 30 cases treated for sterility, 21 cases responded satisfactorily. The average time sterile before receiving the Koch injection was, the report disclosed, 5.7 months from the previous breeding.

The committee passed a resolution, moved by Dr. F. W. B. Smith and seconded by Dr. that "observations justify the recognition of the working hypothesis of biological oxidation of the Koch treatment meriting its further use in veterinary theraphy".

Dr. Arnott, thanking the committee for their outstanding work, offered co-operation with the department of agriculture to assist in further experimental work.

MACDONALD THANKED

Dr. Arnott said: "It is Dr. Koch's belief that a normal supply of essential carbon compounds often can be renewed by the hypodermic administration of Glyoxylide . . ."

Dr. Munro, thanked Dr. MacDonald for his interest in the investigations and told the meeting that he (Munro) "did take the treatment with favorable results." Reports on the investigation are excellent, he said, explaining that the investigations had been withheld from the press until it was assured that the treatments were satisfactory.

Dr. Gunn, told of the Koch treatment being applied to horses suffering from disease. "The owners are very enthusiastic with the treatment."

Dr. Sergent told the committee that a woman friend had been condemned by a heart specialist two years ago. Through proper application of the Koch treatment she was well today. He recited case histories of dogs that he had treated with amazing results.

The meeting adjourned with recommendation to Dr. MacDonald concerning further work with the Koch treatment.

THE KOCH TREATMENT

Koch's methods, once thought "too good to be true," have now convinced many dairymen of their effectiveness and worth.

By D. H. ARNOTT, M.D.

ON October 4th, 1944, at the invitation of the Minister of Agriculture of British Columbia, there met in Vancouver a group of men who assembled for the purpose of considering the merits of the Koch method of treating and preventing common, seriously-destructive diseases which were ravaging the dairy herds not only in this province, but in every part of the Dominion of Canada and elsewhere.

There were two sharply opposing views: The educational, scientific and administrative authorities were convinced the reports emanating from my own experiences obviously were just too good to be true and therefore unworthy of consideration. The fact that none of these men had seen the treatment used, carried weight with the Minister, when:

1. "There were many dairymen present who made astounding claims for the Koch treatment. In practically all cases the dairymen claimed that their cows responded almost immediately to the single injection of glyoxylide. These cattle owners were emphatic in their request that no action be taken which would prevent their obtaining Koch treatments when required." (Annual Report, Department of Agriculture, B.C., 1944, Page 16.)

One leading breeder stated that he was convinced the use of the Koch treatment had saved him from incurring serious loss due to mastitis which had affected a particularly valuable cow which he owned. He related how this animal developed mastitis during lactation and required a great deal of care. At the next freshening the trouble had recurred in a very commanding degree, and the veterinary surgeon in attendance advised him to have the animal removed from the herd and slaughtered, in order to prevent the infection from spreading to other cows. However, instead he used the Koch treatment which consisted of one dose of the therapeutic reagent which was administered by hypodermic syringe under the skin of the neck. As a result the cow recovered and within a week her milk was once more being sold to the creamery. Also, during this lactation the cow had produced twice as much milk as she had given during the previous lactation.

Other breeders contributed their own satisfactory experiences, and some who were unable to be present communicated with the Minister by letter.

As a result it was moved, seconded and carried unanimously that the Minister take steps to investigate the merits of the treatment.

2. "The Minister stated that it was his desire to form an opinion based upon accurate investigations and he named a committee to undertake this investigation." (Annual Report, Department of Agriculture, B. C., 1944, Page 16.)

The Committee met at once and decided to observe the action of the treatment as applied to the various forms of mastitis, and also in regard to results obtained in the treatment of infertility.

It was agreed that the tests should be undertaken over a wide field in the Lower Fraser Valley and extending to Vancouver Island. Breeders would be asked to offer for the test cows suffering from mastitis or infertility.

Two veterinarians appointed for the work by the Committee, always acting together, examined these animals, classified the nature of the attack, administered the treatments and carried out the observations requisite, and made written records. It had been agreed that no clinical problem of mastitis was to be rejected because of its severity, and that the joint opinion of the owner and the two veterinarians in charge was to be accepted by the Committee as final, that none of the animals treated would have recovered spontaneously. The field work was begun late in November, 1944, and completed in September, 1945.

3. "Milk specimens were taken from each quarter of the udder of the affected animal by the veterinarians at the time each animal was injected. Altogether sixty-one initial samples of milk were taken from infected udders. A bacteriological examination was made and noted. Then forty duplicate samples were taken a week later, examined and compared bacteriologically with the first. A second physical examination was made at this time and compared with the first and any improvement or otherwise was accurately recorded." (Annual Report, Department of Agriculture, B. C., 1944, Page 16.)
4. "The remarkable reduction in bacteria is of interest, particularly in view of the fact that bacterial reduction was not claimed for the treatment which was simply that dairy cows could be brought back by means of a glyoxylide injection to the condition that would permit them to produce market milk." (Annual Report, Department of Agriculture, B. C., 1944, Page 16.)

This observation was made just one week after the Koch treatment had been administered.

At the meeting which took place on May 12th, 1945, the laboratories reported there was a strong trend frequently observed for streptococcus hemolyticus not only to lessen in numbers, but even to disappear entirely from the milk of treated animals. The streptococcus hemolyticus is a germ greatly feared by medical men when it affects unpasteurized milk.

5. "Milk samples were taken on the first visit and treatment administered, a second sample taken in one week, and further samples taken at monthly intervals. These samples were drawn as aseptically as possible, kept in a special case containing ice and delivered to the laboratories within twenty-four hours. The findings of both laboratories were found to coincide very closely." (Annual Report, Department of Agriculture, B. C., 1945, Page 22.)

The Committee Report was strongly favourable to the use of the Koch treatment for mastitis and infertility. The 1945 Annual Report of the Department records some interesting observations:

(a) "A consistent result was a definite softening of the udder after treatment." (Annual Report, Department of Agriculture, B. C., 1945, Page 22.)

(b) "The disappearance of fibrous tissue was noticed in a considerable number of cases." (Annual Report, Department of Agriculture, B. C., 1945, Page 22.)

(c) "One quarter that was affected for a long period and badly atrophied (shrunken) made a complete recovery." (Annual Report of the Depart-

ment of Agriculture, B. C., 1945, Page 23.)

(d) "A total of 207 mastitis affected quarters of which only seven were lost." (Annual Report of the Department of Agriculture, B. C., 1945, Page 23.)

(e) "It appears this treatment had a beneficial effect on digestion, also on the skin and coat." (Annual Report, Department of Agriculture, B.C., 1945, Page 22.)

Infertility

Of the twenty-nine cows treated for infertility, twenty-one had fertility restored, being mated successfully to the same sire used during the infertile period:

6. "With very few exceptions, one injection of the Koch treatment was all that was used." (Annual Report, Department of Agriculture, B. C., 1945, Page 24.)

7. "It must be remembered that any and all abnormal conditions were left precisely as found. No attempt was made to correct these by manipulation or other treatment." (Annual Report, Department of Agriculture, B. C., 1945, Page 24.)

8. "Of the twenty-one that responded, two had cysts only of the ovaries, three had cysts and vaginitis, four had retained corpus luteum and vaginitis, three had retained corpus luteum only, eight had vaginitis only, and one had fibrous ovaries." (Annual Report, Department of Agriculture, B. C., 1945, Page 24.)

9. "Dr. Bennett pointed out that five of the cows included in this sterility report that had responded satisfactorily to the glyoxylide treatment were cows suffering from mastitis as well as sterility." (Annual Report, Department of Agriculture, B. C., 1945, Page 24.)

10. One cow was observed to be continuously in heat and four had this function suppressed, but the Koch treatment corrected both these irregularities and restored fertility. (Annual Report, Department of Agriculture, B. C., 1945, Page 23.)

11. "Dr. D. H. Arnott was then called on for some remarks and he expressed himself as being grateful to the minister of agriculture, the chairman, and gentlemen present."



DR. ARNOTT

He explained briefly the working hypothesis of the Koch treatment therapeutic philosophy thus:

"Life is promoted, sustained, and reproduced by the use of food. For good health the supply must be adequate in amount and in variety. For the best normal results it is necessary that the food be well digested, and also that the potential energy contained therein be transferred into living energy throughout the body at a vigorous rate, burning the food properly in each individual cell where it unites with oxygen for this purpose. This living chemical reaction is spoken of by medical science as 'internal respiration,' and it must take place continuously because Nature has not provided any reservoir wherein oxygen may be stored, to be drawn upon at will or in time of need. It is upon the degree approaching perfection with which food is thus turned into living energy consistently that conditions requisite for good health are best maintained, that diseases are best resisted, that life is best reproduced.

"It is Dr. Koch's belief that a normal supply of these essential carbon compounds often can be renewed by the hypodermic administration of the reagents which he discovered." (Annual Report, Department of Agriculture, B. C., 1945, Page 24.)

Before the meeting closed, it was moved by Dr. F. W. B. Smith, seconded by Dr. S. N. Wood, and carried unanimously:

12. "That the observations justify a recognition of the working hypothesis of biological oxidation of the Koch treatment, meriting its further use in veterinary therapy." (Annual Report, Department of Agriculture, B. C., 1945, Page 25.)

Encouraged by the authentic information obtained from the investigation carried out by the Department of Agriculture, some owners of important herds have employed the treatment so freely and consistently that mastitis abortion and infertility no longer cause serious losses. They look forward to the day when the proven strong resistance to these and other destructive diseases acquired through the correct use of the Koch treatment will be passed on to the offspring, when the surplus will be sought as foundation stock at premium prices. Because only in British Columbia has there been the enterprise of the breeders and the co-operation of the Government requisite for the development of desirable bloodlines effectively cared for and mated to produce a fine strain of animals known to be highly resistant to diseases which elsewhere constantly threaten, and often ravage the high priced herds.

Looking back, those who were at the meeting of October 4th, 1944, will always remember the decisions of the late Hon. K. C. MacDonald when he said:

"I am the Minister, and gentlemen, I am determined to get at the truth."

It is Dr. Koch's belief that certain carbon compounds perform an important intermediary step in the living chemistry by which food is turned into life itself; and should the supply of these compounds fall below that requisite for the best conditions, life may continue, but vigorous good health may be lost.

The young intellectual, Gregory Soltenx, slept especially late this morning. His father lectured him: "You, with your Communistic ideas. Why don't you go to work and make some money?"

Gregory sprawled out even further on the bed and said: "Papa, that's exactly why I ain't going to work. It will come a Communistic state—and a Utopia, and we won't need money."

"Maybe," answered the parent, "but isn't it better you should go to work now and make about fifty thousand dollars? When it comes the Revolution, you give it to them, to help it along."

"Yes," answered the young idealist, "suppose it don't come the Revolution —then I'm stuck with the fifty thousand dollars."

Award Physician $7,000 Damages In Libel Action

Saskatoon, June 24 (CP).—Chief Justice J. T. Brown of the Court of Queen's Bench today awarded Dr. David H. Arnott of London, Ont., $7,000 and costs in his libel suit against the College of Physicians and Surgeons of Saskatchewan.

Dr. Arnott, Canadian manufacturer of the Koch treatment for cancer, based his suit on an article in the college quarterly about the treatment, which involved injection of a chemical compound.

The judgment confirmed the findings of a jury which decided here May 14 that Dr. Arnott had been the victim of libel without malice. Dr. Arnott had asked for unstated demages.

In his 18-page judgment, Chief Justice Brown held that the statements made in the college quarterly in December, 1951, were "of a most reckless character made against a member of a great profession in good standing in the Province of Ontario."

"Surely it cannot be contended that there was honesty and integrity in such action, even though it lacks maliciousness," he suggested.

He noted that the quarterly did not mention Dr. Arnott specifically, but only the Koch treatment, terming it "quackery." The jury had decided that mention of the treatment was a reference to Dr. Arnott and Chief Justice Brown agreed that Dr. Arnott's name was synonymous with the treatment in Canada.

"One wonders why there should be such antagonisms as the case at the bar reveals between plaintiff and defendants," he said.

He believed that all were sincerely interested in fighting the same disease.

"This case was no trial on the efficiency of the Koch treatment and was not meant as such," he said. "But on the evidence submitted the Koch treatment is not one to be thrown in the waste basket and the men who administer it to be lightly characterized as irregular practitioners."

There was no attempt to prove or justify the facts alleged in the quarterly's article.

"In fact," Chief Justice Brown observed, "the learned counsel for the defendant stated openly and properly on behalf of his client that it (the college) did not really know what the Koch treatment was."

The Third Page

SATURDAY, JULY 11, 1953

Statements Against Koch Treatment Termed Reckless

In its evening edition of February 11 and morning edition of February 12, The Star-Phoenix carried a news story based on a report of the Saskatchewan Cancer Commission and distributed as a news release by the provincial government bureau of publications.

The report commented unfavorably on the Koch treatment as used to combat cancer. Subsequently Dr. David H. Arnott of London, Ontario, sole source of the Koch treatment of Canada, brought suit for libel against the College of Physicians and Surgeons of Saskatchewan, based on publication of similar statements in their journal, "Medical Quarterly."

On May 14 a Queen's Bench Court jury brought in a verdict against the College of Physicians and Surgeons and awarded Dr. Arnott damages of $7,000 and costs.

In his written judgment at the end of June, Chief Justice Brown observed: "It can, however, I think, be said, in the light of the evidence offered, that the Koch treatment is not one to be thrown into the waste paper basket and medical men who administer it are not lightly to be characterized as irregular practitioners." The chief justice also found: "The statements made in the publication were of a most reckless character made against a member of a great profession in good standing in the province of Ontario. Surely it cannot be contended that there was honesty and integrity in such action, even though it lacked maliciousness."

These and other parts of the Queen's Bench Court judgment were fully reported by The Star-Phoenix when the judgment was handed down on June 23.

It is maintained on behalf of Dr. Arnott that the portions of the judgment quoted in the foregoing establish that "no reasonable steps were taken to verify the charges" and that where the news article "stated the contrary of the above findings it was in error."

The Star-Phoenix published the original news story, based on a cancer commission report distributed by the government's bureau of publications in good faith, believing it to be reliable information of public interest emanating from an official source. There was no intention to reflect in any way unfavorably on Dr. Arnott or his reputation as a practising physician.

Allergy - Its Clinical Significance and Treatment

Allergy may be defined as an hyperactivity of a tissue structure outside of physiological control. According to Dr. Wm. F. Koch it constitutes the basic pathogenic factor of many diseased states, and is in turn an evidence of an underlying toxaemia. Allergic responses are the result of toxic action and may be considered attempts at detoxication or protection.

Allergy or hypersensitivity appears to be the direct sequel of a state of lowered resistance, which latter state actually precedes the allergic response. This is well illustrated in the almost invariable history of general debility preceding the development of Hay Fever. A careful examination of the patient's history will in most cases reveal the fact that they have not felt well for some time prior to the incipiency of the Hay Fever. Possibly an attack of influenza or some other delibitating disease may have lowered the resistance and thus paved the way for the allergy to develop.

Heredity plays an important role in the allergic syndrome. This is especially seen in individuals afflicted with Cancer, in whom frequently years of allergic manifestations may precede the actual appearance of the growth, e.g. attacks of vertigo, the severe headaches of migraine, the development of a psoriasis, colitis, and occasionally an anxiety neurosis or schizophrenia. Any of these allergic states may be followed by Cancer, and tend to be greatly ameliorated or to disappear entirely with the development of the malignancy. Hereditary allergic conditions are a common occurrence in medical practice, and constitute some of our most difficult problems, owing to the fact that they are of a deep-seated allergic origin.

As regards the explanation of the production of Allergy I will quote freely from the writing of Dr. Koch as follows :—

"Allergy has generally been considered an hypersensitivity to some substance, yet one may look upon the process as an hyperactivity of a tissue structure outside of physiological control.

The physical chemical basis of the mechanism of its production depends upon two different properties of unsaturated bodies, viz.

(1) the transfer of energy through fluorescence from exothermic reactions to the chemical process of some special functional mechanism.

(2) the other is the evolution of energy in a functional mechanism by carrier action of the quinone group.

In the first instance, the allergenic agent must be absorbed intimately into the colloids of the functional mechanism, be it the contractile, conductive, secretory, or reproductive elements of the cell. In fact the agent is adsorbed into all of them, yet the energy it has absorbed can only be transfered to the chemical processes going on in that functional unit which posseses spectrum ranges of energy absorption that are identical with the ranges of emission of the allergenic substance. Thus the specificity is explainable on a pure chemical basis. If the secretory elements of the cell are of proper spectrum quality, hypersecretion (as in Hay Fever) results; if the conductible elements are concerned, allergic neuritis, epilepsy, fixed ideas, inhibitions, etc., result. If the reproductive mechanism is concerned, uncontrolled cell division of neoplasia results; and finally is the contractile elements are affected, then muscle spasms (as in Asthma) are the answer. In short the type of allergy depends upon similarity in the specific spectral characteristics of agent and functional units. The basic disease process depends upon the presence of unsaturated valences responsible for the fluorescence in difficultly oxidizable molecules of the allergenic agent. Therefore the removal of the Pathogenic agent is simply a matter of the saturation of its free valences with oxygen, which destroys its fluorescence or carrier properties.

The only safe materials able to fully accomplish this result are the catalysis of oxidation that nature provides in her own oxidation mechanism. These are the structures that are the intermediaries which catalyse the oxidation of sugars for normal function and natural immunity, and the substances liberated by proteolysis in acquired immunity".

In this erudite fashion does Dr. Koch trace the various bio-chemical steps through which the body arrives at a chronic state of suboxidation referred to in my article of September; and it is from this condition that allergenic states develop.

With regard to the treatment of allergic conditions the writer is happy to announce that results of the first order have been obtained with the metabolic catalyst "Glyoxylide", as discovered and prepared by Dr. Wm. F. Koch.

This valuable chemical reagent is absolutely non-toxic, and yet is capable of exerting the most profound influence on the body metabolism in diseased states. A vigorous oxidation catalysis is inaugurated, which in many cases is capable of stepping up the oxidation mechanism to a high peak.

When such a point is reached, not only are physiological processes stepped up, but allergenic poisons and every other combustible substance is disposed of. This onslaught on the toxic elements existent in the blood and tissues soon becomes apparent in an improved state of the general metabolism as well as an improvement in the local lesion.

It has long been the desire of many to dispose of the underlying toxaemia which frequently leads to a fatal issue in spite of all our modern methods of attack. A seat in the spectators gallery in the battle with toxaemia, is no longer necessary for the physician who earnestly desires the welfare of his patients. Glyoxylide is not a cure-all, nor is it intended to be so, but it is a very marked advance in modern medicine and constitutes, in the writer's opinion, by far the most potent medicament at our command today. One has only to use this reagent intelligently with an open mind in selected cases, to appreciate the very real benefit which the patient receives from its use. In allergic states which concern us most in this paper, the early relief from distressing allergic manifestations, and the general improvement in the health of the patient, all go to make a happy and satisfactory recovery.

A cycle of recovery reactions is initiated following the injection of the Glyoxylide. These reactions are harmless, occurring in rhythmical fashion, and are usually followed by a marked improvement both generally and locally. Curiously enough these reaction occur in triple rhythm . The first reaction following the injection of the Glyoxylide, usually occurs 84 hours or 3½ days later, and is followed by a series of chain reaction at 3 week intervals. These reactions usually are mild in character, consisting of a general achiness with headache and sometimes slight chilliness, lasting from a few hours to several days. They are harmless and the patient

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experiences a sense of well-being after the reaction has passed, which more than compensates for any slight discomfort incurred.

The fact that recovery progresses as a rhythmical wave suggests, that like other rhythmic phenomena it is self-perpetuating or may run on indefinitely until the process is completed. Practically this has proven true in many cases, but in other instances the process dies out before recovery is completed and another injection must be give. At times one injection does not really establish a recovery process and it must be repeated. The presence and occurrence of reactions after the use of Glyoxylide, even after the lapse of many months, is a strong indication that the catalytical agent is still active.

So long as recovery cycles are in evidence no repetition of the reagent should be attempted. Indeed positive harm may be done to the patient by the injudicious repetition of doses. A good motto to follow is this, "Never repeat the dose until assured that the first cycle of recoveries has petered out".

H. M. Candlish, M.D.

Prière à Notre-Dame de la Paix

Bénigne Reine de la Paix,
Ayez pitié des pauvres hommes
Qui titubent au bord du gouffre sanglant comme
S'ils étaient saouls d'un vin épais !

Mère des peuples, Notre-Dame
De tous les pays sous le ciel,
N'écouterez-vous pas le déchirant appel
Qui monte des millions d'âmes ?

O Puissante qui, sous vos pieds,
Foulez le Prince de la guerre,
Voyez-le qui déjà se redresse et qui flaire
En riant l'odeur des charniers.

Ah ! faites-lui rentrer son rire
Dans la gorge et que l'hosannah
Des héros et des saints que la France donna
Couvre les cris du vieux Vampire !

O Notre-Dame de Paris,
De Bourges, de Chartres, de toutes
Les églises qui sont à la fourche des routes,
Sur le flanc des coteaux fleuris,

Au nom des orphelins, des veuves
Dont la blessure saigne encor,
Brisez d'un mot le vol des anges de la Mort
Armés d'une faulx toute neuve !

Et comme dans l'azur d'avril,
Un neigeux brouillard de colombes,
Vers vous s'élèvera des plaines et des combes,
Un encens d'âme... Ainsi soit-il !

Albert PESTOUR.

L'hormone gonadotrophique du chorion

"A. P. L."

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(1) Sa teneur est stable — la méthode de titrage biologique suivie est exceptionnellement juste. *Endocrinology*, 22:583, *mai* 1938.

(2) Son mérite thérapeutique est reconnu — de nombreuses observations cliniques ont tprouvé sa valeur dans le traitement de la méno-métrorragie, de l'ectopie testiculaire et de l'hypogénitalisme.

(3) Les injections sont indolores — un point important dans le traitement des enfants et des conditions nécessitant des doses élevées.

(4) Son coût est modique — le traitement n'entraîne pas des déboursés onéreux au patient.

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MONTREAL CANADA

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On oublie trop souvent le rôle bienfaisant des compagnies d'assurances qui protègent le médecin contre les conséquences d'accidents professionnels, et les avantages importants que ces dernières procurent moyennant une modique prime de quelques sous par jour. Avez-vous songé en effet, cher docteur, que vous avez à votre disposition en cas d'accident ou de chantage sans autre frais que votre prime, les services légaux des meilleurs avocats spécialistes. Une seule de leurs consultations vous coûterait à vous-même jusqu'à trois fois la prime annuelle. Avez-vous songé de plus que tous les frais de Cour sont à la charge de la compagnie d'assurances et que si la fatalité veut que vous deviez payer une indemnité au plaignant, cette indemnité parfois de milliers de dollars est soldée par la compagnie.

Le secret professionnel m'interdit de citer les noms de médecins qui ont eu recours à ces services dans des circonstances parfois très difficiles car il me serait facile de vous convaincre sans plus de discussion.

"Bonne renommée vaut mieux que ceinture dorée" disaient nos pères. Ajoutons pour l'occasion qu'une action en dommages pour accidents professionnels mal défendue, coûte à la fois la renommée du praticien et son argent. Cette renommée nous paraît plus en danger s'il pratique à la campagne où les nouvelles se propagent avec plus de rapidité. Nos ancêtres, d'autre part, avaient la réputation d'être des gens à procès ce qui expliquerait peut être la fréquence des poursuites et ennuis dont les médecins sont victimes. Il faut évidemment ajouter à cette raison l'état de choses actuel, le chômage; la misère est mauvaise conseillère.

Nous enverrons sur demande sans obligation le specimen du contrat d'assurance accidents professionnels si l'on veut bien faire usage du coupon ci-après.

Gaston Rivet.

— — — — — — — — — — — — — —

M. Gaston Rivet,
266 ouest, rue St-Jacques,
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Monsieur,

Veuillez m'envoyer, sans obligation de ma part, un spécimen de contrat d'assurance accidents professionnels ainsi que vos taux.

Je fais ou je ne fais pas usage de rayons-X pour diagnostic.

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AVIS

C'est par erreur que les journaux ont annoncé que la firme **Merck & Company Limited** avait été mise sur la "liste noire" par le gouvernement britannique.

Cette compagnie est entièrement canadienne et américaine par ses actionnaires.

Allergy - Its Clinical Significance and Treatment

Allergy may be defined as an hyperactivity of a tissue structure outside of physiological control. According to Dr. Wm. F. Koch it constitutes the basic pathogenic factor of many diseased states, and is in turn an evidence of an underlying toxaemia. Allergic responses are the result of toxic action and may be considered attempts at detoxication or protection.

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(1) the transfer of energy through fluorescence from exothermic reactions to the chemical process of some special functional mechanism.

(2) the other is the evolution of energy in a functional mechanism by carrier action of the quinone group.

In the first instance, the allergenic agent must be absorbed intimately into the colloids of the functional mechanism, be it the contractile, conductive, secretory, or reproductive elements of the cell. In fact the agent is adsorbed into all of them, yet the energy it has absorbed can only be transfered to the chemical processes going on in that functional unit which posseses spectrum ranges of energy absorption that are identical with the ranges of emission of the allergenic substance. Thus the specificity is explainable on a pure chemical basis. If the secretory elements of the cell are of proper spectrum quality, hypersecretion (as in Hay Fever) results; if the conductible elements are concerned, allergic neuritis, epilepsy, fixed ideas, inhibitions, etc., result. If the reproductive mechanism is concerned, uncontrolled cell division of neoplasia results; and finally is the contractile elements are affected, then muscle spasms (as in Asthma) are the answer. In short the type of allergy depends upon similarity in the specific spectral characteristics of agent and functional units. The basic disease process depends upon the presence of unsaturated valences responsible for the fluorescence in difficultly oxidizable molecules of the allergenic agent. Therefore the removal of the Pathogenic agent is simply a matter of the saturation of its free valences with oxygen, which destroys its fluorescence or carrier properties.

The only safe materials able to fully accomplish this result are the catalysis of oxidation that nature provides in her own oxidation mechanism. These are the structures that are the intermediaries which catalyse the oxidation of sugars for normal function and natural immunity, and the substances liberated by proteolysis in acquired immunity".

In this erudite fashion does Dr. Koch trace the various bio-chemical steps through which the body arrives at a chronic state of suboxidation referred to in my article of September; and it is from this condition that allergenic states develop.

With regard to the treatment of allergic conditions the writer is happy to announce that results of the first order have been obtained with the metabolic catalyst "Glyoxylide", as discovered and prepared by Dr. Wm. F. Koch.

This valuable chemical reagent is absolutely non-toxic, and yet is capable of exerting the most profound influence on the body metabolism in diseased states. A vigorous oxidation catalysis is inaugurated, which in many cases is capable of stepping up the oxidation mechanism to a high peak.

When such a point is reached, not only are physiological processes stepped up, but allergenic poisons and every other combustible substance is disposed of. This onslaught on the toxic elements existent in the blood and tissues soon becomes apparent in an improved state of the general metabolism as well as an improvement in the local lesion.

It has long been the desire of many to dispose of the underlying toxaemia which frequently leads to a fatal issue in spite of all our modern methods of attack. A seat in the spectators gallery in the battle with toxaemia, is no longer necessary for the physician who earnestly desires the welfare of his patients. Glyoxylide is not a cure-all, nor is it intended to be so, but it is a very marked advance in modern medicine and constitutes, in the writer's opinion, by far the most potent medicament at our command today. One has only to use this reagent intelligently with an open mind in selected cases, to appreciate the very real benefit which the patient receives from its use. In allergic states which concern us most in this paper, the early relief from distressing allergic manifestations, and the general improvement in the health of the patient, all go to make a happy and satisfactory recovery.

A cycle of recovery reactions is initiated following the injection of the Glyoxylide. These reactions are harmless, occurring in rhythmical fashion, and are usually followed by a marked improvement both generally and locally. Curiously enough these reaction occur in triple rhythm . The first reaction following the injection of the Glyoxylide, usually occurs 84 hours or 3½ days later, and is followed by a series of chain reaction at 3 week intervals. These reactions usually are mild in character, consisting of a general achiness with headache and sometimes slight chilliness, lasting from a few hours to several days. They are harmless and the patient

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led to analyse the chemical composition of these natural substances, and as a result he was able to prepare similar compounds synthetically. This has simplified the production a great deal, and a suitable combination of these catalytical agents is now available to the profession under the name of Glyoxylide. The Wm. F. Koch Laboratories of 226 Queen's Ave., London, Ontario, are fully équipped to distribute the product direct to physicians in Canada, and to furnish advice where necessary.

In order to support the statements which have been made in this paper the writer hereby appends the following case report dealing with a frank case of endarteritis obliterans:

An elderly woman, 74 years of age, called me to see her on March 6/39 with reference to an acute pain in her left foot, especially in the big toe. This had been present for two weeks prior to my visit and had caused her considerable pain. She thought it was rheumatism until she noticed that her toes, especially the first and fifth phalanges were turning black, with loss of sensation.

My examination on March 6/39 showed the patient to be in average health, with fairly well marked arteriosclerosis generally. Her blood pressure was 220/120; heart, lungs and abdomen clinically negative; Urine showed a trace of albumin, no sugar, S. G. 1020; Blood sugar on fasting stomach taken March 7/39 was .98% which was well within the normal limits; left toes were cyanosed, especially the first and fifth phalanges, which were bluish-black; also an area on the lateral aspect of the fifth metacarpal had become gangrenous. Only slight tactile sensation in toes of left foot; presence of a definite cyanosed area on plantar aspect of left foot; which corresponds to the plantar arch of blood-vessels. Dorsalis pedis artery faintly palpable, artery sclerosed and beaded. Patient was suffering acute pain in left toes, tender on palpation.

In view of the above finding I made a diagnosis of endarteritis obliterans, the negative blood-sugar and urinalysis ruling out Diabetes. She was treated with a single dose of Glyoxylide on the morning of March 8/39, and had the first fairly comfortable night without sedatives in the past two weeks. The following day I saw her and was delighted to find the pain considerably less, the cyanosed areas pinkish-blue, and the whole foot suffused with an intense hyperaemia, with some return of sensation and warmth.

On March 16/39, 8 days after treatment with the Glyoxylide, I saw her again, and found the big toe which had been practically black, now pinkish-blue, and the other toes a normal colour. The area of cyanosis on the plantar aspect over the plantar arch had also entirely cleared up, with return of sensation and warmth. The dorsalis artery was also much more readily palpable, and the blood-pressure had dropped to 190/120. The patient was feeling much improved with no pain in the left foot, and just an occasional sensation of pins and needles in the toes.

On March 22/39, 14 days after treatment I again saw her, and this time her toes, including the big toe, had returned to normal both in appearance, in sensation and in warmth. This patient has continued to improve in her general health, and to date there has been no return of the obliterating endarteritis. Needless to say I have a very grateful patient to deal with, especially as a friend of hers had her leg amputated below the knee for a similar condition some years ago, and she retained a lively recollection of this friend's pitiful condition leading up to a painful death.

If Glyoxylide will and does produce results of this order in gross obliterating endarteritis, what must be the histological changes taking place during the recovery process in Cancer and many other diseases which yield to its sway? I believe with Dr. Arnott of London, Ont., with whom I have closely collaborated during the past year, that Dr. Koch's theory of a faltering oxidative mechanism as being the etiological factor in malignancy and many other diseased states, is fundamentally sound, and clinically correct. After all the proof of the pudding is in the eating, and no one with an unbiased mind, such as I trust I have had during these past months, could witness such results and not, to say the least, be profoundly stirred. When one thinks of the thousands of helpless sufferers, who could be benefitted by the intelligent use of this medicament, one longs for the day when it will come into general use by the profession at large.

H. M. Candlish, M.D.

Les cours de perfectionnement en médecine

Cette enquête fut faite par l'A.P.I.M. en 1934.

Les Groupements nationaux ayant répondu à cette enquête sont :

Allemagne, Autriche, Belgique, Danemark, Danzig, Espagne, Estonie, France, Grande-Bretagne, Hollande, Luxembourg, Norvège, Suède, Suisse.

Question 1:—

Les "Cours de perfectionement" (c'est-à-dire après diplôme et au cours de l'exercice de la profession) sont-ils organisés dans votre pays?

Réponse :

Allemagne, Autriche, Norvège: Ils sont organisés de façon uniforme étant d'ordre national.

Belgique : Il n'existe aucun cours de ce genre en Belgique institué pour des médecins après la sortie des Universités. Plusieurs essais ont été tentés, principalement à l'Universeité de Bruxelles. Les seul cours de perfectionement post-universitaires seraient ceux suivis, à titre personnel, par les jeunes médecins, dans les cliniques ou laboratoires. Beaucoup de jeunes médecins belges, d'ailleurs, vont faire un stage à l'étranger où ils suivent des cours et cliniques particulières à Paris.

Danemark: Oui, de tels cours sont tenus tous les ans à Copenhague, organisés par l'Association générale des Médecins danois. Ils le sont aussi, avec des programmes plus restreints, dans certaines petites villes, où ils sont organisés par les Associations médicales.

Dantzig: Ils sont organisés par les corporations médicales.

Espagne: ils sont organisés non par organisations uniformes, nationales, ni régionales, mais par diverses initiatives.

Estonie: Ils furent organisés, mais pendant quelques années seulement, pour les médecins des districts ruraux. C'était une organisation nationale uniforme qui maintenant n'existe plus.

France: Dans un certain nombre de villes possédant une Faculté de médecine, ces cours de perfectionnement existent, mais sans une organisation nationale uniforme, ni même régionalement. A Paris, en dehors des cours de perfectionnement faits par des médecins des hôpitaux (chirurgie, médecine, ophtalmologie et autres spécialités).

Grande-Bretagne: Il n'y a, chez nous, aucune organisation générale, d'ordre national ni régional. Chaque Groupement qui organise un "cours" fait son propre programme. Les plus importants de ces Groupements peuvent être définis ainsi que suit: a) Universités et hôpitaux pourvus d'écoles de médecine; b) Hôpitaux non pourvus d'écoles; c) Les "Royals Colleges of Physicians and Surgeons" d'Angleterre, d'Ecosse et d'Irlande; d)

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The Classic Cancer Battle

Dr. Koch and 'Glyoxylide'... A Man Ahead of His Time

By NAT MORRIS

IN the battles over cancer, the war that raged against Dr. William Frederich Koch is an epic in ruthless ferocity. The discoverer of Glyoxylide, an oxygen catalyst which purportedly increases the capacity of the cell to burn off toxins, is usually referred to by his enemies as the "quack who fled to Brazil to escape prosecution by the Food and Drug Administration." His product is ridiculed as nothing but distilled water.

Doctor Koch's background, however, is hardly that of a charlatan. Born in Detroit in 1885, his degrees are A.B. (1909), Ph.D. (1917), all from the University of Michigan; and M.D. (1918), Detroit College of Medicine. From 1910 to 1913 Doctor Koch taught histology and embryology at the University of Michigan, and from 1914 to 1919 he was a professor of physiology at the Detroit Medical College.

Before he was thirty years old, Doctor Koch made a significant scientific contribution to endocrinology by his work on the parathyroid glands. These tiny glands, attached to each side of the thyroid, were once carelessly snipped off by surgeons when they removed goiters. Death from tetany inevitably occurred because the parathyroids regulate calcium metabolism. The *Journal of the AMA* heralded Koch's work in 1913 with a highly laudatory editorial. Six years later, in the same pages he was to be branded as a faker.

In his work on parathyroids, Koch discovered that removal of the glands brings a marked coagulation of blood and tissues. As cancer patients display the same characteristic, he reasoned that cancer might be due to a toxic condition related to a hormonal deficiency brought on by injury or irritation. This heightened coagulation is a protective mechanism which also stimulates tumor growths. Koch therefore attempted to remove the toxins with tissue thrombin, a ferment which brings on a fever whose heat burns off the toxic elements in the system. This approach was similar to Coley's, but Koch apparently produced curative fevers a little more consistently with tissue thrombin and thereby secured better results.

When Koch boldly claimed a cure for cancer based on the results of treating eight cases, he became a marked man. His claims were derided, and he quickly fell into disfavor with the reigning surgeons in the Wayne County Medical Society.

Doctor Koch approached the cancer problem from the standpoint that the disease is caused by toxins remaining in the blood system. In line with his original interpretation of sugar oxidation as a function to destroy toxins resulting from metabolic processes which he taught at Wayne University from 1914 to 1919, he believed this to be due to insufficient oxidation. He also believed that germs also produce toxins which are incompletely removed, thus subscribing in part to the virus theory of cancer and leading quite naturally to his belief that the solution to the cancer problem lay in securing more active catalysts to stimulate the body's capacity to oxidize toxins.

This reasoning led to the creation of Glyoxylide. According to Koch, his preparation starts a chain reaction in which toxins are converted into antitoxins by the addition of molecules which alter their composition. It was also Koch's belief that the cancer germ or virus is originally harmless but becomes virulent when poisoned by the toxins in the system.

This highly ingenious reasoning, although based on authentic physiology and chemistry appears a bit too magical. A substance which through some alchemy actually converts a toxin into an antitoxin seems incredible. However, opponents of Koch's theories have formulated no scientific arguments to refute it. Without any investigation, Koch's theories have



Dr. William Koch is pictured here in a portrait painted by Samuel Finglass which appeared on the cover of the Cancer News Journal, a publication of the International Association of Cancer Victims and Friends. Dr. Koch's glyoxylide was well ahead of the times in which it was discovered. The brilliant physician-scientist, like Dr. Max Gerson, was convinced that toxins in the system were mainly responsible for cancer. He was lauded for his work on parathyroid glands, but condemned for his work in the forbidden circle of cancer.

always been preemptorily dismissed as nonsense.

The Koch treatment does not consist entirely of Glyoxylide but also includes a rigid diet which excludes all foods which are toxic or which contain oxygen inhibitors, such as meats, beans, lentils, coffee, alcohol and tomatoes. Only distilled water is permitted, and daily enemas are prescribed. Neither Glyoxylide alone nor diet alone will cure cancer; according to the Koch school, each must be used in conjunction with the other. One injection of the catalyst is usually effective for six months, and additional injections are not given until decreased oxidation is again evident. The treatment has the advantage of not requiring hospitalization; it is said to greatly alleviate pain, obviate the use of narcotics and stimulate the appetite.

The Koch theory of cancer is as follows: "Clinical observation disclose the persistence of toxemia over a period as long as twenty years previous to the advent of the growth. After the growth has come, these toxic manifestations disappear or nearly so. After a surgical removal of the growth they return and with recurrence of the growth again disappear. We designate these symptoms as the pro-growth symptoms for they differ from those consequent to the activity of the growth itself. The strongest and the sufficient proof that cancer is a response of protection against a definite toxin, however, rests with the fact that removal of the toxin and destruction of the toxic sources is followed by complete involution of all cancer tissue, complete healing of the regions involved, return to health, with absence of growth and pro-growth symptoms, and the absence of recurrence."

In the recovery process, according to the Koch theory, the cancer cell is digested and eliminated by being "split into the chemical elements from which it is constructed, namely, amino acids, fats, sugars, salts, and certain toxic substances. The food materials are turned back to the blood to renourish the body. The toxic substances must also be absorbed but are useless and toxic and they are eliminated through the kidneys, burned up through fever, or passed out in the perspiration, feces and mucous secretions."

Koch's theories strongly contradict prevailing opinion. His internal treatment of cancer, correlated with diet, would relegate surgery and irradiation to the discard. Koch went so far as to say that a surgeon who speaks of curing cancer by operation "not only belies the statistics but he shows his ignorance of the minute structure of the body, together with his ignorance of pathology."



The late Senator Everett Dirksen of Illinois nearly cut his political career short when a Congressman because of a malignancy. However, he had the Koch Therapy, recovered fully and went on to serve in the U.S. Senate. As a Senator he found it "politically inexpedient" to support Dr. Koch during the hearings, and would comment only that "God helped me." Some of Dr. Koch's supporters cried "foul" but the scientist himself made no issue of the matter.

Koch's outspoken criticism put surgeons in the same embarrassing position as the obstetricians, who were accused by Semmelweiss of spreading puerperal fever with their contaminated hands. Surgery and biopsy, Koch said, only spread cancer faster but, unfortunately, surgeons dominated the practice of cancer, had the power to pass on the merits of cancer cures and naturally resented such forceful criticisms. That is the bizarre position into which Koch was thrust, and his subsequent career became a desperate struggle against the interests whom he opposed but who could brand him as a "cancer quack."

The first battle of the "Koch Cancer Cure" war, and one that decided the issue forever in official medical circles, took place in Detroit in 1919. In response to popular pressure, Mayor Couzens, one of the original founders of the Ford Motor Company and later a United States senator, was responsible for initiating a test of the Koch remedy. The procedure devised is one of the fairest and most practical ever proposed in cancer investigations. Unfortunately, its provisions were ignored and nothing conclusive ever came of it.

The plan called for a committee of five examining physicians, appointed by the Wayne County Medical Society, to select the patients for treatment by Doctor Koch and to observe his results. In other words these officials were to be responsible for the selection and diagnosis of patients, and Koch, was to be responsible for their treatment. Certainly nothing could be fairer. There could be no charge against Koch in the matter of selecting patients; that responsibility rested squarely on the shoulders of the committee, none of whom was friendly toward Doctor Koch. According to Koch, this is what happened:

Seven advanced and hopeless cases of internal cancer were selected. They were not local patients, but picked from widely scattered communities and had been brought to Detroit for treatment in a special hospital ward. For three weeks not one member of the committee certified a patient's condition over his signature, the necessary step before Koch could start treatment.

The patients were sinking fast; obviously the greater the delay, the more difficult would be the cure. Aroused, Doctor Koch appealed to the president of the medical society, who whereupon demanded angrily that the committee perform its duty. One patient -- and only one -- was examined. The diagnosis was hopeless, spreading, internal cancer.

Doctor Koch claims that to avoid criticism he immediately instituted treatment of all patients without waiting for their examinations by committee members. According to Koch's supporters all seven patients responded exceedingly well after only three weeks of treatment. The committee then called the test off alleging that

Doctor Koch refused to cooperate, and sent the patients home with a warning not to have anything further to do with Koch.

According to the AMA version of the test, published in its *Journal* of February 12, 1921, Koch was a difficult and uncooperative personality. It was alleged that after the committee went over the cases with him, he demanded permission to name a member of the committee and that permission was granted but that he failed to name his man. It was also alleged that after this meeting Koch gave his injections to the patients but never returned to treat them further. So some patients left in disgust, and the committee sent the rest home.

Here are both sides of the story. More conflicting versions would be difficult to improvise.

Doctor Koch claims that every effort was made to follow up the results of his treatment but that he could trace only three patients. One of them was the patient examined by a member of the committee, as had been agreed upon. Her cancer had originated in the uterus, had spread to the stomach and had caused severe hemorrhaging, but she made a dramatic recovery, according to Koch. Her husband signed an affidavit that her recovery started within three weeks after the injection had been given and progressed to a complete cure. The patient died in an accident fifteen years later. Autopsy disclosed no existing cancer.

A second patient was found to be in good health several years later, free of hemorrhages, pain and the cancerous growth. She testified that as soon as the treatment had been given, her pain had been relieved. The third case that Dr. Koch was able to trace had had an inoperable stomach cancer, with severe pain and hemorrhaging. In 1923 an affidavit certifying to her recovery was submitted to the Wayne County Medical Society in an effort to secure a fair hearing for the Koch treatment.

> "To take any further action in this case would, in our opinion, simply serve to advertise Koch and give his 'cure' a dignity which is not in the public interest."

The hearing was set for November 5, 1923. In the meantime the chairman received a letter dated October 29 from the "Propaganda Department" of the AMA to this effect:

"There appears to be no reason or warrant for a further examination of the 'Koch Cancer Cure.' ... In spite of the unfavorable report of the Wayne County Medical Society (publicized in its bulletin and in the AMA Journal) ... Koch has continued to commercialize his alleged cure.

"To take any further action in this case would, in our opinion, simply serve to advertise Koch and give his 'cure' a dignity which is not in the public interest."

Nevertheless, the Cancer Committee of the Wayne County Medical Society did convene. Doctor Koch brought before them a number of patients whose condition had been diagnosed as hopeless by various local physicians but whom he had cured. He also presented patients still under his treatment. The committee denied both the diagnoses and the evidence of cure and, according to Koch supporters, attempted to dissuade patients from further treatment by Koch and to persuade them to undergo surgery instead.

One case which Koch presented was supported by the affidavit of his patient's husband and a witness. They certified that the patient's condition had been diagnosed by a surgeon as Paget's disease and he had advised an immediate operation, as the cancer had spread from her breast to her armpit and clavicle. The patient refused the operation because she was given no assurance that she would retain the full use of her arm.

Instead she turned to the Koch treatment. The surgeon in question was permitted to examine her during the course of her recovery and he eventually acknowledged she had been cured in the presence of her husband. Before the committee, however, he testified that his original diagnosis had been falsified and that the patient's condition had been "a simple ulceration without associated lymph fissuing."

Professor W.A. Dewey of the Department of Medicine at the University of Michigan had been present at the hearings. Writing later to Doctor Koch to congratulate him on the honesty of his presentation before the committee he said of it:

"For a studied intent to falsify, a premeditated determination to condemn everything, and an unscientific, un-American assumption to be judge, jury, and prosecuting witness, the report of this so-called committee outstrips in bias, unfairness, and mendacity anything that has ever been my lot to observe in a medical practice of forty-four years ... The composition of the committee, being for the most part surgeons and radium or Xray 'experts,' a class that assumes cancer to be curable only by these methods, was unfortunate in the first place, and in the second place, no member of the committee was, in my opinion, qualified to sit in judgment on your treatment, by education, experience, or by right."

> It became dangerous for physicians to endorse the Koch method, for they were immediately threatened with loss of their academic and professional standing ...

Another of Doctor Koch's friends was Dr. A.R. Mitchell, for many years chairman of the Board of Trustees of the American Medical Association. He wrote Dr. Koch several commendatory letters and advised him, on the strength of his intimate knowledge of the tactics of his confreres, to withhold publication of further information on his cancer preparations or methods. A Detroit girl was alleged to have plied her charms in an unsuccessful attempt to get the letters away from Koch. Allegations were also made that certain interests closely identified with official medicine tried to gain control of the Koch formula; unable to grab it, they resorted to a campaign of vilification and persecution.

This oppression was extended to those who dared to employ Glyoxylide. It became dangerous for physicians to endorse the Koch method, for they were immediately threatened with loss of their academic and professional standing in the medical profession. These threats were allegedly employed successfully against Dr. Carroll W. Allen, professor of surgery at Tulane University, and against Professor Bryan, head of surgery at Vanderbilt University. Both reported good results but were coerced into discontinuing the use of the Koch preparations.

It is claimed that Professor Maisin. of Belgium endorsed the Koch method

for some years. Significant support was also found in Canada in the person of Dr. Forbes Godfrey, an eminent Toronto physician who also served for twenty-six years as Minister of Health and Education and who personally visited the Koch clinic in Detroit during his term of office. He extolled the Koch remedy before Parliament as being far superior to radium, of which he said ominously:

"Radium has a dangerous effect on the human system. In a couple of years people who have used it usually die suddenly because it affects the heart."

The only cancer investigation with a semblance of dignity and fairness was the in camera sittings of the Cancer Commission of Ontario, Canada, held in 1938, 1939 and 1940 for investigating Glyoxylide. Patients were presented before the commission, which consisted of five members, three of whom were physicians. In many instances, laboratory findings were submitted. The proceedings were conducted in a dignified and impartial manner and elicited many proofs of cure in cancer and other conditions.

A case of endarteritis obliterans (inflammation of the inner coat of the artery) in the foot was presented which had been injected with 1 c. c. of Glyoxylide. Thirty hours later, the black discoloration turned to red; the next day it became pink; ten days later the foot was warm, circulation and full feeling had been restored, and the color was normal.

The only cancer investigation with a semblance of dignity and fairness was the in Ontario, Canada.

Dr. H.M. Candlish testified that he had used Glyoxylide on more than one hundred patients in seven months for a wide variety of conditions. Eight cases of coronary disease had responded well, as confirmed by electrocardiograph tracings. Other conditions helped were essential hypertension, eczema, asthma, general debility and cancer. Once case had been certified as cancer by biopsy.

The most complete testimony was rendered by the late Dr. J.W. Kannel, a surgeon of Ft. Wayne, Indiana. Before adopting the Koch preparation, he had operated upon at least fifty cases of cancer in his practice, and had followed his surgery with Xray or radium treatment but the longest survival period had been only two and one-half years.

Doctor Kannel testified that he had first learned of Glyoxylide in 1925. He tried it first on a patient with breast cancer who was expected to live only a few months. Instead she survived but suffered a recurrence in 1931. She responded quickly to additional treatment and was reported as alive and well in 1939.

In spite of impressive evidence offered at the Canadian hearings, no formal findings were ever published.

In 14 years, Doctor Kannel attested, he had treated 72 cases with the Koch preparation. Many of these he considered hopeless to treat but he was forced to yield to their insistent pleadings. He reported that 21 of his cancer patients were still alive at the time and that four had died of other causes. Some of these survivors had traveled to Canada to testify.

Doctor Kannel also mentioned the professional hazards involved in adopting the Koch treatment. A colleague had been expelled from his local society merely because he "talked too much about it." Yet Glyoxylide was the only remedy that had offered him hope in treating cancer, Doctor Kannel said, in contrast to his poor results prior to 1925, after 24 years of operating for cancer.

On a visit to the Mayo Clinic, he also mentioned seeing a surgeon remove five cancerous breasts in one day. When he asked if surgery, followed by Xray and radium would cure the cancer, the surgeon admitted great pessimism but said he knew of nothing else to employ.

In spite of impressive evidence offered at the Canadian hearings, no formal findings were ever published. To prevent the Koch adherents from capitalizing upon them, the chairman of the Canadian Cancer Committee stated in the July 19, 1941 issue of the *Journal* of the AMA: "It should be noted that this commission has made no report expressing any opinion whatever of the efficacy or otherwise of the Koch treatment as a remedy or cure for cancer."

In 1940 and 1941 Doctor Koch conducted work in Mexico and Brazil on leprosy, tuberculosis and mental conditions. He claims to have brought about a rapid cure of dementia with one injection of Glyoxylide. This reputedly so incensed a representative of a big pharmaceutical firm then reaping huge profits from useless drugs injected repeatedly into mental patients. He is reputed to have shaken his fist in Doctor Koch's face and warned him that he would not be interfering much longer in Brazil.

In April, 1942, Doctor Koch was arrested in Florida on a charge that his product was falsely labeled. At the hearing, $10,000 bail was asked. The Federal Commissioner demanded an explanation for this unusual request; such bail is customary only in murder cases. The district attorney then disclosed that he had been ordered from Detroit to insist on the high bail to prevent Doctor Koch from returning to Brazil and finishing his researches there.

In 1942 and 1946, the United States Food and Drug Administration prosecuted Koch in two bitterly fought trials. The government attacked the oxidation theory of curing cancer and contended that, according to the opinion of their experts, the remedies were indistinguishable from distilled water. A temporary injunction against the Koch Laboratory was granted pending a thorough Federal Trade Commission hearing. The injunction was made permanent in 1950.

Utterly exhausted and defeated, Doctor Koch gave up, relinquishing his methods to the Christian Medical Research League of Detroit.

Utterly exhausted and defeated, Doctor Koch gave up, relinquishing his methods to the Christian Medical Research League of Detroit. This organization then inherited the Koch formula and was called upon occasion-

ally to defend physicians threatened with malpractice proceedings, expulsion from medical societies or loss of their medical licenses because of using Glyoxylide.

In 1952 a physician in the Middle West was expelled from his local medical society for "unethical" practices -- the use of Glyoxylide. Local newspapers published letters from grateful patients. One former patient told reporters that she had been cured of cancer by the expelled physician after having been given only a few months to live following surgery and Xray treatment by another doctor. Her cancer disappeared after two injections costing only $50. "They were certainly worth it," the woman commented. "I had spent $1,300 before that."

In 1954, Dr. C.E. Hardy of Nashville, Tennessee, was brought before the medical examiners and deprived of his medical license. He had prescribed the Koch treatment and found it successful in a number of cases. No patients had complained against him, some testified for him, but he lost his license.

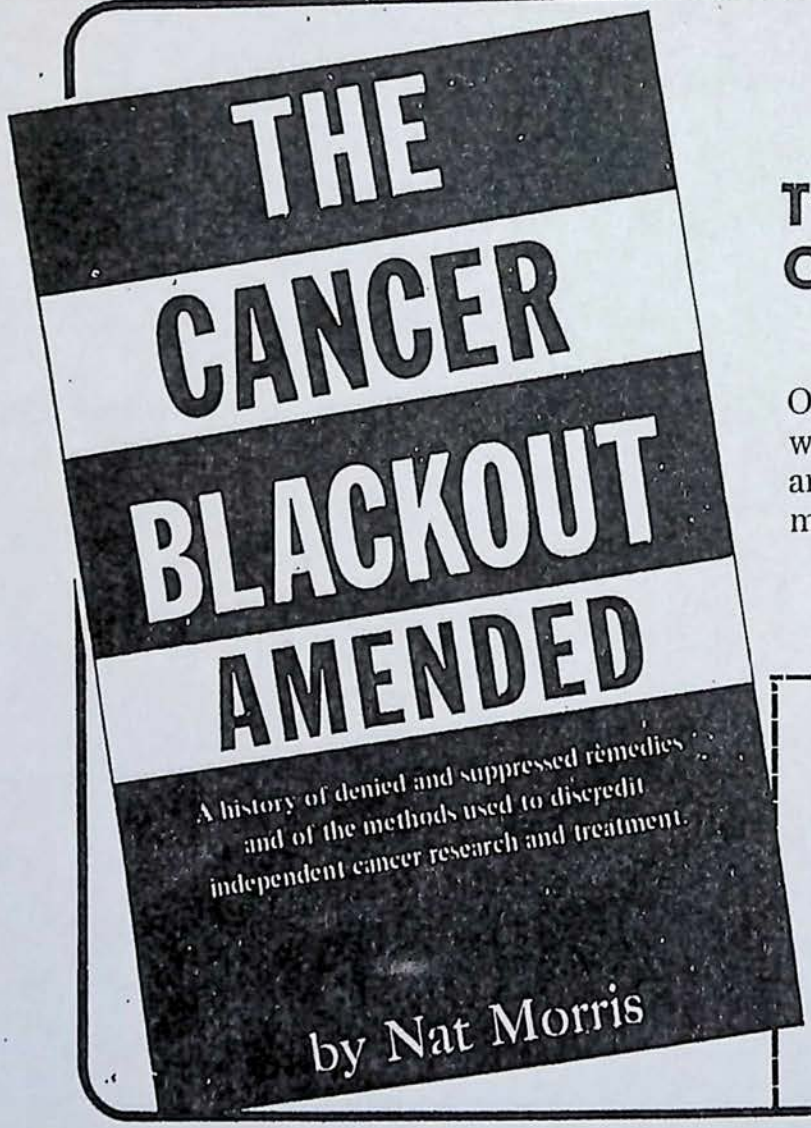
> The powerful punitive measures that can be brought against physicians is a deterrent against independence of thought.

The powerful punitive measures that can be brought against physicians using an outlawed remedy, regardless of whether the proscription is justified or not, is a deterrent against independence of thought. It has proven effective in finally destroying Glyoxylide and putting it off the market.

As of this writing, it is no longer manufactured. It is said that after Koch gave up the battle and assigned his manufacturing process to a Detroit religious organization, the preparation was incompetently processed and was no longer effective.

If his clinical claims were false, a fair test would disprove them. Instead, Koch was driven out of practice by the concerted and relentless prosecution of medical societies and government bodies. The Koch case proves once again that no scientific standards for testing cancer exist and that the fate of an independent cancer therapist, regardless of his scientific training and qualifications, is inevitably the same. The competent and incompetent alike, the quack and the dedicated healer, the fraudulent and the genuine are damned equally, without the slightest attempt to award them a fair hearing.

(Editor's note: NEWSREAL gratefully acknowledges the work of investigative journalist Nat Morris who kindly agreed to allow us to exerpt a few brief chapters from his excellent book, "The Cancer Blackout," published by Regent House, 108 N. Roselake Ave., Los Angeles, Calif. 90026.)



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CHEGOU O PROFESSOR KOCH

E' inventor de um processo químico para a cura do cancer, da tuberculose e da lepra



O professor Koch em companhia do Dr. Renato de Souza Lopes e dos seus filhos, a bordo do "Delbrasil"

A bordo do "Del Brasil", chegou hoje ao Rio, procedente de Buenos Aires, o professor Koch, inventor de um processo de tratamento do cancer, da tuberculose e da lepra. O illustre visitante foi recebido pelo Dr. Renato de Souza Lopes e por grande número de scientistas.

Antes de desembarcar o professor Koch disse-nos:

— Passarei alguns mezes no Rio, onde vou fazer a demonstração do meu método e processo clinico para o combate ao cancer, á tuberculose e á lepra. Augmentando o poder da combustão do organismo, tenho conseguido a cura de 70 % dos doentes que foram submettidos ao meu processo.

Dentro de alguns dias, darei inicio ás minhas actividades no Rio.

EMINENTE BACTERIOLOGISTA AMERICANO EM VISITA AO BRASIL



O professor William Koch e seus dois filhos em companhia do jovem Almir de Castro, que os convidou para virem ao Brasil (Fotografia I. A.)

Pelo transatlantico norte-americano "Delbrasil", que fundeou na Guanabara, ás primeiras horas da manhã de ontem, passou, pelo Rio, devendo prosseguir viagem para Buenos Aires um dos mais notaveis homens da sciencia dos Estados Unidos: o professor William Koch. Filósofo, quimico, biologico, bacteriologista, William Koch é uma autoridade reconhecida mundialmente, tendo descoberto um processo para o tratamento e a cura de enfermidades até agora tidas como praticamente incuraveis, como o cancer, a tuberculose, a paralisia infantil e a lepra. Utilizando uma therapeutica original — o emprego do "glyocyllide" — o sábio americano consegue uma ação estimulante sobre certas células cerebraes e do coração, determinando a combustão de todos os productos tóxicos. Os resultados obtidos pelo emprego do producto do professor William Koch são notaveis, tendo mesmo a bordo tido ocasião de applicá-lo em um passageiro enfermo, que, desde logo, experimentou melhoras sensiveis.

Na volta de Buenos Aires, o professor William Koch se demorará alguns dias entre nós.

A nota altamente significativa é que ao lado a viagem do mestre americano é illustrada de um commercian-te brasileiro, o sr. Attila de Castro. Tendo um filho — Almir de Castro — estudando no Rollins College, na Flórida, sr. Attila de Castro escreveu-lhe manifestando o desejo de que, por occasião de suas ferias, escolhesse dentre os seus colegas para virem conhecer o Brasil. O sr. Attila de Castro tinha como objetivo tornar o nosso paiz conhecido nos Estados Unidos, levando a effeito, assim, uma interessante obra de intercambio cultural e de propaganda do nosso paiz.

Paul e Bill Koch, filhos do professor William Koch foram os colegas escolhidos pelo jovem Almir de Castro, devendo ficar durante a permanencia no Rio, hospedados na residencia particular do conhecido homem de negocios.

A' vinda, assim, de seus filhos, obedeceu o professor William Koch a tambem visitar o nosso paiz.

O scientista americano, quando de volta da Capital argentina, fará algumas conferencias no Rio. Sua intenção era descer ontem mesmo na Capital da Republica, o que não fez, devido a ter que prosseguir viagem substituindo o medico de bordo do "Delbrasil", que foi chamado a prestar serviços nas fileiras do Exercito norte-americano.

DR. W. F. KOCH ARRIVES IN RIO DE JANEIRO
WITH HIS SONS WILLIAM AND PAUL
JUNE 1941

EXHIBIT "E"



BRAZILIAN FRIENDS AND ASSOCAITES
AT THE AIRPORT TO WISH DR. KOCH A SAFE
RETURN TRIP TO THE UNITED STATES - NOVEMBER 1941

This Report is not to be used in publication, in whole or in part.

GEORGE R. HARRISON
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
CAMBRIDGE, MASS.

August 3, 1936

Millard Smith, M.D.,
472 Commonwealth Ave.,
Boston, Mass.

Dear Dr. Smith:

I have carried out a number of spectrographic analyses on the material contained in the ampoule submitted by you, and have read the first few chapters in the monograph by Koch which you sent.

I consider his statements pertaining to matters of physical chemistry, spectroscopy, and the interaction of matter and radiation indicative of a basic knowledge of the subject. There are a number of points which are still the subject of controversy, such as mito-genetic radiation, but numbers of recognized biologists hold to the side which Koch accepts. His thesis may not be correct, but I see no way of proving from internal evidence that it is incorrect.

I first measured the absorption curve of the ampoule material ~~in a quartz cell, and found it to show no distinctive absorption~~ bands, but only a rather linear increase in density through the ultraviolet until it became sensibly opaque in a 1 cm. layer at 2200 Angstroms. This type of absorption curve at once rules out several large classes of substances.

I then analyzed the liquid with the electric arc for metallic constituents and found that it was apparently an aqueous solution of an organic substance in moderate concentration. To make this analysis it was necessary to destroy the material.

A search through the absorption curves given in the International Critical Tables narrowed the possible materials down to a group of a dozen or so. One of the curves most nearly approximating that found was that of glyoxal in water.

To carry the hunt further than this spectrographically would be time-consuming and costly, since it would be necessary to mix duplicating solutions to reproduce the exact curve found. I assume that you do not require this, since it seems to me that the evidence points to the probability that the solution is what Koch says it is, or at least the equivalent.

You will appreciate that while glyoxal in water gives a curve similar to that of the ampoule material, this does not necessarily mean that the latter is this. It merely gives presumptive evidence that similar molecular bonds are present in the two materials. My conclusion is that the spectrographic analysis, as carried out so far, makes it appear very probable that the material is what Koch says it is.

Very sincerely yours,

George R. Harrison

INSTRUCTIONS

for PATIENTS

1. Preparation for Treatment.
2. Dietary Regulations.
3. Special Points in Care and Management.

1. PREPARATION FOR TREATMENT

In order to secure the maximum benefit of the treatment, it is necessary that the patient be in as nearly perfect physiological state as it is possible to obtain. The first step in accomplishing this is to rid the blood stream and tissue fluids of all the impurities and poisonous materials that may have accumulated from various causes. A frequent source of such undesirable substances is in the inefficient activity of the lower bowel, which results in the retention of decomposed food stuffs and sometimes the setting up of ulcerations and pus pockets that contain very toxic and harmful bacteria. Ordinary physics and laxatives may not correct this condition. The only satisfactory means of cleaning out such accumulations is to wash the bowel out with high enemas. One enema is seldom sufficient to accomplish the desired result. Only after repeated irrigations can we feel assured that a reasonable degree of detoxication has been accomplished.

To get good results from an enema two conditions are essential—First, that a sufficient quantity of water reach the upper part of the colon and, secondly, that the water be of just the right temperature so as not to irritate the bowel or throw it into a spasm. Fill the syringe with two quarts of water that

has been previously boiled and then cooled sufficiently so that the point of the elbow can be held in it without discomfort. Add two teaspoonfuls of ordinary table salt to the water. Then hang the syringe at a height of twenty-four inches above the body.

Lie down either flat on your back with a high pillow under the buttocks or lie on the left side and after lubricating the tip of the enema tube with vaseline insert it in the rectum and turn on the water. If convenient, it is advisable to let a little water escape from the tube before inserting it, as the water that first comes from the tube is likely to be considerably colder than the water in the syringe. If discomfort is felt when a small amount of water has entered the rectum, it is best to remove the tube and expel this. Then the tube is reinserted and, with the rectum emptied, from one to two quarts of water can be taken before any pressure is felt. A good method to follow in carrying out this part of the procedure is to shut off the flow of water after about a quart has entered the rectum, remove the tube and change from lying on the back or left side to lying on the right side. This maneuver makes it more likely that the water will reach the upper part of the colon where the most serious retention often is present. As soon as the desire to evacuate the bowel contents is felt, the patient should rise and expel them. He should remain seated on the stool until he is certain he has expelled as much of the water as possible.

The enema is best taken an hour after breakfast and, if no griping or distress is felt afterwards, it can be repeated in the evening shortly before bedtime. From two to six enemas will have to be taken before the antitoxin treatment is administered. The period of preparation varies according to circumstances.

Besides such cleaning out of the intestinal tract, additional purification of the liver and other organs can be brought about by a preliminary liquid diet for two days and even longer when a more prolonged fast appears desirable. A fast is sometimes a very effective means of stimulating the defensive mechanism of the body against infection as demonstrated by the popular practice of "starving a cold." The liquid diet of fresh apple juice and vegetable broth reduces the intake of solid food and at the same time the liberal supply of fluids helps to "wash out" the crystalloid poisons that may be held in the cell substance of the various organs of the body. Apple juice

is also stimulating to the liver and kidney function.

Only ripe and sound apples should be selected to make the cider. They can be conveniently crushed in an ordinary food chopper.

The vegetable broth is made from a variety of fresh vegetables, including peas, wax beans, green beans, navy beans or kidney beans, carrots, etc. Boil them together for two hours and then work through a strainer or sieve.

A glass of apple juice is given the first thing in the morning.

An hour later a bowl of warm soup may be taken.

At eleven a. m. give as much apple juice as can be taken without discomfort.

At noon give another bowl of warm soup.

At intervals in the afternoon apple juice may be taken as desired.

For supper as much warm soup is given as the stomach will tolerate.

Apple juice, either full strength or diluted with distilled water, is used in place of water and other beverages to relieve thirst whenever needed. It can be taken hot or cold.

Yeast (3 or 4 cakes per day) should be taken off and on for several weeks to maintain good bowel function.

REST IN BED

While on the liquid diet it is preferable that the patient remain in bed even if he feels able to be more active. The rest not only makes the lack of solid food less noticeable, but it also brings about an improved circulation of blood and, therefore, promotes a greater activity of the secretory organs so that they are in better condition to react to the treatment when it is administered.

DIETARY AFTER TREATMENT

The purpose of these diet regulations is to restrict the ingestion of foods to those that are absolutely essential to health and to eliminate everything that is of a positively harmful or doubtful nature. Modern studies of the effects of many varieties of test diets on animals and in a number of instances on groups of human subjects have demonstrated that there are a number of requirements in a wholesome diet other than the mere balancing of the principal classes of foods.

CLASSIFIED LIST

After the antitoxin has been given, the diet should consist of the solid, raw or cooked foods outlined below. This selection is made after much experience and is designed to include the non-injurious materials and to omit

those which tend to interfere with the recovery chemistry.

1. The restricted juice diet, together with the daily enemas, should be continued from two to four days before the antitoxin is injected.

2. After the injection has been given, the patient should go on the classified diet but the daily enemas should be continued until two bowel movements a day take place naturally. After this result is obtained, the enemas should be given twice a week.

3. No medication of any kind is necessary nor permissible; no cathartics, nothing but hot or cold applications to control pain, or the smallest amount of morphine BY MOUTH only, if that should become necessary.

Tannic acid present in tea, coffee, and nuts inactivates the catalase of the intestinal mucosa (lining) and thus removes protection against poison. The amines produced by putrefactive germs in the colon, aluminum and bismuth do the same. Errors involving these substances should be avoided. Thus animal proteins and aluminum cooking utensils should not be used. Tin-canned foods are prohibited.

CLASSIFIED DIET

What to Eat

Fruits (Ripe Only)

Apples
Bananas
Dates
Cantaloupe
Figs
Fresh blackberries
Fresh raspberries
Fresh blueberries
Fresh huckleberries
Loganberries
Muskmelon
Pears
Pineapple
Peaches
Strawberries (picked ripe)
Raisins
Watermelon

Grains and Cereals

Barley
Bran
Cornmeal
Corn Flakes
Cracked Wheat
Cream of Wheat
Grape Nuts
Hominy
Macaroni
Noodles
Pettijohns
Post Toasties
Puffed Rice and Wheat
Rice
Rye
Rolled Oats
Spaghetti
Shredded Wheat
Vermicelli
Wheatena
Whole Wheat

Soups

Barley
Bean
Celery
Corn
Cream
Pea (new or dried)
Rice (unpolished)
Vegetable

NOTE—Do not use any spices, tomatoes, or cubes in making soup. Must not use any canned soup. Salt may be used for seasoning.

Vegetables

Artichokes (Jerusalem)
Beets—Beet tops
Brussels sprouts
Butter beans
Shelled new beans
Cabbage
Cauliflower
Carrots
Celery (raw or stewed)
Corn (new)
Cucumbers
Kale
Kolrabi
Lentils
Lettuce
Dried Lima beans
Green (all kinds except spinach)
Onions (for flavoring)
Peas, fresh
Peas, dried
Potatoes, baked, boiled or mashed (sparingly)
Pumpkin
Salisfy
Squash
String beans
Sweet potatoes (baked or boiled)
Turnips (white)
Turnip tops
Radishes
Swiss chard
Wax beans
Watercress
Pure olive oil for salad dressings

Dairy Foods

Butter
Sweet Cream

NOTE—Obtain cream from dairies which use stainless steel or glass sterilizers.

Bread

Bran
Bran muffins
Biscuit (whole wheat)
Corn bread
Graham bread
Graham wafers
Rye Bread
Rye Krisp
Whole wheat bread
Whole wheat wafers
Whole wheat toast

Beverages

Apple juice (made fresh)
Pear juice (made fresh)
Cream, one-half water
Distilled water, all you can drink

Desserts

Whole Wheat bread pudding
Rice Pudding
Whole wheat plain cake
Pure Honey
Pure Maple Syrup
Brown Sugar
Jellies of allowable fruits
Fruit Ices
Jams
Preserves
Sherbets
*Ice Cream

Where fresh vegetables are unobtainable, dried vegetables or vegetables which have been put up in glass containers (cold packed) are permissible.

Condiments

Dilute hydrochloric acid diluted with water to taste, may be used as a vinegar substitute for those desiring such. Salt may be used sparingly.

**Home made ice cream made with cream and without vanilla is permissible and the allowable fruits and fruit juices may be used.*

MUST NOT EAT

while under treatment.

Fruits

Cherries	Grapefruit	Grapes
Cranberries	Lemons	Quinces
Currants	Limes	Rhubarb
Gooseberries	Plums	

Vegetables

Egg plant	Rhubarb
Parsley	Sauerkraut
Pepper grass	Spinach
Peppers	Tomatoes
Asparagus	

Dairy Foods

Buttermilk	Sour Milk
Cheese (any kind)	Sour Cream

Must not eat poultry, fish, eggs or meats

Desserts

Chocolate Ice Cream	Junket
Chocolate pudding	Spanish cream
Egg Custard	

Candies

No candies, chewing gum, or chocolate, etc.

Condiments

Bottle sauces	Mustard
Catsup	Pepper
Ginger	Spices
Horse radish	Vinegar

Beverages

Alcohol	Ginger Ale
Beer	Lemonade
Champagne	Mineral waters
Cordials	Spirits
Coffee	Tea
Cocoa	Wine
Carbonated water	Instant Postum
Chocolate	

Tobacco

Cigars	Cubebs
Cigarettes	Smoking Tobacco
Chewing Tobacco	Snuff

Medicines

Must not use any home remedies as:

Aromatic spirits of Ammonia	Alcohol rubs
Aspirin	Witch hazel
Coal Tar products	Fever mixtures
Cathartics	Hypodermic injections
Castor oil	Iodine
Cold creams	Glycerine
Cough syrups	Glycerine suppositories
Sleeping medicine	Patent medicines
Pain killers	Salicylates
Hair tonics	Vaseline
	Etc., etc.

USE
DISTILLED
WATER
FOR ALL
PURPOSES

SPECIAL POINTS IN CARE AND MANAGEMENT

It is impossible to lay down fixed rules that will apply in the conduct of every patient or even in the majority of patients. This is a matter of careful supervision and personal judgment. Even dietary regulations will have to be adapted to the peculiar conditions of each case. Some patients will thrive on a liberal intake of liquids, while others will do better with small amounts of drier and more concentrated foods.

When the liver function is unimpaired, a much larger proportion of oils and fats can be taken than the more bilious type of individual will tolerate. Those with weakened digestive capacity and "irritable stomachs" may find a meat free diet very irksome and insufficient over any great period of time. Some concessions may have to be made in such cases from a strictly vegetarian pabulum, but they should not be left to the patient's own caprice and inclination. Patients with tuberculosis require a somewhat different diet than cancer patients, although the common practice of stuffing such patients with eggs and meat is to be deplored.

Over-exertion and fatigue are likely to prove highly injurious in tuberculosis and there are times in the recovery process when several days and even weeks of complete rest in bed may prove advantageous. We have

found this to be a good practice in cancer cases, also, where considerable toxemia and weakened circulation have greatly reduced the patient's vitality.

The activity of the bowels can be controlled to a large extent by the character of the diet. Enemas are sometimes necessary, but the object should be to secure normal bowel activity without artificial aid as soon as possible. Fruits and leafy vegetables should be eaten in liberal amounts if there is a tendency toward constipation. The practice of taking a glass of hot water in the morning is of great benefit in some instances. Dried raisins and dates are slightly laxative.

It is important that patients take great care at all times to avoid becoming chilled, sitting in a strong draft of cold air, sleeping with insufficient bed covers, etc. A single severe chilling may overcome all the good effects of the treatment.

Do not take any medicine of any kind unless advised by the attending physician.

Wash and Dressings for Open Wounds

One to three drops of dilute hydrochloric acid to a glass of water.

LOGIC AND CLINICAL DEVELOPEMENT

In 1912 and 1913, I reported the discovery of fatally toxic amounts of gunaidin and methyl guanidin in the urines of parathyroidectomized dogs, They all died in convulsions in about a week after removing the parathyroid glands, with completeness. The autopsies showed hemorrhagic degeneration of the liver kidneys and brain. and excessive amounts of lactic acid were eliminated in the urines. The large veins showed striated, antemortem clots, not of the fibrinous normal type but rather a jellation of the blood colloids.

From these findings and the fact that guanidin presents an amine group of high activation due to its conjugation with an imide group, I concluded that the amine group of guanidin liberated its hydrogen atoms to a highly negative group that had to do with the initiating of the tissue oxidations, for lactic acid was formed and hence fermentation took the place of oxidation of fuels in the tissues . One way in which it could accomplish tissue oxidation suppression in this way was to condense with a carbonyl group, which indeed would be eagree to make such a condensation because of its high electronegativity. Then I postulated that the tissue oxidations were initiated by the dehydrogenating action of a carbonyl group normally, and when this action was blocked, fermentation would take the place of oxidation, and the amount of energy production would be limited and of too low a potential to supply the electric energy to charge the tissue and blood colloids, therefore they would not be dispersed and would settle out as a jell and block the fine cappilaries causing the hemorrhagic degenerations of the vital organs that was observed. Distribution of oxygen to the tissues is thus blocked also.

The facts then led to the conclusion that the tissue oxidations were initiated by dehydrogenating Functional Carbonyl Groups which I named the FCG. Now in order for these carbonyl groups to have the preference as dehydrogenators, they must be activated by receiving quotas of electrons from other groups joined to them, and so I postulated that each carbonyl group was conjugated with an ethylenic linkage which passed its electrons on to the carbonyl group. This combined system of carbonyl and ethylene I named the Functional Carbonyl Group system- (FCG SYSTEM)

It was evident then if this postulate were correct that oxidation could be blocked by an azomethine condensation with the FCG, or by an addition to one pole of the double bond that activated the FCG. And it was easy to see how the latter means of blocking oxidation could be brought about by the very conditions

encountered after parathyroidectomy, particularly the general anoxia of the tissues brought about by the failure of the jellated blood to circulate and carry oxygen to the tissues. This lead to a basis for a general type of pathogenesis, since if the FCG started oxidation progressions through dehydrogenations, then free radicals would be formed at the point of removal of hydrogen from the fuel substrate and such a free radical, not having its oxygen to combine to form a peroxide free radical that continued the oxidation process, would have to add to something else and the closest thing to which it would add is the double bond that activated the FCG. In this way the fuel would become locked into or integrated chemically with the cell's energy producing mechanism, and block its action.

Then it was logical to conclude that if the dehydrogenated substance, the free radical that was formed belonged to some pathogen that entered the field (that would ordinarily be burned as fuel as a prodedure of the natural immunity as we assumed) in the absence of adequate oxygen it would add to the double bond of the FCG system and become integrated with the cell energy producing mechanism, and be able to exert its pathogenic properties as an integrated part of the cell, and no amount of serological effort could remove it. Indeed such is the case practically for onec a virus has integrated with the cell it can not be removed by serological procedures./ The same applied to pathogens integrated with the FCG by azomethine condensation Then according to whether the integrated substance was one that blocked energy production or withdrew energy or contributed energy to the cell energy producing mechanism, the pathological effect would be either an anergy, an atrophy, or a hyperactivity of the functional mechanism that made the addition, in other words an allergy. So if the conducting mechanism was effected in nerve cells or their synapses, a compulsion neurosis or fixed idea would be the result, If the contractionm mechanism were the victim, then muscle spasm as in asthma would take place, and if the cell were a secreting cell, a hypersecretion as in hay fever would follow. and if the mitotic mechanism were envolved it would be a hyperplasia outside of physiological control as in neoplasia.

When a virus as in Rabies, dog distemper, or Anterior poliomyelitis, is the integrated pathogen, not only paralysis but cell destruction would take place as a lytic process, or the cell would be inactivated as in a symbiotic process, But if the process of oxidation only was blocked then an anergy would follow as in diabetes. To check up on these pathogeneses, it was necessary to devise a means of dehydrogenating the integrated pathogen and produce a free radical therein

while adequate oxygen was being supplied, so that this free radical would add molecular oxygen and become a peroxide free radical that caused the cleavage of the pathogen from the energy producing mechanism, and at the same time started a progressive oxidation therein that yielded the energy and materials back to the cell that the viral pathogen actively took away during its vegetation, and thus provided fpr the reconstruction of the nerve cell that was injured as in rabies, poliomyelitis distemper and other paralytic diseases. In such cases the return of function would indicate that the pathogenic virus was removed . This result is exactly what was observed as clinical proofs demonstrate.

Moreover the pathology in cancer must be on this basis,-an integration of two pathogens, one the initiating pathogen/or virus and a sustaining polymerizing a free radical, a mercaptan etc., carcinogen that yielded energy while integrated with the FCG system, and passed this energy on to the FCG system to force its mitosis. Removal of the carcinogen would then cause the cell to stop dividing, and such neoplastic cells that formed a tumor and were in excess must be removed as a blood clott or other obsolete and histological tissue. This again is what was realized as abundant clinical/proofs demonstrate.

The reagents used at first to supply the dehydrogenating carbonyl functiom were glyoxal and short chain ketoaldehydes similar to methyl glyoxal in which the smallness of the reagent/eliminated the problem of steric hindrance, and the molecule results were effective as was proven in the offical 1919 A.M.A.- Wayne County Medical Society investigation in which five cases of confirmed undoubted cancer of/ the vital organs in their terminal states were treated, and at least 3 out of the five recovered and possibly a fourth, that could not be followed as he lived too far away, but in view of the good results had in his case patients came from his home town 300 miles away as long as five years later to receive the same treatment.

These short chains with carbonyl activated by conjugation with carbonyl were then increased in molcular weight so as to contain many carbonyl groups im conjugation and accordingly the oxidation/ reduction potential was boosted, and vigorous dehydrogenation could be had. To this class belong the polymeres of rhodozonic acid and triquinoyl .

It was also found that carbonyl activated by conjugation with ethylenic linkages as in benzoquinone and diphenoquinone were active dehydrogenators, and were used with success in all of the pathologies classified above. as were also the reagents in which carbonyl was activated by conjugation with other carbonyl groups.

The clinical proofs of the foregoing statements are an enormous record some of which appeared in the Federal Court trials of 1942 and 1946 of five months each of daily sessions in which the U.S. government claim that the remedies were ineffective were proven false so abundantly that the U.S. government had to withdraw its false charge and set me free from imprisonment. The clinical proofs were too strong and were uncontradictable, the diagnoses of cancer being made by America's greatest authorities, at our proudest institutions, as The University of Michigan hospital, the Henry Ford Hospital of Detroit, The Mayo Clinic, the University of Oregon Hospital and many others where the nations leading pathologists made the pathological diagnoses and the nations leading surgeons made the diagnostic explorations and gave the patients up as entirely hopeless. The cures were complete with complete absorption of all cancer tissue, complete healing of the destroyed tissues and perminent recovery and immunity to the disease. Some of these fully diangosed cases of the Court records, uncontradictably established, are still alive 40 years and more after the diagnoses were made and the patients were treated with one or two doses of the canbonyl compounds ,

The other pathologies treated and varified in the Federal Court Trials as uncontradictable, cover the whole gamut of disease, showing that a least common denominator in pathogenesis and its reversal has been established. The details are to be found in the author's book, THE SURVIVAL FACTOR IN NEOPLASTIC AND VIRAL DISEASES. copyrighted in 1954, 1960, and 1966. and also in the Chemistry of The Natural Immunity, copyrighted in 1936, and the text "Cancer and its Allied Diseases" copyrighted in 1926 and 1929.

Since the work was started as a physiological investigation in 1912, several facts besides the place of the free radical in pathogenesis and its reversal have been established of physiological interest, namely the pathogenic effect of amine groups when highly activated as in the present antibiotics. The toxic effects of activated amine in the blocking of the tissue oxidations is seen when antibiotic agents are given to pregnant mothers, and the offspring are born defective as the teratogenic defects of thaliomide and the defective childrem of mothers who sustanied viral infections as measles, mumps abd influenza during pregnancy, Here we see the effect of the pathogenic inhibitors of oxidation when integrated with the developing cells of the foetus by which energy for cell development is blocked It is interesting that such victims have been restored to normalcy also by the procedure of this thesis.

The Lord's Prayer is the greatest of all educational theses. It tells us who we are with relation to the Creator, the One Who threw the great unfathomable stars and suns into space, and created their everlasting energy, mption and distances for the particular service of the Earth. The Gospel of St. John tells us that in the Creation of all things the Lord Jesus was with the Father as the Creator. It was He the Redeemer who taught us how to address a prayer to the all loving infinite Father, the prayer that takes care of all of our needs.

National Foundation for Cancer Research

P.O. Box 187 • Woods Hole, Massachusetts 02543

NFCR

Scientific Director
Dr. Albert Szent-Gyorgyi
(617) 548-3705, Ext. 393

Nov. the the 1st, 1979

Dear Doctor Garber,

I thank you for your kindl lines and you willingnesss to arrange a meeting with Paul Koch. I can tell you, I have a great admiration for Koch. He musth have beeen a very outstanding man /. My feeeling is that he had a strong intuitive feeeling about the role of C=O group and expecially its conjugated form as C=OC=O as one of the great regulating forces in nature. It is very unfortuante that he never expressed this clearly and definitely in any hos writings known to me. I have beeen working myself on these lines now for ye-ars and the subj has made very great progress and it is doubtful whether the notes of Dr.Kock could help any further.

I would not like to become involved in the controversy around his name and, maybe, reproached later that I led in my studies by the posthumus notes, which Paul could put at my disposal. I also doubt whether I could find the time for their study they undoubtedly deserve. I would not like either to revive the controversy around his work. That he was met by hostility it is not doubtful for me. I know it from my own experience that people with intuition are regarded as an enemy wh/ø/ by those who have none.

With reiterated thakns very truely yours:

Albert Szent-Gyorgyi

A Brief review of some of the Medical & Cancer Research of Albert Szent-Gyorgyi. Ph.D., M.D., N.L.

In 1950 Dr. Albert Szent-Gyorgyi said "....I often hear distinction drawn between 'basic' and 'applied' research with the unspoken implication that 'basic research' is that which cannot be applied and thus is useless. There is no such difference for all knowledge is useful, all research is but applied research. The difference is merely in timing and dimension. 'Applied research' is the application of knowledge already acquired, paying cash return. **Basic research, which seeks new knowledge for knowledge's sake, new truth for truth's sake, is the foundation of the applied research of tomorrow.** All really important progress of today was abstruse, apparently useless research yesterday, and if we neglect basic research today we have cut out the roots of progress tomorrow.....Antibiotics were a few years ago merely the subject of the curiosity of two people who were interested in the theoretical problem of natural defense regulations. **A big scale reduction in human suffering can come only by such extension of basic knowledge.**"[1]

Dr. Szent-Gyorgyi, during his lifetime, conducted extensive 'basic research' in the fields of physiology and medicine. It was this research that made it possible for him to isolate ascorbic acid from the adrenal glands and from various plant juices and then prove that this ascorbic acid was identical to vitamin C. This research opened the door for him to conduct basic research in the field of cancer. From liver extracts he found an unidentified substance, which he called **"Retine", that had the ability to retard neoplastic cell division and growth.** ("l"; Prevention, Nov. 1972, pp. 124-131)

Based upon his "basic cancer research", Dr. Szent-Gyorgyi presented his theories on the cause of cancer and his ideas as to a proposed method of treatment for cancer in his last two book-lets: "ELECTRONIC BIOLOGY AND CANCER, A New Theory of Cancer", 1976, and "THE LIVING STATE AND CANCER", 1978. Here he narrated that the sulfhydryl (SH) was called the hormone of cell division in 1929 by F. Hammett. ("q"; p. 34, & "r"; p. 62) Through his research, he was able to identify **methylglyoxal (MG), a dicarbonyl**, as the **growth inhibitor** he had been looking for and which he had called **"Retine"**. He stated that both **methylglyoxal and glyoxal (the simplest dicarbonyl) were antagonistic to the cell proliferation action of the (SH) group**. He called **methylglyoxal the red light to cell division**. ("r"; pp. 62-3) He also has shown that **glyoxal and methylglyoxal will suppress cell division without harming the cells** and that this suppression is reversible. ("q"; p. 29) He further **attributes the suppression of cell proliferation to the carbonyl groups**. ("q"; p. 71) He points out that ascorbic acid is oxidized to dehydroascorbic acid, a **dicarbonyl** and that this structure satisfied the requirements of an inhibitor of cell division and that the primary oxidation product of the oxidation of ascorbic acid is a **free radical** and that **the ascorbic acid radical attaches to methyl-glyoxal making it a stronger electron acceptor**. ("q"; pp. 71-2 & 49)

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[1] The Next Half Century In Medicine - *A Symposium*; Sterling – Winthrop Research Institute, Dedicatory Exercises, May 17-18, 1950; pp. 39 – 47.

Dr. Szent-Gyorgyi reports that the ketone aldehydes inactivate the (SH) group by acting as an electron acceptor for protein and thus contributes to the stability of the cell's beta state and its structure. It has been shown that **carbonyls react with guanidine; guanidine being a good electron donor.** ("q"; pp. 32-3)

That the dicarbonyls, which are highly unsaturated compounds and rather reactive substances, can be present in cells only in a very limited quantity; that they can not exist in the strongly reducing anaerobic atmosphere of the alpha state. The dicarbonyl is a specific feature of the beta state. ("q"; p. 23) **He goes on to say that it is probable that a more effective electron acceptor will be found than glyoxal.** ("q"; p. 86)

Dr. Szent-Gyorgyi expressed the opinion that the two more important and direct roles for oxygen were the transformation of protein into free radicals and semiconductors, and the promotion of electronic reactions, making charge transfer and formation of free radicals autocatalytic ("q"; p. 64). He further states that a lack of oxygen will eventually take the cells back from the oxidative beta state to the fermentative alpha state. That without oxygen dicarbonyls cannot be produced in the cell and without dicarbonyls oxygen systems can not be built. That the presence of oxygen and the dicarbonyls are both essential to the beta state, and without either one, the other can not exist and the cell will go from the beta state of oxidation to the alpha state of fermentation. **That this situation may play a major role in oncogenesis. That he expects that the dicarbonyls will induce contact inhibition in cancer cells.** ("q"; pp. 82-3)

Dr. Szent-Gyorgyi also reports that the suppression of proliferation of invading microorganisms in vegetable cells is accomplished, irreversibly, by highly active aromatic dicarbonyls such as diquinones of catechol derivatives, i.e., o-diquinones which is toxic ("q"; p. 71) and that methylglyoxal would inhibit bacterial growth. ("q"; p. 38)

According to Dr. Szent-Gyorgyi, animal cells exist in two states, a fermentation (alpha) state where there is cell proliferation and a normal oxidative (beta) state which involves the higher functions of complex cells. That when this beta state becomes un-stable or is deranged by out side factors, the cell can change and persist in the proliferation alpha state and thus tumors would result. After normal cell division, cells will return to the beta state; i.e., there is a reversible transformation from the beta state, during normal cell division, to the alpha state (undifferentiated state) which is followed by a return to the beta state (differentiated state). **The cancer cell lacks the ability to return to the beta state and continues its uncontrolled division in the alpha state. Thus the cancer cell has lost its reversibility.** ("r"; pp. 68-69)

In the final chapter of Electronic Biology and Cancer, Dr. Szent-Gyorgyi went on to write that the di-carbonyl's oncostatic action had been well established. Dr. Szent-Gyorgyi was also of the opinion that quinones were very toxic and that ortho-quinones would inhibit cell division. Though he said he found quinones devoid of

therapeutic activity; he did not identify which quinones he was referring to and he did not give any information on the types of biological tests he had conducted with these quinones, the conditions under which these tests were conducted and how the test material was prepared.

A complete study of Dr. Szent-Gyorgyi's medical and cancer research by a modern cancer researcher could open the eyes of that researcher to the real solution to the cancer problem that all of us face today. He could learn, if he really wanted to learn, the correctness of Dr. Szent-Gyorgyi's cancer research and that his cancer research does confirm the basic principal of the body's chemistry of natural immunity.

The research of Dr. Szent-Gyorgyi has been continued, after his death, by his co-researcher, Dr. Laszlo G. Egyud. Dr. Egyud holds two United States Patents: 1) 5147652 and 2) 5849783. In his patents he describes the simple dicarbonyl structure of glyoxal and the alpha-ketoaldehydes starting with methyl glyoxal, and the importance of these chemicals with their dicarbonyl structure, that inhibit cell division, to the function of the natural immune system of the body. Dr. Egyud points out that the immune system selectively destroys and eliminates invading pathogens and/or organisms (nonself cells) such as bacteria, viruses, fungal diseases, parasitic diseases and cancer cells.

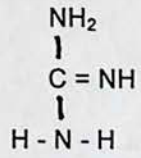
In 1939 Dr. Koch in his book, "The Chemistry of Natural Immunity", wrote about the importance of the pure dicarbonyl structure (O = C = C = O) of Glyoxylide to the function of the body's immune system. Triquinoyl, $(O = C = C = O)_3$, a well recognized organic chemical and it is the trimmer of (O =C = C = O).

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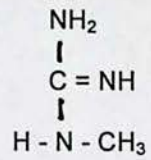
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n) "Electromagnetic Theory of Cancer, A Nobel Winner's Explanation," by Patrick Young who reported on Dr. Szent-Gyorgyi's cancer research; The National Observer, July 5, 1975;
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q) "Electronic Biology And Cancer, A New Theory of Cancer", 1976 (Narcel, Dekker, Inc.)
r) "The Living State and Cancer," 1978 (Narcel, Dekker, Inc, New York and Basal) go into a greater detail on his research. These two Booklets can be obtained through "U.M.I." in Ann Arbor, Michigan (1-800-521-3042);
s) The Next Half Century In Medicine - *A Symposium*; Sterling – Winthrop Research Institute, Dedicatory Exercises, May 17-18, 1950; pp. 39 – 47;
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u) Why Is This Man Smiling? Carol Kahn, Family Health, pp. 47-48, July 7, 1982;
v) Lost In The Twentieth Century, Albert Szent-Gyorgyi;
w) Albert Szent-Gyorgyi, 1937 Nobel Prize Winner, 45 Years Later, (Newspaper article)

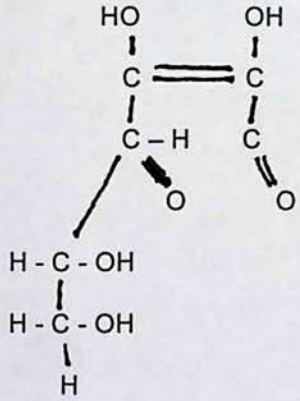
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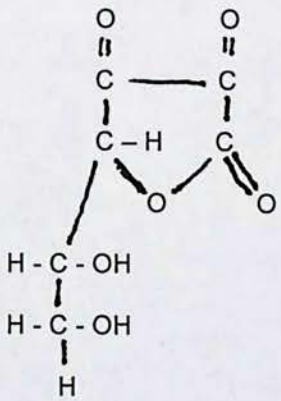
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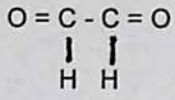
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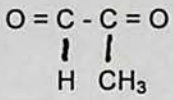
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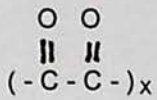
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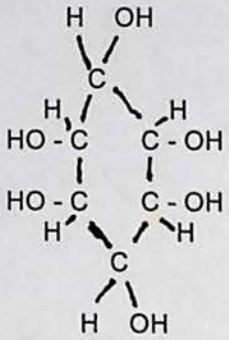
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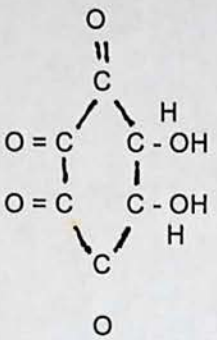
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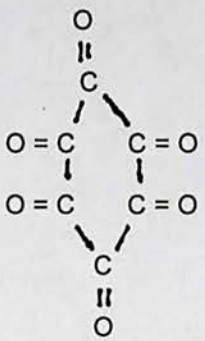
Serial System of Carbonyl Groups with free radical terminals



Inosital



Rhodizonic Acid



Triquinoyl

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THE SEARCH FOR A NATURAL CURE FOR CANCER

International Association of Cancer Victims & Friends, Inc.
Box 707, Solana Beach, California 92075 — Phone (714) 755-9781



by Nobel Prize Winner Albert Szent-Gyorgyi, M.D., Ph. D.

There is a great need for a drug which cures or prevents cancer without harming the patient. Such an action can be expected only from a natural substance. I have to explain what I mean by "natural."

The cell is an exceedingly complicated and subtle machinery in which all functions are carefully regulated. A normal cell divides only when division is needed. A cancer cell divides also when no division is needed. The regulations are out of order. All efforts to show the difference between the chemical makeup of a normal and a cancer cell have hitherto failed. The cellular structures are identical; only the regulations are disturbed. Something has gone wrong which has to be repaired.

In order to be able to repair any mechanism, we must know how it is built and how it works. As told by Bernal, we can control only what we understand. To be able to repair, we must find out what has gone wrong – which screw is missing or which bolt has loosened. To replace it, a new part which takes over the function of the old one, is what I call a "natural cure." Only by replacing the failing part, can we expect a real cure which does no damage to the host. Putting in all sorts of substances which we take from the shelf, or synthesize are not "natural," even if taken from some plants. The same holds for high energy radiation. All these artificial therapeutic agents interfere with some basic function on which both the cancer and the normal host cell depend. They have thus to damage both.

For years my laboratory has worked in silence to find out how the living cell regulates its proliferation. We have arrived at a fairly clear concept and hope to be able to identify soon the part which is not working properly. In my opinion, this is the only hopeful approach. It is not an easy one because the living machinery is very complex and subtle. This is not a new approach either. It is the oldest approach but it is not a sensational one and so it is very difficult to find support for it. The National Institutes of Health, the main granting agency for biomedical research, rejected my application thrice. I had no luck with the cancer society either. Everybody wants a quick cure, but there are no shortcuts to basic research. There are shortcuts only to failure.

Life originated on a dark and airless globe on which there was no light and oxygen, and we can guess that under those very poor conditions life could develop only the simplest forms and could become continuous by proliferating as fast as conditions permitted. As the measure at which the globe cooled, the surrounding water vapor condensed and light could get through. Life utilized it and produced oxygen with it and oxygen made life develop, differentiate, build complex functions with complex structures. The problem is: How could oxygen do this? Oxygen makes oxidation, burning possible, and oxidation produces energy. Warburg, the great German biochemist, made energy responsible for the development. But energy cannot transform, build machines, it can only drive them. But if it was not energy which provoked the development, then it had to be oxygen itself which made the difference. "Oxidation" in scientific language means taking "electrons," electric particles from oxidized material. All matter is built of an atomic nuclei and electrons. Taking electrons from a substance means oxidizing it. The oxygen of the air does not take electrons from the living protein, but there are atomic groups, called carbonyls, which contain oxygen which can take single electrons from protein, bringing the proteins hereby into a most reactive form, called "free radical." The transformed proteins have very special properties, like electric conductivity. It is here in the electronic dimension that something is out of order in cancer. Carbonyls arrest cell division and my laboratory was led to the conclusion that it is still the carbonyls which arrest cell proliferation and it is the carbonyls which make the cell return to the resting state, after it completed division. If the carbonyls are missing, proliferation has to go on, and cancer results. We were not the first to be led to such a conclusion. A decade ago a very intuitive researcher, W.F. Koch, came to the same conclusion. Unfortunately, he did not leave us enough information to enable us to follow his trail.

By having carbonyls as regulating agents, the problem is by no means solved. We have to find out how the carbonyl fits into the regulation, how it is produced, destroyed and how it acts. There is still a long way to go, but I am very confident that this is the right way and the end is not too far. It is very unfortunate that the research worker on this line has to fight a battle on two fronts: one against nature to learn her secrets. This battle is interesting and hopeful. The other battle is against the narrow bureaucratic thinking. This fight is uninteresting, hopeless and very discouraging, and if not long ago a small group of people, the "Bethesda National Foundation" had not come to my help, I would have had to give up research altogether. What keeps me going is not only their financial support, but also the confidence of my fellow Americans.

Albert Szent-Gyorgyi, M.D., Ph.D. 548-3705
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Laboratory of Muscle Research - see Center for add.

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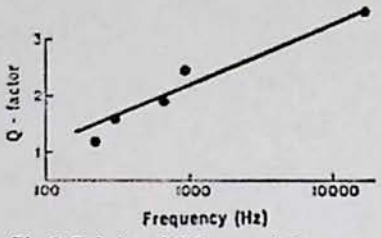


Fig. 2. Relation of Q-factor and frequency calculated from the curves of Fig. 1.

When one plots the data Békésy obtained in human cochlear specimen (*2*, Fig. 11-49) in a normalized manner with respect to frequency (*4*), then indeed it might appear as though Johnstone and Boyle were correct. Although there is some nonsystematic spread of individual data, the Q-factor, for the frequency range studied, does not appear to vary with frequency and it has a value of approximately 1.7.

However, Fig. 1 presents the data Békésy obtained in guinea pigs (*2*, Fig. 12-23) in a normalized manner with respect to frequency and the curve of Johnstone and Boyle (*1*), also obtained for guinea pigs, is appropriately entered. There is a systematic change of the Q-factor with frequency. For better illustration, the latter change is presented in Fig. 2. The relation follows, in first approximation, a straight-line function, and the value of Johnstone and Boyle, also included in this figure, represents a reasonable extension of Békésy's low-frequency data. [There is a numerical discrepancy between the Q-factors as computed by Johnstone and Boyle from their data (2.5) and that calculated here (3.56). Since we had to take the data from the graph in (*1*), we are not sure whether the discrepancy is genuine.]

It is gratifying that the new data of Johnstone and Boyle (*1*) fit those of Békésy (*2*) rather well. In fact, we find the agreement remarkable.

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S. M. Khanna

Department of Otolaryngology, Columbia University, New York 10032

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5. Supported by PHS grants.

6 March 1968

Tonndorf and Khanna's method of plotting the tuning curve is interesting, as is their graph of the relationship between Q and frequency. We had also noticed the trend in Q (*1*). As to the question of absolute values, our statement was that no absolute values had been given for the tuning curves, and this statement is correct as far as we know. We acknowledged that Békésy did present some absolute values, and we quoted them (400 Å at 90 db SPL); however, the relationship of this figure to the tuning curves is obscure.

Our results are in some aspects different from Békésy's, almost certainly because they were measured at a different place and with different frequencies; however, our measurements are in no way inconsistent with his observations.

B. M. Johnstone
A. J. F. Boyle

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25 March 1968

Cancerostatic Action of Methylglyoxal

Several years ago, experiments on a cancerostatic agent found in normal tissues (*1*) indicated that it might be methylglyoxal, a keto-aldehyde, or a derivative thereof (*2*). Several α-keto-aldehydes were therefore synthesized and studied (*3*), and were found to have a specific inhibitory effect on cell proliferation by inhibiting protein synthesis (*4*, *5*). Bacteria, germinating seeds, flagellates, fertilized eggs of sea urchins, and cells in tissue culture were used as test material (*5*). Some of our findings were corroborated by others (*6*). We found that cancer cells in tissue cultures were more sensitive to methylglyoxal than normal ones were, a finding of possible significance for cancer therapy (*3*, *7*).

Swiss albino mice were injected intraperitoneally with 20 million ascites sarcoma 180 cells, and were then treated with an intraperitoneal injection of methylglyoxal (*8*) for 9 consecutive days. The mice were divided into four groups of 20 animals each. In the first group, treatment began 1 hour after inoculation; in the second, 4 hours; in the third, 24 hours; and in the fourth, 48 hours after inoculation. Each animal received 18 injections (four 2-mg injections followed by fourteen 1-mg injections) twice daily, 12 hours apart. Control animals received the same volume of physiological saline. The mice were observed for 10 months. In the first group, 15 animals remained free from ascites; in the second group there were 13; in the third group, 7; and in the fourth group, 4. The rest showed varied lengths of survival. All the control animals died in the first 26 to 34 days of the experiment. The cured animals had normal-sized, healthy litters.

Our experiments show that mice inoculated intraperitoneally with sarcoma 180 can be cured by intraperitoneal injections of methylglyoxal.

These experiments, performed in the winter of 1966 to 1967, were not published because we doubted the value of local treatment of cancer, and no therapeutic effect was obtained with solid tumors of sarcoma 180 on intraperitoneal or subcutaneous injection of methylglyoxal. Our experiments were preliminary, and we planned to extend and improve them. We report them here in response to the paper in which Apple and Greenberg (*9*) described similar results. These authors seem not to have been fully acquainted with our work on methylglyoxal, whose derivative, Kethoxal (Upjohn), is used as a cancerostatic agent.

Laszlo G. Együd
Albert Szent-Györgyi

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Biophysics

The living state and cancer

($\alpha = \beta$ period/methylglyoxal as electron acceptor/doping of protein/glyoxalase and entropy/SH catalysis/oncogenic paradox)

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Contributed by Albert Szent-Györgyi, March 2, 1977

ABSTRACT **Complex living structures developed on our globe after the appearance of light and oxygen. In functions of these structures, solid state phenomena play a major role. The structural proteins were made into radicals by doping, the covalent incorporation of electron acceptors. This lent mobility to their electrons and a subtle reactivity to their molecules. Cancer is unable to go into the radical state.**

We divide the surrounding world into "animate" and "inanimate," alive and not-alive. The division is sharp, unequivocal, which indicates that there has to be some basic difference between the structures of the two. The nature of this difference may be the most important problem of contemporary science. Apart from having this intrinsic interest, the problem also urgently asks for a solution because the understanding, cure, and prevention of a host of degenerative diseases, like cancer, are waiting for our better understanding of the living state. We can control only what we can understand. Shortcuts, in science, mostly turn out to be blind alleys.

The history of life has been divided into two periods by the appearance of light and oxygen. There are reasons to believe that in the first dark and anaerobic period, which I have called the "α period," life could develop but the simplest forms, capable only of the most primitive vegetative functions. Life began to develop and differentiate, build increasingly complex forms capable of increasingly complex and subtle functions, when light and oxygen appeared. The second, aerobic and light, period of development and differentiation I have called the "β period." Accordingly, we have two problems. First, what distinguished the animate from the inanimate in the first, primitive α period? Second, what had to be changed in the basic structure of the living systems to open the way to development and differentiation, the final product of which is us?

The α–β transition

Life originated on a dark and airless globe, covered by dense water vapor. There was no light and no oxygen. Life has left behind very few traces from this first dark and anaerobic period and so we can only philosophize that under the inhospitable conditions of that period life could develop but the simplest forms, capable of performing only the simplest "vegetative" functions. The main product of this period had to be the protein molecule which, by its specific folding, could develop a catalytic activity.

To make life perennial, the living systems, in this period, had to proliferate as fast as conditions permitted. Energy for this proliferation had to be produced by fermentation so that the α period could also be called the fermentative period of unbridled proliferation.

When, owing to cooling, the water vapor condensed and light reached the surface of the earth, life started to develop and differentiate, build increasingly complex forms capable of increasingly complex and subtle functions. To guard the harmony of the whole in the midst of increasing complexity, the unbridled proliferation had to be replaced by regulation.

What life did with the light was to capture its photons and use their energy to separate the elements of water. The hydrogen it fixed by linking it to carbon, producing its own food, the oxygen it released. The invested energy it could recover by reverting the process and oxidizing the hydrogen of food to water again.

The protein molecule developed in the α period was, essentially, a long chain of peptide bonds. There being no oxygen, the atmosphere had to be strongly reducing, dominated by electron donors—that is, molecules tending rather to give off than take up electrons. Under these conditions, the orbitals of the protein molecule had to be occupied by electron pairs, strongly held in their place. The resulting "closed shell molecule" had to have a low reactivity and little tendency to build complex structures, there being no unbalanced forces to hold it together, and no electronic mobility to integrate its function with that of other molecules.

Present biology is a molecular biology. According to it, the main bearers of life are the protein macromolecules with their molecular reactions. One may wonder how such poorly reactive clumsy macromolecules could bring about those subtle biological reactions which characterize life and lend its charm to biology. One may wonder whether these macromolecules are really the main actors of life and whether the main actors are not very much smaller and mobile units, electrons, while the macromolecules themselves are rather the stage than the actors of the drama of life. The problem is whether the electrons of proteins could achieve a greater mobility, lending a subtle reactivity to the protein.

The situation in a closed-shell electronically saturated molecule has often been compared to that in a completely filled garage where there can be no mobility. By taking out a single car, all others are made mobile. Similarly, a closed shell molecule can be transformed into a highly reactive radical with highly mobile electrons by taking out one of its electrons. The electron, taken out, has to leave behind its earlier partner uncoupled, has to leave behind an electron hole and a partially occupied orbital. All this has to upset the electronic balance of the entire molecule. Molecules containing an uncoupled electron are radicals, and radicals are known for their great reactivity.

Single electrons can be taken out from molecules by other molecules that have a low-lying unoccupied orbital in which they can accommodate an additional electron. Such a transfer of an electron from one molecule to another is called "charge transfer," in which two radicals are formed, the "acceptor" having a negative, the "donor," a positive charge. In the α period no such charge transfer could take place in proteins. There being no oxygen, the atmosphere had to be strongly reducing

Abbreviations: MG, methylglyoxal; ESR, electron spin resonance.

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and at the generated high electron pressure there could be no stable strong electron acceptors, with low-lying empty orbitals.

Oxygen as electron acceptor

Oxygen is a strong acceptor. After its appearance the atmosphere was no more dominated solely by electron donors, but was dominated by a new parameter, the D/A quotient, the relation of donors to acceptors.

The appearance of oxygen opened the possibility of taking electrons out of the protein molecules, transforming them into radicals with a high degree of reactivity and electronic mobility. The O_2, as such, could not be used as electron acceptor because, being di- or tetravalent, it tended to take up electrons pairwise. The pairwise transfer of electrons is not charge transfer but burning, oxidation, which does not lead to the production of radicals.

Oxygen can be made into a monovalent acceptor by linking its atoms, by double bonds, to C as in C=O, carbonyl, instead of linking them to one another, as in O=O. The carbonyl group being small, it cannot easily accommodate a whole additional electron, which makes it into a weak acceptor. However, its π electron pool can be extended by placing at its side another double bond, be it in the form of another C=O, or in the form of a C=C. The two double bonds being conjugated, their π systems fuse to a wider π system, which is a strong, though still monovalent, acceptor. Two C=Os make a dicarbonyl, a C=O and a C=C make an enal.

Aldehydic C=O is rather reactive but, being hydrated, is not a strong acceptor. Ketonic C=O is stronger, but less reactive. The smallest ketone-aldehyde which unites the advantages of both ketones and aldehydes is methylglyoxal, MG. MG can rather easily be formed along various metabolic pathways. It can form even spontaneously from triose. 2,4-Dinitrophenylhydrazine precipitates out of a triose solution a hydrazone of MG.

In live tissues there are two streams of electrons. In one the electrons are transferred pairwise to oxygen, O_2, producing energy. In the other, the electrons are transferred one-by-one, the acceptor being the C=O, carbonyl. This stream serves the electronic desaturation of protein.

The glyoxalase

The previous chapter opens the possibility that it might have actually been MG or a closely related ketone-aldehyde that served as acceptor in the electronic desaturation of protein and so might have started up the development and differentiation in the α period. To guard the harmony of the whole in the midst of differentiation, the unbridled proliferation of the α period had to be arrested. It seems logical that Nature should have used the same substance for the arrest of proliferation with which she started the development and differentiation. Egyūd and I (1) have shown that MG, at a low concentration, can arrest cell division reversibly, without harming the cell, and so could play a central role in cellular regulation.

Regulation always involves two antagonists. Traffic cannot be regulated by red or green light alone, only by red *and* green. The antagonistic influence in the regulation of cell division might have been the production and rapid inactivation of MG.

It was more than 60 years ago that D. H. Dakin, H. V. Dudley, and C. Neuberg discovered simultaneously a most active enzyme capable of transforming the active MG into inactive D-lactic acid. This methylglyoxalase (mostly called "glyoxalase") is one of the most active and widely spread enzymes. Nature does not indulge in luxuries and if there is such a widely spread and highly active enzyme, it must have something very important to do, but nobody could find out what, neither MG nor D-lactic acid lying on a metabolic highway.

The glyoxalase occupied the attention of a great number of leading biochemists whose studies showed that it actually is not an enzyme, but an enzymic system, composed of two enzymes, "glyoxalase I" and "glyoxalase II," which use SH-glutathione as coenzyme. MG and SH-glutathione form spontaneously a hemimercaptal which is the substrate of glyoxalase I, which transforms it into a thioester. The glyoxalase II then splits the thioester into D-lactic acid and free SH-glutathione, recovering the coenzyme.

But how could MG act as regulator in the presence of a highly active enzyme that destroys it? Evidently, in the resting cell it is stored in an inactive state. Physiology has a great number of examples of keeping a substance in an inactive state. Enzymes can be kept in an inactive state, for instance, by being stored as proenzymes or by being enclosed in impermeable vesicles. They can also be anchored to structures.

Whatever the case may be, the inactivation of a potent enzyme within the narrow boundaries of the cell demands a high degree of order. Any disturbance of this order (say by a carcinogen) would then lead to the release or activation of the glyoxalase, the destruction of MG, and the consecutive induction of proliferation. If it was MG that brought the cell from the α to the β state, then the destruction of MG has to have the opposite effect, and bring the cell from the resting β to the proliferative α state. This could explain why my cells begin to proliferate if I cut myself; the cut is a disturbance which activates the glyoxalase; the glyoxalase destroys MG and brings about proliferation which eventually fills the discontinuity, restores order, and inactivates the glyoxalase.

The oncogenic paradox

The malignant transformation of tissues involves a paradox which, to my knowledge, has not been pointed out before.

This transformation is a very specific process which must involve very specific changes in a very specific chemical machinery. Accordingly, one would expect that such transformation can be brought about only by a very specific process, as locks can be opened only by their own keys. Contrary to this, a malignant transformation can be brought about by an infinite number of unspecific influences, such as pieces of asbestos, high-energy radiation, irritation, chemicals, viruses, etc. It is getting more and more difficult to find something that is not carcinogenic. That a very specific process should be elicited in such an unspecific way is very unexpected.

The paradox can be solved by supposing that the process in question takes place in two steps, an unspecific and a specific one. The unspecific action may be making disorder. Disorder in an ordered system can be produced by practically any influence. Disorder, in cells, may lead to the activation of glyoxalase, the destruction of MG, and the release of proliferation from its inhibition, leading the cell into the proliferative α state. Proliferation will then go on as long as the carcinogen is present and disorder persists.

It is also believable that the destruction of MG pushes the cell into some vicious circle out of which it cannot emerge without outside help. Without MG the cell may be unable to find its way back to its β state. Such a vicious circle is known to most of us: without our spectacles we cannot find our mislaid glasses.†

† If these considerations are correct, then cancer should be produced also by substances that inactivate MG, as 2-naphthylamine or dimethylhydrazine (2) does.

Structure versus solute

In the α period the main components of living systems had to be the soluble protein molecules catalyzing various reactions which did not involve solid-state phenomena. In the β period extensive systems of structures were built. If Nature develops a new system she does not throw the old one out, but builds the new one on top. So she built the system of structures into the solution of dissolved proteins which continued to perform their primitive functions, catering also for the structures. It was the function of the structures which demanded free radicals and electron mobility.

Pohl, Gascoyne, and I (3) separated the soluble proteins and the structures (which, by definition, have to be insoluble), by blender-treating tissues in ice-cold half-saturated ammonium sulfate, then centrifuging out the insoluble proteins. These gave a strong electron spin resonance (ESR) signal, consisting to a great extent of radicals, while the soluble proteins (separated after full saturation with ammonium sulfate) gave practically no signal at all.

This duality in the nature of proteins has, till now, not been fully appreciated. When I proposed, more than 30 years ago (4), that proteins may be semiconductors, the main and apparently decisive argument against my proposition was that none of the great number of proteins isolated in crystals showed any signs of semiconductivity. It was overlooked that crystalline proteins have to belong to the soluble group and so cannot be expected to be semiconductors. It is the structures that are semiconductors, which cannot be crystallized.

The doping of protein

Two molecules can be transformed into radicals by transferring an electron from the one to the other. If the two radicals dissociate, the donor carries with it a positive, the acceptor, a negative charge. Radicals are highly reactive, especially if they carry a charge. Many biologists doubt the possibility of the existence of such charged stable radicals, thinking their high reactivity incompatible with life.

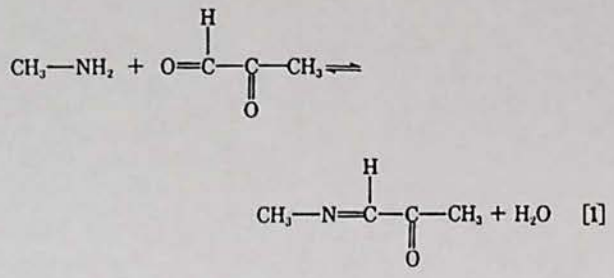
What would be the situation if a protein macromolecule transferred one of its electrons onto an acceptor of small size, but would, before transferring it, incorporate this acceptor into itself? In this case again, two charged radicals would be formed, transforming the protein macromolecule into a biradical, but this biradical would have no net charge, would thus not make trouble. This process of incorporating a small acceptor would be very closely analogous to the doping used in the semiconductor industry. This seems to be the way in which Nature transformed protein macromolecules in the β period into highly reactive radicals without endangering life. She discovered doping 800 million years before man did.

If the protein macromolecule donates an electron to a ketoaldehyde, such as MG, then the transferred electron can be expected to be one of the nonbonded electrons of an amino nitrogen and can be expected to become located mainly on the ketonic C=O, which Abdulnur showed to have a very low-lying triplet level (5).

Proteins being very complex, I started studying this transfer reaction on a model, composed of MG and a simple amine. The simplest aliphatic amine is methylamine.

If dilute (0.1 M) solutions of methylamine and MG are mixed, the gradual appearance of a yellow color indicates the formation of a Schiff base (reaction 1).

The yellow color of the Schiff base is due to the chromogenic C=N group. It is easy to show, by using butylamine instead of methylamine, that the reaction takes place in two steps, a colorless intermediary product being formed first.



Both methylamine and MG are freely soluble in acetone, but their complex is not. If 0.5 M acetone solutions of methylamine and MG are mixed, a heavy colorless precipitate is formed, which rapidly becomes a dark purple, showing a strong absorption at 475 nm. As shown by H. Pohl (unpublished), this purple substance is a tetramer. It can readily be separated on the centrifuge. It gives a strong ESR signal with a rich hyperfine structure, which leaves no doubt that electrons have been transferred from the amine to the ketoaldehyde. The ketonic C=O being connected with the amino N by a bridge of conjugated double bonds, the electron can move over freely, leading to the formation of two covalently bound radicals.

The question is: do proteins give similar reactions? As material for these experiments I chose casein.

If dry casein powder was suspended in methanol containing 10% (wt/vol) neutralized commercial (40%) methyglyoxal and was incubated overnight, next morning the casein was found to have turned brown, having taken on the color of liver. The color could not be detached from the protein by repeated precipitation, dialysis, or "washing" with water or alcohol. The dried brown casein gave a strong ESR signal (3), very similar to that given by methylamine–MG complex. The number of spins tended towards one per casein molecule, which suggested that it was a special amino group that was responsible for the reaction, possibly the terminal amino group of the protein. Similar results were obtained with other proteins, such as serum albumin. Pethig and I (6) found the brown casein to have a greatly increased electronic conductivity.

All this indicates that proteins give reactions with MG very similar to those of methylamine, and protein can be converted into a biradical by incorporating MG into it.

All this suggests that the brown color of the liver is due to the formation of analogous charge transfer complexes. If a mouse liver is blender-treated in an ice-cold half-saturated ammonium sulfate solution and the structural proteins (which have the brown color) are separated by centrifugation, they are found to give a strong ESR signal similar to that given by the MG-treated casein (3). The underlying Schiff base could be split from the liver protein by treating it with 2,4-dinitrophenylhydrazine in 1 M HCl at an elevated temperature. The dinitrophenylhydrazone of the substance split off from the protein and behaved chromatographically similarly to the dinitrophenylhydrazone of MG. Its final identification is not yet established.

On SH

There being no oxygen in the α period, there could have been no sulfates, and the sulfur of the atmosphere had to be present to a great extent as SH, sulfhydryl, participating in the biological processes, becoming involved in their mechanism.

MG has a strong affinity to SH and readily forms a hemimercaptal with it. There can be little doubt that the immediate arrest of cell division by MG is due to a great extent to this interaction.

SH not being electroactive, one has to use devious methods to get information about the reactivity of various SHs. In my experience, one can divide, very roughly, the SH groups of tissues into three classes: highly, moderately, and poorly active. The SHs partaking in the mechanism of cell division belong to the first, the SH of glutathione belongs to the second, and the SHs of metabolic enzymes belong to the last group. However crude and qualitative, this division is a useful one. The MG introduced into the cell will react first with the most reactive SHs involved in the mechanism of cell division. The less active glutathione will not interfere with this reaction. An excess MG will then react with the glutathione, which will protect the less active SHs of metabolic enzymes from the action of MG. Until free SH-glutathione is present the MG is not toxic, but it becomes very toxic as soon as its concentration exceeds that of glutathione, which is present in the mouse in an average concentration of 1 mM.

Extending these studies to diamines, I mixed a 0.1 M neutral ethylenediamine and MG solution. The slow development of a yellow color indicated the formation of a Schiff base. If SH-glutathione was added, the color rapidly turned dark purple. The color was accompanied by the appearance of an ESR signal. Evidently, the SH catalyzed the charge transfer. The change was strongest if MG and SH were about equivalent. Excess SH inhibited.

With this reaction in hand, I went over the various charge-transfer reactions of MG and found that all of them were strongly accelerated by SH. This led to the unexpected conclusion that SH is a general catalyst of the charge-transfer reactions of MG and amines. All these charge-transfer reactions, if taking place in the presence of SH-glutathione, are not the reactions of the MG as such, but reactions of its hemimercaptal. SH has a general catalytic effect on charge-transfer reactions. The mechanism of the action of SH is not understood. J. Ladik (personal communication) made the unexpected discovery that SH can act not only as electron donor but also as electron acceptor, which may have far-reaching biological consequences.

Summing up, we can say that the SH is a catalyst of charge transfer between MG and amines and has to play a central role in the electronic desaturation of proteins.

Theory, therapy, and prevention

The foregoing suggests that cancer essentially is increased entropy, randomness, disorder. It suggests that the cancer cell is unable to arrest growth because it is unable to inactivate its glyoxalase, which destroys the ketone-aldehyde that keeps the cell at rest and in the radical state. The essential difference between a cancer cell and a normal cell is in the degree of order. The question is whether this difference can be equalized or utilized in some way to inhibit the growth of the cancer cell.

To achieve a therapy the normal ketone-aldehyde would have to be restored to the cell. Until the exact chemical nature of the ketone-aldehyde is known, methylglyoxal, which is available commercially, can be used.

The difficulty is that ingested MG is rapidly destroyed. The expired air and urine of mice injected with radioactively labeled MG contains radioactivity soon after injection, the MG having been destroyed by the glyoxalase. This loss cannot be compensated by injecting large quantities of MG because the MG, while harmless at a low concentration, becomes toxic when its concentration exceeds that of the SH-glutathione present.

This leaves but one way open to maintain a low MG concentration, and this is by continuous infusion. P. Conroy of the Biochemical Department of Brunel University is studying the effect of such intravenous infusion in mice, the technique of which is cumbrous and difficult. Whether the maintenance of a low MG concentration will arrest growth of cancer has to be shown. MG, being a physiological substance, does not kill cells. It is possible that a cancer cell may be killed simply by arresting its proliferation, but it is also possible that it may be killed by the lowering of the pH, due to the production of D-lactic acid. The vascularization of cancer being poor, the acid may accumulate to a toxic concentration. If a tissue, such as liver, is treated in a blender in Ringer's solution, and is incubated with MG, within minutes its proteins are denatured and precipitated isoelectrically by the acid formed, the glyoxalase having been activated by the blender treatment. It seems possible that the cancer cell can be made to commit suicide by means of its own active glyoxalase, if a low concentration of MG is maintained. All this may open also very interesting possibilities for the local treatment of cancer. It seems not impossible that ways to the prevention of cancer may also be found by means of decreasing the electron donor/acceptor quotient.

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Is Methylglyoxal the lost Koch Glyoxylide?

Found at alph Moss's CancerDecisions.com
(Hyderabad, May 28)

INDIAN CANCER researchers have taken a giant step on the road to discovering the ultimate cancer cure by developing a drug that selectively targets the cancer cells without harming the healthy ones.

Researchers in Calcutta claim that patients in "very advanced stages" of cancer for whom all other treatments had failed have been brought back to "excellent" health with the help of a drug formulation they have developed after research spanning more than a decade.

"We have what we think magic bullet against cancer," says Manju Ray, a biochemist at the Indian Association of the Cultivation of Science (IACS) where the drug was developed under a project funded by the Department of Science and Technology and the Council of Scientific and Industrial Research.

Most currently available anti-cancer drugs are toxic because they also damage the normal cells. Ray says the IACS formulation, containing "Methylglyoxal" as the lead ingredient, combats only the diseased cells, the cherished goal of cancer researchers worldwide. Methylglyoxal is a metabolite in the human body produced during glucose breakdown.

Others involved in the project are Swapna Ghosh of IACS, Manoj Kar and Subhankar Ray of the University College ofScience, and Santajit Datta, a medical practitioner. Results of human trial conducted by them with the new drug have recently appeared in the Indian Journal of Physics. While Americans are going ga-ga with their new anti-cancer drug "Glivec" - that was featured on the cover of May 28 issue of Time magazine - the low-profile, cash-strapped Kolkata researchers have been working quietly for over a decade shunning publicity until they obtained proof from human trials nine weeks ago. According to their published paper, the Methylglyoxal-based formulation had "a dramatic positive effect on the patients". For instance, the condition of 11 out of the 19 patients treated - most of them in a very advanced stage when the treatment began -- are now stated to be in "excellent physical condition". Five are in stable condition and only three died during the course of the study. Since the submission of the paper, the number of patients treated has crossed 40 mark with more than 70 per cent success, according to Manju Ray.

Most remarkable fact, according to the scientists was that Methylglyoxal was successful against different types of cancer unlike "Glivec" which targets only the chronic myeloid leukemia.

Those whose health returned to "excellent" condition after treatment with Methylglyoxal included patients in "a very advanced stages" of colon cancer, acute myeloid leukemia, non-Hodgkin's lymphoma, and cancers of ovary, breast, liver, lung, bone, gall bladder, pancreas and oral cavity. The patients were inducted for the trial, from January to June 2000, after obtaining permission from the Drug Controller General of India, the scientists said. The drug was administered orally for about six months with gradual reduction of daily dosage from the initial 25 milligrams per kilogram of body weight.

Researchers said development of the drug was preceded by years of basic research involving human cancer cells in culture and animal experiments that showed that Methylglyoxal selectively killed the cancer cells without affecting normal cells by exploiting "a very significant" biochemical difference between the two.

Explaining the mechanism of action, the scientists said cancer cells required a large amount of energy

providing substance called ATP (Adenosine-5-Triphosphate) for survival.

"Methylglyoxal inactivates the enzyme (Glyceraldehyde-3- Phosphate Dehydrogenase) needed for ATP production in cancer cells and thereby starves them to death. Normal cells remain unaffected."

Manju ray said that chemists knew Methylglyoxal molecule for about four decades and its anti-cancer effects in animals had also been studied. "But surprisingly, no one bothered to initiate further research leading to human trials," she said.

The researchers said concern in some quarters about safety of Methylglyoxal were not borne out from the clinical trials, which showed that in combination with protective agent like Ascorbic Acid and vitamins, the drug Methylglyoxal had no major toxic effect. They said there was scope for further enhancing the drug's efficacy.

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United States Patent 5849783

Autobiotics and their use in eliminating nonself cells

US Patent Issued on December 15, 1998

Inventor(s)

Laszlo G. Egyud

Assignee

Cell Research Corporation

Application

No. 536618 filed on 1995-09-28

Current US Class

514/425 , Plural chalcogens bonded directly to the five-membered hetero ring by nonionic bonding
514/675 , Ketone DOAI 514/693 Aldehyde DOAI

Field of Search

424/480 , Cellulose or derivative 436/829 , LIPOSOMES (E.G., ENCAPSULATION, ETC.) 514/425 , Plural chalcogens bonded directly to the five-membered hetero ring by nonionic bonding 514/675 , Ketone DOAI 514/693 Aldehyde DOAI

Examiners

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Attorney, Agent or Firm

Hamilton, Brook, Smith & Reynolds, P.C.

Foreign Patent References

3218121A1 DE Nov., 1983

Abstract

Physically and chemically latentiated autobiotics are described. The latentiated autobiotics are useful for the treatment or prevention of any disease or condition, which results from the presence of nonself cells in a vertebrate host. Latentiated autobiotics are furthermore useful in suppressing immune rejection processes, as radiosensitizers and as anticoagulants.

Claims

The invention claimed is:

1. A method of inhibiting tumor cell growth in a vertebrate host comprising administering to the vertebrate an effective amount of a chemically latentiated alpha-ketoaldehyde, wherein the tumor cell is selected from the group of tumors consisting of: melanomas, carcinomas and leukemias, and the carcinomas are from tissues selected from the group consisting of: lung, colon, kidney, ovary, brain, prostrate, and the chemically latentiated alpha-ketoaldehyde is selected from the group consisting of N-(1-hydroxyacetonyl) maleimide and acetylated N-(1-hydroxyacetonyl) maleimide.

2. The method of claim 1 wherein the acetylated N-1 (hydroxyacetonyl) maleimide is further modified to a structure having the formula: ##STR4## wherein X is selected from the group consisting of: --H; --OH; --CH.dbd.CH_2 ; --Cl; --Cl_2 ; --I; --Br; --NH_2 ; --NH--R; --N.dbd.R_2 ; and --R where R=(CH_{0-11} --CH_3 or an aromatic or cyclic compound).

3. The method of claim 1 wherein the N-1 (hydroxyacetonyl maleimide is further modified to a structure having the formula: ##STR5## wherein X is selected from the group consisting of: --H; --OH; --CH.dbd.CH_2 ; --Cl; --Cl_2 ; --I; --Br; --NH_2 ; --NH--R; --N.dbd.R_2 ; and --R where R=(CH_{0-11} --CH_3 or an aromatic or cyclic compound).

Description

BACKGROUND OF THE INVENTION

All vertebrates have an immune system. The essence of the immune system is its capacity to recognize surface features of macromolecules that are not normal constituents of the vertebrate. (Hood, L. E., et al., IMMUNOLOGY, 2d ed., The Benjamin/Cummings Publishing Co., Inc., p.5 (1984)). A properly functioning immune system is able to distinguish "nonself" surface features from "self" surface features, whereby, the immune system selectively destroys and eliminates invading organisms such as bacteria and viruses expressing "nonself" surface features. The immune system also selectively eliminates cells which express "nonself" surface features, such as cancer cells, while accepting cells with "self" surface features.

However, some nonself cells evade the host's immune system by camouflaging their outer surface with host protein. These camouflaged nonself cells remain and proliferate in the host undetected. Undetected nonself cells are the cause of many diseases, which plague man and animals. For example, cells infected with viral diseases (e.g., AIDS, influenza, measles, mumps, chicken pox, shingles, hepatitis) bacterial diseases (e.g., pneumonia, bronchitis, meningitis, carditiitis, periodontitis, bovine

mastitis) fungal diseases (e.g., histoplasmosis, blastomycosis, candidiasis) and parasitic diseases, all result from the infection and proliferation of nonself cells in a host vertebrate.

In addition, malignant cells result when a vertebrate's own cells become nonself. Healthy individuals at any given moment carry about 50,000-100,000 nonself, potentially malignant cells in their body. These nonself cells are generally recognized and killed by the individual's immune system. However, if any of the nonself cells become camouflaged, they will proliferate as malignant cells.

Currently, there are few adequate and specific therapies for most diseases that result from the presence of nonself cells in a host. For example, malignant cells are currently treated either by surgical excision of tumors or by therapies using radiation and highly toxic chemicals. However, surgical excision is not an effective method of treatment when the malignancy has metastasized. In addition, radiation and chemotherapy are nonspecific, often killing normal cells as well as malignant cells.

Another problem is that the cell-kill caused by chemotherapeutic agents follow first-order kinetics. As a result, a constant percentage, rather than a constant number of cells is killed by a given application of a chemotherapeutic agent. To illustrate, if a drug capable of killing 99.99% of malignant cells is administered to a patient, who harbors 10^{12} malignant cells, 10^{8} malignant cells would remain. Although the patient would be diagnosed as having a complete clinical remission, any of the 10^{8} malignant cells remaining could cause a relapse in the disease.

Another problem with cancer therapies, as well as therapies for other diseases based on the presence of nonself cells in a host, is that the nonself cells often become resistant to a particular therapeutic agent over time. Attempts to overcome this problem have resulted in protocols using several therapeutic agents concurrently or in rational sequences. Other protocols are aimed at targeting the drugs more specifically to the nonself cells.

A chemotherapeutic agent that could be used to specifically eliminate nonself cells, but not self cells in vivo would be very useful in treating cancer and a variety of other diseases that result from the presence of nonself cells in a host.

Alpha-ketoaldehydes, a series of chemicals containing the alpha-ketoaldehyde radical, are known as potent inhibitors of the proliferation of nonself cells. The antiviral properties of alpha-ketoaldehydes have been intensively and systematically examined and the results published in a series of papers (Underwood, G. E. and S. D. Weed, Proc. Soc. Exp. Biol. Med., 93:421-424 (1956); Tiffany, B. D. et al. J. Am. Chem. Soc., 79:1682 (1957); Underwood, G. E. et al., Proc. Soc. Exp. Biol. Med., 100:312 (1959)). Alpha-ketoaldehydes have also been shown to have a bacteriostatic effect. (Freedberg, W. B. et al. J. Bacteriol., 108:137 (1971); Barrett, P. A., et al. Nature, 206:1340 (1965); Egyud, L. G. and A. Szent-Gyorgyi, Proc. Natl. Acad. Sci., USA, 55:388-393 (1966)). Recently, alpha-ketoaldehydes have been shown to selectively inhibit respiration of tumor cells. (Ray, M., et al., Int. J. Cancer, 47:603-609 (1991); Kisch, B., Biochem Z, 253:373, (1932)).

In addition, topical treatment of tumor growth with alpha-ketoaldehydes cures the host (Apple, M. A., and D. M. Greenberg, Can. Chem. Ther. Rep., 51:455-464 (1967); Egyud, L. and A. Szent-Gyorgyi, Science, 160:1140 (1968); Jerzykowski, T. et al., Neoplasma, 17:25-35 (1970)).

However, alpha-ketoaldehydes are readily metabolized to the corresponding β-hydroxy acids by glyoxalase enzymes, which are present in all living cells, especially red blood cells. Therefore,

although free alpha-ketoaldehydes inhibit the proliferation of nonself cells, systemic doses of free alpha-ketoaldehydes have not been successfully used therapeutically due to degradation by metabolic enzymes. When free alpha-ketoaldehydes were used at high concentrations, in an attempt to overwhelm the capacity of the glyoxalase enzyme system, they were found to be toxic.

SUMMARY OF THE INVENTION

The present invention relates to a class of modified chemicals known as latentiated alpha-ketoaldehydes, which can be administered to a vertebrate to specifically eliminate nonself cells, expressing surface features that are not normally expressed on the surface of the vertebrate's cells, while leaving self cells intact.

Latentiated alpha-ketoaldehydes can also be administered to a vertebrate to specifically eliminate invading organisms such as those bacteria, viruses, fungi and parasites which express nonself surface features, as well as the cells infected with these organisms that express nonself surface features (Townsend, A., IMMUNE RECOGNITION AND EVASION: MOLECULAR ASPECTS OF HOST AND PARASITE INTERACTIONS. (1990) Eds. Lex, H. et al. p. 87 Academic Press). Thus, the term "nonself cells", as used herein, will include these vertebrate cells expressing surface features not normally expressed on the vertebrates' cell surface (i.e., altered surface features or surface antigens, such as, but not limited to, tumor cells and fertilized egg cells); cellular organisms such as bacteria, parasites, protozoa, yeasts, molds and including viruses that are able to hide or mask their antigenicity through the use of host protein; and cells which express altered surface features because they are infected with cellular organisms and viruses.

Alpha-ketoaldehydes can be latentiated by chemical means, physical means or both. Unlike free alpha-ketoaldehydes, latentiated alpha-ketoaldehydes retain biological activity much longer in vivo and can be administered in doses that are nontoxic to the host vertebrate.

In one embodiment, the alpha-ketoaldehydes are chemically latentiated by reaction with a secondary amine. In another embodiment, alpha-ketoaldehydes are physically latentiated by entrapment within an encapsulant, such as a liposome. Importantly, chemically latentiated alpha-ketoaldehydes, and physically latentiated, alpha-ketoaldehydes demonstrate the ability to target, or localize at nonself cells. In addition, latentiated alpha-ketoaldehydes are able to target non-self cells with a higher concentration of surface --SH physical group (e.g., malignant cells). Furthermore, because of their small physical size, it is reasonable to predict that latentiated alpha-ketoaldehydes would be able to penetrate the blood/brain barrier and, therefore, can be used to treat diseases resulting from the presence of nonself cells in the brain of a host.

Once localized at the nonself cell, there are several modes by which latentiated alpha-ketoaldehydes cause the destruction of nonself cells in vivo. In one mode, latentiated alpha-ketoaldehydes remove and prevent reformation of the protein coating "camouflaging" the nonself cell. Once the shield is removed, the nonself cell is exposed to foreign cell recognition and destruction by the host's immune system (e.g, natural killer (NK) cells). In another mode, latentiated alpha-ketoaldehydes inhibit protein synthesis and thereby prevent growth and proliferation of the nonself cell. In yet another mode, alpha-ketoaldehydes have been shown to inhibit tumor cell respiration.

An important advantage in the use of alpha-ketoaldehydes for controlling malignancies, or for limiting the proliferation of any nonself cell, is that these chemicals can selectively and directly kill nonself

cells. At the same time, they can also enable the host immune system to attack camouflaged nonself cells. By taking away the camouflage, they make these cells vulnerable to the NK cells. As a result, therapy using latentiated alpha-ketoaldehydes provides more than one modality to kill nonself cells. In addition, the use of latentiated alpha-ketoaldehydes as a treatment appears to be resistant to mutations when using methylglyoxal as the alpha-ketoaldehyde being latentiated. This is because methylglyoxal occurs naturally in small quantities inside normal cells. Non-self cells are less likely to develop mutations that will make them resistant to this naturally present material. Thus one can expect that latentiated alpha-ketoaldehydes will be effective in inhibiting and killing those non-self cells (e.g., bacteria, viruses, malignant cells) that are able to develop drug resistance to other pharmaceuticals.

Latentiated alpha-ketoaldehydes are also useful as radiosensitizers and may be useful as diagnostic agents when combined with appropriate radioisotopes or fluorescent agents. In addition, latentiated alpha-ketoaldehydes can be administered to suppress the immune rejection processes of tissue transplantation (e.g., skin grafting, transplantation of pancreatic islet beta-cells, and bone marrow transplants), as an anticoagulant, as a prophylactic agent to prevent pregnancy or blood clots, and as an inhibitor of sulfhydryl enzymes, such as tissue transglutaminase (protein-glutamine gamma-glutanayltransferase). When applied topically to damaged tissue due to burns, wounds, or cuts, the latentiated alpha-ketoaldehydes may act to suppress the growth of bacteria, fungi or other pathogens which may facilitate healing of the damaged tissue.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1A is a schematic representation of a multilamellar physically latentiated alpha-ketoaldehyde.

FIG. 1B is a schematic representation of a unilamellar physically latentiated alpha-ketoaldehyde.

FIG. 2 is a diagram representing the attachment of host protein to the transplantation antigen of a nonself cell.

FIG. 3 is a diagram representing the camouflaging of a nonself cell with host protein and the removal of the camouflage upon reaction with an alpha-ketoaldehyde (KA).

FIG. 4 is a graphic representation of the effect of chemically latentiated methylglyoxal on intraperitoneal Ehrlich ascites carcinoma in mice.

FIG. 5 is a graphic representation of the effect of methylglyoxal-maleimide on B16 melanoma tumor cell migration.

FIG. 6 is a graphic representation of the results of the acute toxicity study with CaRest-M3 in mice by intravenous injection.

FIG. 7 is a graphic representation of the results of the acute toxicity study with CaRest-M3 in mice by intraperitoneal injection.

DETAILED DESCRIPTION OF THE INVENTION

The present invention is based on the findings that latentiated alpha-ketoaldehydes administered in vivo undergo specific reactions with camouflaged "nonself" cells. For the purpose of the subject

application, a nonself cell is defined as a cell present within a vertebrate host, which is different from the host ("self") cell. This difference is expressed on the exterior of the cell via surface antigens. Thus, the surface antigens of nonself cells differ from the surface antigens of host, self cells. Examples of nonself cells include cancer cells, bacteria- or virus-infected cells, fertilized eggs and cells of lower organisms such as fungi, protists, parasites and bacteria.

In one reaction, latentiated alpha-ketoaldehydes remove and prevent the reformation of the host protein coating that camouflages many types of nonself cells. Once this coating is removed, the natural killer cells of the host's immune system are able to recognize and kill the nonself cells.

In another reaction, latentiated alpha-ketoaldehydes block protein synthesis, thereby inhibiting cell division. The lower homologues of alpha-ketoaldehyde (i.e., the aliphatic C-3 and C-4 homologues) may penetrate the cell wall and inhibit protein synthesis from within. The higher homologues (i.e., above C-5 of the aliphatic series) which do not penetrate the cell surface, together with the lower homologues, can block protein synthesis of a dividing cell by reacting with an arginine-rich protein. This protein appears on the cell surface at the initiation of cell division and is essential for cell division. (Stein, S. M. and Berestecky J. M., Cancer Res.:34: 3112 (1974); Stein S. M. and Berestecky J. M., Cell Physiol:85: 242 (1975)).

In a third reaction, the alpha-ketoaldehyde, methylglyoxal (MG) has been shown to inhibit tumor cell respiration in a selective manner. (Ray, M., et al., Int. J. Cancer, 47:603-609 (1991); Kisch, B., Biochem. Z, 253:373 (1932)). It is reasonable to expect that latentiated alpha-ketoaldehydes would also be effective inhibitors of tumor cell respiration, resulting in destruction of nonself cells. Thus, alpha-ketoaldehydes, and particularly latentiated alpha-ketoaldehydes, present a triple threat to nonself cells. Furthermore, by providing three possible modes of interaction with nonself cells, resulting in destruction of nonself cells, latentiated alpha-ketoaldehydes afford increased potential to affect nonself cells exhibiting weak, or minimal, antigenicity.

As a result of these findings, it is now possible to use latentiated alpha-ketoaldehydes in therapies for treating diseases and conditions resulting from the presence of nonself cells in a vertebrate host. The following is a description of alpha-ketoaldehydes, methods of latentiating alpha-ketoaldehydes, and the mechanisms by which alpha-ketoaldehydes act in inhibiting the proliferation of nonself cells in a vertebrate host.

Alpha-ketoaldehydes

Alpha-ketoaldehydes are a series of chemicals derived from glyoxal (CHO--CHO), a dialdehyde with two carbon atoms. The simplest alpha-ketoaldehyde, methylglyoxal (2-oxopropanal), occurs naturally in small quantities inside normal cells. It is continually formed from several metabolic sources (Ohmori S, et al. "Biosynthesis and Degradation of Methylglyoxal in Animals" in Enzymology and Molecular Biology of Carbonyl Metabolism 2, (Ed: Flynn T. J.) Allan R. Liss Inc. Publisher, pp. 397-412 (1989)). Within a cell, alpha-ketoaldehydes function in regulating cell division. Based on this involvement in the internal self regulatory process of cell division, alpha-ketoaldehydes have been termed "autobiotics." (Egyud, L. G., J. Biochem., 96:19c (1965); Egyud, L. G., Proc. Natl. Acad. Sci. USA, 54:200 (1965)).

Methylglyoxal (CH_3 COCHO), with three carbon atoms (C-3), is the first member of an aliphatic series where each consecutive member is extended by a CH_2 unit (i.e., C-4, ethylglyoxal CH_3 --CH_2 --

CO--CHO; C-5, propylglyoxal CH_3 --CH_2- CH_2- CO--CHO; etc.). Members of the aliphatic series up to C-5 are soluble in water or lipid solvents. The higher members of the series (C-6 to C-12) are solids and soluble only in organic solvents. The reset of the synthetic compounds are reasonably soluble in water or a mixture of water/organic solvent.

Alpha-ketoaldehydes can be synthesized from the corresponding aldehydes or 2-ketones by known chemical methods (e.g., the selenious acid oxidation of N. Rabjohn (Org. Reactions, 5:331 (1949)) and H. L. Riley, et al. (J. Chem. Soc., (1932)) by hydrolysis of alphaoximino ketones (Cox, J. Chem. Soc., Vol. 129 (1936); Taylor, J. Chem. Soc., (1926) or by cupric acid oxidation of 2-keto alcohols (Christaensen, et al., Chem. Ind. 1259, (1958) or US patents in Chem. Abst., 51: 2072b (1957); Florkin, Stotz Comphenz. Biochem. 10: 85 (1963)). The alpha-ketoaldehydes can then be isolated by fractional distillation. The pure product, in cis and trans form, can be obtained by preparation gas chromatography. A number of alpha-ketoaldehydes (e.g., methylglyoxal, phenylglyoxal and hydroxymethylglyoxal) are also commercially available. Beta-substituted alpha-ketobutyraldehydes are available under the trade names "Kethoxal" and "Methoxal" (Upjohn Chemical, Inc., Kalamazoo, Mich.).

For the purposes of the subject invention, "alpha-ketoaldehyde" refers to a series of chemicals containing a ketone-aldehyde radical sequence attached to a greatly variable structure. Over 30 alpha-ketoaldehyde containing aliphatic, aromatic, heterocyclic, polycyclic moieties were synthesized and are described in U.S. Pat. No. 4,066,650, entitled "Keto-Aldehyde-Amine Addition Products and Method of Making Same", by Egyud, L. G. The teachings of the Egyud patent are incorporated by reference herein.

The preferred alpha-ketoaldehydes include, but are not limited to, methylglyoxal, phenylglyoxal and chlorinated derivatives, such as, chloromethylglyoxal, dichloromethylglyoxal, chlorophenylglyoxal and dichlorophenylglyoxal.

Latentiation

Alpha-ketoaldehydes are readily metabolized intracellularly to the corresponding β-hydroxy acids by glyoxalase enzymes in the presence of glutathione, which are present in all living cells (e.g., animal, plant and bacterial cells). Glyoxalase enzymes are especially active in red blood cells. However, alpha-ketoaldehydes can be modified so that they are protected against the action of glyoxalases while at the same time their in vivo toxicity is decreased and their specificity toward non-self cells (e.g., cells with increased surface --SH groups) is enhanced.

"Latentiation" refers to chemical or physical means of protecting the ketoaldehydic function of alpha-ketoaldehydes against significant modification or destruction by the in vivo environment. Latentiated alpha-ketoaldehydes, therefore, remain in a patient's blood stream longer than free alpha-ketoaldehydes.

Applicant has determined the half life of free and latentiated alpha-ketoaldehydes by injecting methylglyoxal radiolabelled with ^{14}C into mice. The in vivo decomposition of both free and latentiated methylglyoxal was followed by the appearance of radiolabelled ^{14}C, which can be detected in the respiratory air or in the urine of the mice. With free alpha-ketoaldehydes, the half life was measured to be about 30 minutes. However, the half life of latentiated alpha-ketoaldehydes was measured to be at least 12 hours. Latentiation also protects host cells from the toxic effects of alpha-

REPORTS NEW CANCER SERUM

Professor at Detroit College Stirs Medical Profession by Announcement.

Members of the medical profession in Detroit have been stirred by the announcement of a new treatment of cancer by Dr. William F. Koch, professor of physiology at the Detroit College of Medicine and Surgery, and the statement he has already clinically cured a number of inoperable cancer cases.

Dr. Koch's announcement is made in the issue of the Detroit Medical Journal, in a paper entitled "A New and Successful Treatment and Diagnosis of Cancer."

He describes the treatment as "a sub-cutaneous injection of about 10 drops of a bio-chemical compound."

RESULT OF LONG STUDY.

This compound, Dr. Koch told a reporter, is the result of nine years of study and experiment which began in the chemical laboratory of the University of Michigan, with his study of the function of the parathyroid glands, four glands, about the size of a small pea, lodged deep in the neck.

"The function of the parathyroid glands," Dr. Koch said, "was a mystery from the time these glands were discovered until some years ago when I cleared up the matter to a point where a very important disease, Eclampsia, and the changes which constitute cancer could be studied. Eclampsia treatment will be reported soon in some medical journal." (Eclampsia is an intoxication resulting from insufficiency of the parathyroid glands. It occurs in pregnant women and is quite rare.)

"The parathyroid glands are necessary to life. If they are injured the afflicted person dies in a characteristic way—in convulsions.

"The first contributions to this subject were made at Johns Hopkins university. Unfortunately they were erroneous and only made the mystery deeper. It was when I discovered that when these glands are injured certain poisonous substances develop from a previously useful substance, that we were placed on the right track again. The poisonous bodies are certain guanidine and they develop from a hormone, which I found to be methyl-cyanimide.

[illegible] QUESTION.

"While testing the various organs for the presence of this compound and also testing cancer the same way, I noted the difference between cancer and normal tissue and it is this difference that forms the basis of my cancer treatment."

"The action of this compound, which Dr. Koch asserts destroys cancer tissue and has no effect on normal tissue, he describes as follows:

"The serum is carried to the cancer by the blood. The cells are killed. Their benumbed presence increases and they become waterlogged and swell. The pressure of the swelling causes [illegible] pain until the killed part has been disintegrated and absorbed, and the absorption, or burning up, caused fever, usually occurring about 18 hours after the injection of the serum. Cancer tissue so absorbed also serves as desirable food. If the patient has been starved a long time as in cancer of the stomach, a large quantity [illegible] of cancer tissue, once killed, it supplies food [illegible] and [illegible] strength to the patient. Cancer previously treated with X-ray or radium, however, if killed by the present treatment, gives [illegible] very rapidly [illegible] as the [illegible] to kill the patient.

"Dr. Koch's treatment will not help cancerous cases that have previously had X-Ray or radium treatment [illegible].

[illegible]

[illegible] treated, in each case had in every instance the treatment has a failure," he said. "Except that it is a matter of [illegible], I [illegible] in the dark as to the exact nature of that change in the cancer chemistry induced by X-ray or radium treatment. I am now trying to solve that problem."

[illegible] Dr. Koch, says that [illegible] cancers [illegible] I have had good results with skin cancer, several times," he asserted, "but I have not had enough experience with it to say that my compound will cure it. The compound was not constructed according to the chemistry of such growths. The material I used, for analysis when starting the work was rectile and stomach cancer. The types that respond best to the treatment are cancers of the liver, stomach, intestines, rectum and uterus, which are apparently rapidly and completely cured."

About ten injections of the serum, Dr. Koch says, will completely cure [illegible] cancers are gradually always inoperable.

HAD CASE [illegible].

"I had a woman patient last [illegible]," he said, "with a cancerous growth as large as a watermelon. She was [illegible] to walk and wanted to live only until her son returned from France. It did not [illegible] her to live a week. Today she is as well as any of us. It is the same with all stomach cases I have treated. They are either [illegible] quickly as treatment [illegible] and the [illegible] of [illegible] cancers that have not been treated with X-ray or radium will Dr. Koch's cures have been well advanced. It makes no difference in the success of the cancer treatment how near death the patient may be, he asserts.

"Just as long as the blood is circulating to carry the serum from the site of the injection through the growth, the compound will do its work," he said. "Of course some patients may be so completely exhausted as to die anyhow, or they may have some other fatal malady. If one of the patient's vital organs is destroyed during the cancer, obviously will not save his life. He is likely to die before the cancer is cured."

[illegible]

The stomach, Dr. Koch says, although important, is not necessarily a vital organ.

According to Dr. Koch, not one case of cancer in the history of the world had been cured by medical treatment until he discovered this compound.

Several Detroit physicians whom Dr. Koch thanks in his paper for their co-operation in his cancer treatment have confirmed Dr. Koch's statement that he has established clinical cures of cancer in specific cases.

[illegible] "clinically cured" is meant, they explained, that insofar as can be determined without [illegible] the patients by operation to justify a [illegible] statement that no traces of cancer remain, or by waiting five years to ascertain that there is no recurrence of the cancer, the patients have been cured.



DR. WILLIAM F. KOCH

HAS NEW CANCER TREATMENT

Although all spoke of Dr. Koch's treatment with that reserve which, in discussing the value of another man's discovery of a disease-treatment, marks the utterances of reputable physicians jealous of their own professional reputations, they were unanimous in the opinion that Dr. Koch's treatment has shown remarkable results. That, from the viewpoint of the physician, caution in indorsing a "cancer cure" is natural, is emphasized by the statement of Dr. J. H. Carstens, and solemnly echoed by two others of the physicians interviewed, that "the man who discovers a cure for cancer will be the greatest man in the world."

BRILLIANT CHEMIST.

Dr. Alexander W. Blain, surgeon, head of Jefferson clinic: "Dr. Koch is one of the most brilliant physiological chemists in the country. It is too early to say he has a cancer cure, and it should not be regarded as a 'cure all' but as an adjunct to the treatment of cancer. No cure can be established until five years have shown there is no recurrence of the disease. But what he has done is this: He has made people well who were so far gone with cancer that they had only a few weeks to live. Several patients he treated for me are working hard and enjoying life a year after they should have been dead. Even if Dr. Koch gets no further with his work than he is now—and he is experimenting now with his fifteenth mixture, I believe—even if he has not discovered an absolute cure for cancer, he has added years to the lives of cancer victims. There are nearly 100,000 victims of cancer in the country and if they could all have a few years of usefulness added to their lives the saving to the country [illegible]. What he has already done is a boon to humanity and a great step forward in physiological chemistry."

[illegible] her and [illegible] growths as [illegible] the cancer [illegible] have [illegible] is now [illegible] I have [illegible] work done with [illegible] should [illegible] every opportunity to prove the value of his treatment."

Dr. C. Hollister Judd, president of the medical board, Woman's Hospital: "When we stop to consider that one woman in every seven and one man in every 11 have cancer, the importance of the work Dr. Koch is doing can not be overrated, though it is too early to say that he has a cure for cancer. He has been working under many handicaps. The cases given him have been the 'hopeless' ones, where the surgeons saw the uselessness or impossibility of further operation, and his treatment has shown remarkable results.

SHOULD [illegible].

"Everything should be done to encourage him in his work. He should not be obliged to think, for instance, of expense. Yet his serum costs him $1 an injection, I believe. He ought to be given $100,000 to carry on his work and he ought to have a ward in a hospital where he could concentrate his patients. Woman's Hospital is arranging to give him 12 beds. Dr. Koch's work, which is still experimental, is important in this sense, he is studying cancer physiologically rather than pathologically. That is, instead of working on the cancer tissue of a dead person, he is working on patients who are alive. There might be a question as to which method is more interesting to the physician, but there is no question of which appeals more to the patient."

CONFIDENCE IN HIM.

Dr. Walter J. Hackett, visiting gynecologist and obstetrician, Woman's Hospital: "There is no question of Dr. Koch's sincerity and ability. It will take five years to determine whether or not he has a real cure for cancer, but I have enough confidence in his treatment to let him inject his serum into any cancer patient of mine. I had, as a patient, an old woman who was very far gone. At Koch's suggestion

Dr. J. H. Carstens: "He has apparently effected [illegible] but it is too soon to say this positively. I am against publicity in the matter, as we do not want persons afflicted with cancer to rush to Detroit for treatment when they will not be able to be taken into Dr. Koch's will get all the cases he needs."

TOO EARLY TO [illegible].

Dr. O. H. Palmbrieel: "Dr. Koch treated an old man for me. The growth seems to have reduced materially and the patient began feeling better after the first few treatments. It is too early to say that Dr. Koch has a cure for cancer. He should be given a ward in a hospital with a number of cases proved beyond the shadow of a doubt to be cancer. Then a commission of physicians should be appointed to watch the effect of Dr. Koch's treatments on the patients. If he had 100 cases of positively proved cancer and he established cures in 30 per cent of the cases, he would be getting somewhere.

"If he can cure 10 per cent of his cases—even if he has not a positive cure for all cancer—his discovery is a hope to humanity, for the man who discovers a cancer cure will be the greatest man in the world. One of the difficulties of curing cancer is that ordinarily it is not discovered until the case is too far advanced to be operated. Operations are successful if the cancer is caught early enough, and if all the cancer cells are removed. If, however, a few of the cells escape and spread through the lymph tracts or the blood vessels to other parts of the body, the cancer will break out again and it is obvious that only a certain amount of tissue can be removed from the body.

WITHHOLDS FORMULA.

"Where a case has been operated and the cancer breaks out again, there is almost no curing it by further operation. The trouble with making any announcement of a cancer cure is that too much will be expected of it, as too much was expected of the X-ray and other inventions. The X-ray is of wonderful assistance in diagnosing, in locating foreign particles in wounds, photographing of stomach or intestines, and in discovering broken or dislocated bones, but it is not a [illegible] as people thought when the discovery was announced."

The establishing of a commission of physicians to study the progress of the cases he treats is, Dr. Koch says, exactly what he wants.

"I do not want to make the formula public just yet," he declared, "because I fear it might be commercialized. The compound is difficult to make and it deteriorates rapidly. If I published it and quacks or unscientific men started mixing it and treating cancer with it, the results would be disastrous, not only possibly to the patients, but to the ultimate success of the treatment. Improperly mixed or administered the compound would fail to do its work. It would be discredited by the medical profession and it would take years to establish its value. When I have proved to the satisfaction of the medical world, that it does its work, it will be time enough to make the formula public."