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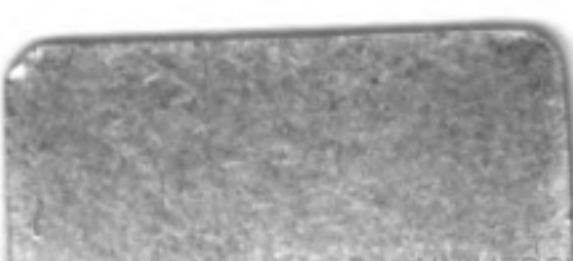
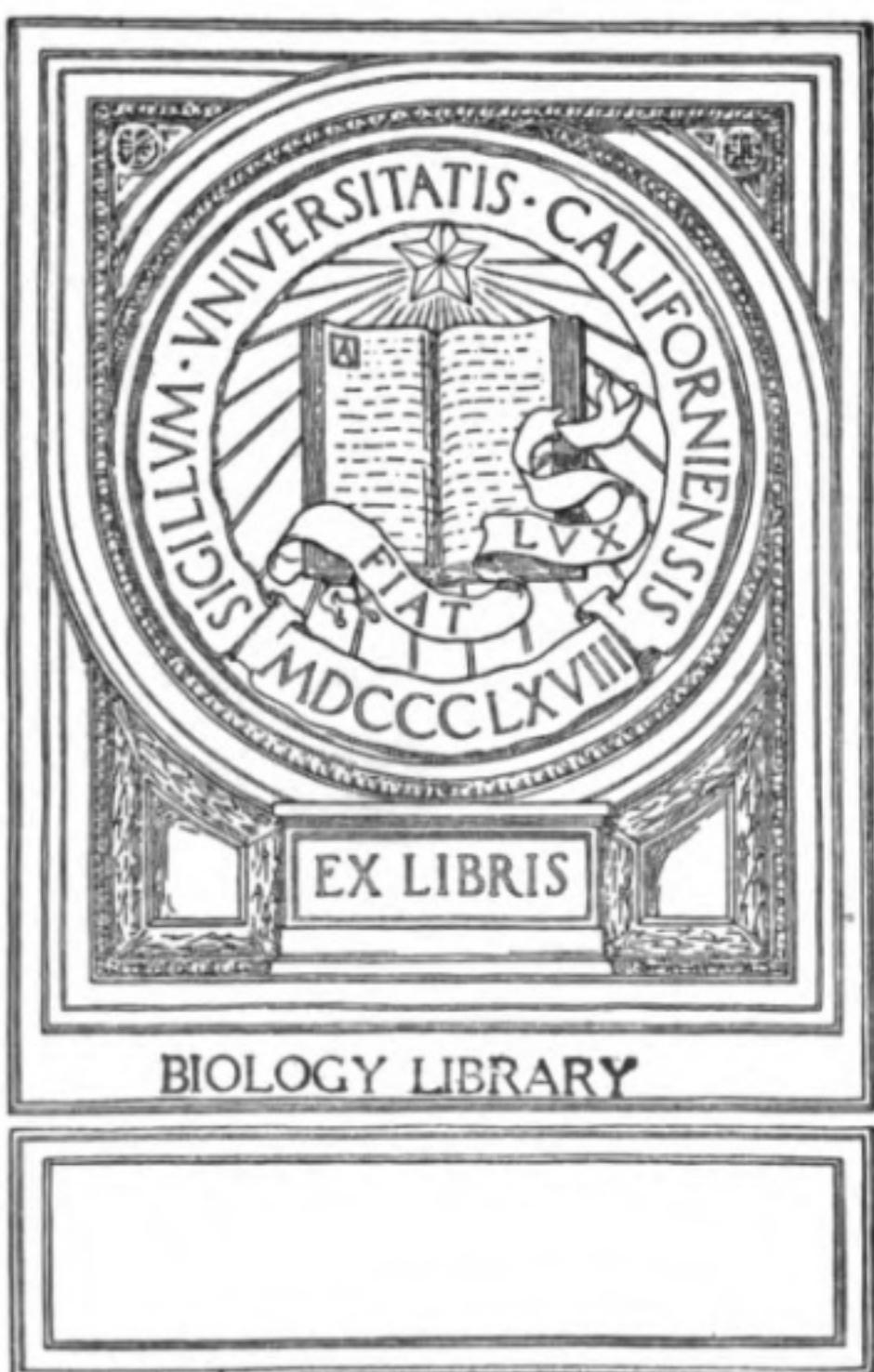
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Natural Immunity

ITS CURATIVE COMBINATION
NEOPLASIA - ALLERGY - INFECTION

by WM. F. MORE, PH.D., M.D.

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NATURAL IMMUNITY



**ITS CURATIVE CHEMISTRY IN
NEOPLASIA • ALLERGY • INFECTION**



**UNIV. OF
CALIFORNIA**

A BRIEF SURVEY

by

WM. F. KOCH, Ph. D., M. D.

FOURTH EDITION
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PRELIMINARY SURVEY

This work concerns the production of immunity to disease on a basis of pure chemistry and indeed upon the very general and fundamental relations of the valences between carbon and oxygen. It is for this reason that its applicability is so great. It recognizes that oxidation is the fundamental living process necessary to every cell activity, that certain chemical structures are antagonistic to the oxidation process and therefore toxic directly and catalytically, and that the need to overcome a negative oxidation catalysis by a positive oxidation catalysis and the conversion of a toxic to the antitoxic type of activity is fundamental to the correction of such antagonism.

The unsaturated double union between carbon atoms may be actively toxic in one molecule and not so in another made up of the same essential groups where these groups are arranged differently. Therefore the double bonds between the carbon atoms possess an activity that is modified by the totality of structure of the molecule. Thus 1, 2,—5, 6, dibenzanthracene and 1, 2, benzopyrene are carcinogenic while 1, 2,—7, 8, dibenzanthracene is not carcinogenic. The difference in the two molecular types rests with the arrangements of the benzene rings with reference to the 9, 10, carbon atoms of the anthracene molecule, the atoms with quinonoid proclivities, and at which stations the molecule is easily split. Thus carcinogenic substances are resolvable into an essential dibenzene sub unit. This difference in properties is also represented in their spectrographic behaviors in all ranges from x-ray through the infra-red. The valency electrons and the atomic groups are affected, and the influence on the oxidation mechanism supplying energy for every cell function be it contraction secretion mitosis or autolysis will necessarily follow. It is my position that the physiological oxidations progress as chain reactions. These are notoriously sensitive to inhibitor molecules which deactivate the 'hot' reactant molecules and thus put an end to the oxidation progress. Such is the behavior of negative catalysts like benzopyrene that poison the oxidation process.

We may say therefore that all of the allergies are explainable on the basis of a negative oxidation catalysis of graded strength affecting the functional, the plastic, or the autolytic cell mechanisms. On this basis the problem is solvable by providing an efficient positive oxidation catalyst that vigorously restores the normal oxidation chain in which the negative catalyst is destroyed and showing after effects (photochemical) comparable to the continuing of the decomposition of hydrogen peroxide by light sensitized iron salts, or the production of benzyl bromide in the dark by light sensitized bromide (oxide of bromine). In these reactions the catalyst is continually formed as the reaction is propagated, a common feature of biological processes upon which the continuance of life and immunity depend.

Our catalysts are produced directly by chemical means and not by radiation by taking advantage of the valency relations of carbon and oxygen, where a free carbonyl group is liberated momentarily in an appropriate reaction and this is free to combine another such group or two such groups may combine a free carbon atom. If carbon monoxide is heated above five hundred degrees centigrade the oxygen loses its tetravalency for divalency and two carbon valences are liberated that actually behave in this way. In chemical solution as will be seen, the same effect may be had either in an intermediary substance such as our "Glyoxylide," or in an isolatable substance as our "Malonide."

The first of these bodies $O=C=C=O$, as will be seen, is directly related to the single and double carbon chain compounds of sugar decomposition, while the second, $O=C=C=C=O$, is related to the three carbon chain

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products of sugar decomposition. Their position in the catalysis of oxidation in the body, functional and immunological, need not surprise one therefore, and their employment in the care of the diseased is of interest because it is physiological and restores normalcy. The unsaturated bodies obtainable from the internal dehydration of glucose and fructose and their relative advantages as oxidation catalysts in diseased states will not be dealt with in this volume. They are almost pure carbon ring compounds that definitely protect against infection and will be discussed elsewhere. Since an understanding of these phases of oxidation have required development, I hope that my contribution will be carefully examined.



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PREFACE

Within our own time, the greatest scientific authorities scorned the idea that a machine would be constructed which could fly. Today, the average layman knows more about this problem than the best scientific minds of a few years ago, because it has been accomplished.

In 1920, the Cancer death rate per 100,000 population of the cities of New York, Chicago, Philadelphia, Los Angeles and Cleveland, averaged 101.50 per annum and by 1929 had risen to 117.70. (*1)

In Detroit, the figures for 1920 were 96.70, but in 1929 the rate had *dropped* to 74.50. During part of this time I saw scores of Detroit citizens treated for Cancer by Dr. Koch, and cured. The privileges extended to me were open to any sincere observer in my profession, who, no matter how critical, went there with an open mind.

Modern medicine has never been satisfied until the cause of a disease has been recognized and placed under control. Let me show you the opinions of men, prominent in the profession, as to the cause of Cancer and Tuberculosis.

Frances Carter Wood, (*2) writing the article on Cancer in *Modern Home Medical Adviser*, a book published in 1935 and edited by Morris Fishbein, (*3) begins his subject with these words:

"The word Cancer applies to a number of diseased conditions characterized by the uncontrolled growth of some of the tissues of the body. If not checked, such growth inevitably leads to death."

"The chemical or other changes which give the cells, the little units of which the tissues of the body are com-

Remembering then, if we uncover and remedy the cause of Cancer, we may disclose the cause of Tuberculosis, and by identical means improve our medical care of these cases, let us turn to page 88, 89, and 90 of the Report of the Royal Commission referred to above.

Dr. Ellice McDonald and his co-workers, (*8) have confirmed the work of Warburg (Berlin) and Reding (Brussels). "He is strongly of the view that the control of cancer rests upon a chemical basis and that the chemical laboratory will be one of the great factors in the solution of the cancer problem."

He says: "The glucose concentration of the blood of cancer patients is relatively higher than normal by an average of twenty per cent. * * *

A consideration of the experimental evidence leads one to the conclusion that there is, in cancer, a definite deficiency in the oxidation phase of the carbohydrate metabolism, as compared with normal conditions. * * * The next step in cancer research is to find out how the cancer can be transferred back, in its metabolism to the normal cell. * * * In such case, the cancer cells present in the tumor * * * would gradually die and disappear. The cancer would be cured."

Dr. Koch's treatment restores to the body, its normal oxidative capacity, as a continuing vital habit.

After I inject into the arm of my patient the reagent developed by Dr. Koch, it may happen that a large Cancer of the abdomen will become smaller and finally disappear. The abdomen will resume its normal appearance and its contents will function normally again. But at the point where I have injected the treatment, there will be no damage visible. There will be observed no redness, no swelling, and the patient will feel no soreness nor even tenderness.

Dr. Koch's treatment acts, therefore, not against the flesh of my patients, but against the poison which has dulled the normal oxidative power of the body cells.

The vigorous growth of the Cancer seems to overwhelm all the normal cells in the vicinity, but when the Cancer has been made to regress by the use of the Koch treatment, we find enough of the old well-disciplined body cells have been preserved to help restore the damage. This may happen without distortion, scar, or loss of physiological function.

During the earlier years of my contact with Dr. Koch's work, I lacked the mental courage requisite for acquiring the belief, that there existed a fundamental relationship between the cause of Cancerous growths and the cause of Tuberculous infections; but through repeated visits, I was obliged to observe several cases make satisfactory progress. Cases treated by myself have been limited in numbers, but the good clinical results obtained from the use of the Koch treatment in the utterly hopeless stages of the disease, have been both dramatic and inspiring.

In Tuberculosis, fresh air through the lungs never can induce the normal oxidative powers of the tissues of the body, such as is reestablished by the use of the Koch treatment; and recovery with the help of the Koch method becomes a habit of body which does not readily break down.

During the last few years, four cases of fibro-myoma of the uterus, presenting such commanding symptoms of haemorrhage that removal of the womb was undoubtedly indicated, have been given the Koch treatment by me, in preference to operation. There were no failures. All recovered completely. One of these patients was strongly urged to be operated by a surgeon of very high standing, as he believed this offered the only chance for restoration of her health. She presented no further problem after the treatment had been instituted, and gave birth to a normal male child, two years and four months later. She is quite well, has no sign of the old fibro-myoma; and her son, born healthy, remains so.

Francis Carter Wood says, that before the growth of Cancer can be observed, and before Tuberculosis can be recognized by recovering the tubercle bacilli from the sputum, there must be a change in the chemical habits of the body. Primrose agrees with this view, being convinced the change must bear a close relationship in both diseases. Lockhart-Mummery insists we enlarge this group to include non-malignant tumors, such as the fibro-myoma which completely disappeared from the woman noted above.

Very early in his clinical experiences, Dr. Koch was confronted with the task of treating Cancer, complicated with advanced Tuberculosis. Though unexpected, when recovery was an established fact, the result required an explanation. It inspired the conclusion that many diseases we have found difficult to care for, may have a common brotherhood, and might yield to treatment identical with or similar to that used in the successful treatment of Cancer and Tuberculosis. I have had the satisfaction of breaking a small portion of this new ground, but the limited space available forbids any attempt here, to enlarge the field dealt with by Francis Carter Wood, A. Primrose and Lockhart-Mummery.

Dr. Koch explains that the nature of Cancer, Non-Malignant Tumors, Tuberculosis and allied diseases is not to be found in examining these morbid conditions alone, but a review of our ordinary conception of the normal must be included. The too intense study of diseased conditions has taken our minds from the wider field of the healthy. Many of us do not develop Cancer or Tuberculosis; nor for that matter, do we go down with Influenza during an epidemic; and many have escaped the usual "children's diseases." In other words, we possess a natural immunity to these diseases. Dr. Koch's treatment aims to restore that most excellent condition of bodily well-being, which we recognize in those who have the gift of *Natural Immunity*.

The work of Pasteur disclosed to us the nature of

infectious diseases, and their prevention through the use
of Isolation, Antiseptics, Asepsis, and Vaccines.

Dr. Koch, by a fine bit of chemistry, enlarges tremendously our field of medical effectiveness. Well-established malignant and nonmalignant tumors are cured; patients suffering severely from Tuberculosis are restored to permanent good health; other infections, both acute and chronic, yield to his method of treatment. A new epoch in the knowledge of the nature of disease and its successful treatment is at hand. For those of us who have been privileged to look forward under the instruction of Dr. Koch. *Never can there be any turning back.*

DAVID H. ARNOTT, M.D.

London, Ontario, Canada

REFERENCES

- (1) T. F. Murphy, M.D., Chief Statistician for Vital Statistics, Bureau of Census, Department of Commerce, Washington.
- (2) Editor, *American Journal of Cancer*; Professor and Director of Institute for Cancer Research, Columbia University, New York, N. Y.
- (3) Editor of the *Journal of the American Medical Association*.
- (4) Member of the Board of Trustees of the King George V Silver Jubilee Cancer Fund for Canada.
- (5) Chairman Executive Committee and Editor of the *Annual Report*, British Empire Campaign.
- (6) Report of the Royal Commission on the use of Radium and X-Rays in the treatment of the Sick, etc. Printed by order of The Legislative Assembly of Ontario Sessional Paper No. 41, 1932.
- (7) Page 21 of Report of Royal Commission described in (6).
- (8) Dr. Ellice McDonald of the Cancer Research Laboratories of the Graduate School of Medicine, University of Pennsylvania, Philadelphia, Pa.

Chapter I

THEORETICAL STATEMENT

As a first report on the study of the chemistry of the natural immunity mechanism, I published in the *Medical Record* of New York, in October, 1920, the results of the treatment of patients suffering from far advanced malignancy with substances extracted from animal tissues, the heart and the brain. These substances were tentatively called Tissue Thrombines because as a result of their hypodermic administration a coagulation necrosis took place in all cancer tissue, followed by its calcification, digestion, and absorption. Many of the patients treated returned to normal health with reconstruction and return of function to the affected organs. It must be interesting to know that of these patients treated as long as sixteen years ago for widely metastasized far advanced cancer of the stomach, rectum, uterus and breast, there are a number living and well today with no return of the trouble, and in all respects in excellent health. Some of the patients have died from other causes than cancer, from accident, pneumonia and heart failure. One case I suspect died from cancer, although the doctor in charge of her last illness wrote me that it was a heart affection. Autopsies were made in all cases followed except the one just mentioned. They demonstrated the cause of death not to be malignancy, and that malignancy could not be detected in any instance or in the parts originally diseased. In other words, a mature statement can now be made that so far as malignancy is concerned, normal healthy animal tissues contain substances that prevent and abolish its basic pathology.

As might be expected, no time was spared in the effort to learn the chemical structure and mode of action of the active substances concerned. These substances are all diffusible bodies of small molecular weight held in adsorption by the lecithin cephalin fractions of the tissue extracts, from which they can be removed by dialysis, and exist in exceedingly small quantity indeed.

Their identification next led to the synthetic production and trial, not only in malignancy but in the various infections and allergic states commonly met with. I was also able to synthetically prepare such bodies in much more dynamic form than the tissue extracts yielded. From their study, the following conclusions are drawn:

1. Natural immunity is a general property of the tissues depending upon the presence of metabolites concerned in the oxidation process ordinarily belonging to the production of energy for function. The metabolites seem to serve as photo-chemic sensitizers or catalysts.
2. The sufficiency in these tissue metabolites constitutes the resistance to disease and prevents mal- or dysfunction in general.
3. Deficiency in these materials eventuates in an interruption in the progress of oxidation and function. Consequently susceptibility to infection and symptoms and structural changes of disease are produced.
4. Deficiency in these substances may result from exhaustive muscular effort, the exhaustion from too severe exposure to cold, from the lytic action of poisons upon the tissue colloids that raises the surface tension and causes a washing out or leaking away of the important metabolites, and finally from the action of toxic molecules that inhibits or paralyzes the action of the metabolites through photochemic interference. We will deal with the theoretical and clinical aspects of each case as we go along.

Photochemic action has scarcely been investigated with reference to the part it plays in normal and pathological conditions, but in the industries it is receiving more and more employment, judging by issues from the patent offices, and it is in this field that theoretical chemistry, physics and mathematics have made the greatest strides of late. Inasmuch as the known carcinogenic substances are all fluorescent, the influence of

photochemical action in neoplasia cannot be ignored. Indeed it offers a ready explanation not only of the action of the carcinogenic toxins but points out what should characterize the chemical structure of the recovery-producing and immunity-preserving substances. Correctly enough, the structures suggested are exactly those provided by the oxidation metabolites belonging to the natural immunity mechanism, as we shall soon see.

Quoting a general statement from Griffith and McKeown, Sir William Ramsey series, Physical Chemistry, page 6, several principles are presented fundamental to the behavior described below:

"The radiation field itself is produced in the following manner. An electro-magnetic wave or disturbance starts out from a vibrating electrically polar unit—an atomic or molecular system with spacial separation of unlike electrical charges—whose vibration involves a periodic fluctuation of its electrical moment. The frequency of the radiation emitted is identical with that of the oscillator itself; its phase, intensity and state of polarization are determined by the phase amplitude and manner of vibration of the oscillator. In this way, an excited oscillator produces a continuous wave train of radiant energy at the expense of its own energy of vibration. If, on the other hand, an electrically polar unit is placed in a radiation field the frequency of which approximates to the natural frequency of vibration of the polar unit, the latter will be induced to vibrate in sympathy with the electric vector of the field, and energy will be continuously absorbed from the field. The concept of such continuous energy exchanges between the individual oscillator and a radiation field of the same frequency is a fundamental principle of classical electrodynamic theory." Every energy producing reaction may propagate itself in this way.

When radiation energy absorbed by matter is re-emitted as radiation of the same quality, it is called resonance radiation, but if it is re-emitted at a different

(lower) periodicity, it is called fluorescence, if the emission is instantaneous, but if emitted over a more or less protracted period, it is called phosphorescence.

Fluorescence depends upon the presence of certain unsaturated valences within the molecule of a substance. In the carcinogenic materials, the double linkages between carbon atoms confer this property, and the cancer producing influence is enhanced by increasing the size of the molecule by multiplying the presence of the benzene ring, and especially when two or more benzene rings hold several carbon atoms in common. Thus is the power of the molecule to lower the surface tension of the tissue colloids increased, and this favors its deeper adsorption into the cell substance. The more bulky the molecule, moreover, the more inertia in general and the more stable the fluorescent grouping against destruction by oxidation. Benzopyrene and dibenzanthrene are powerful carcinogenic materials, and this is a matter of common knowledge. The mechanism of action, however, has not hitherto been explained on the basis of the fluorescence, nor has the unsaturated carbon valences concerned been discussed with reference to any particular cell function. However, the mechanism is quite clear and is satisfactorily confirmed by the events of the recovery process outlined below. I will describe it as follows:

The normal oxidation process in the tissues involves the addition of peroxide oxygen to unsaturated valences where they exist between carbon atoms or between carbon and oxygen or nitrogen atoms, and between the hydrogen and oxygen of the hydroxyl group. This involves a migration of electrons from oxygen to hydrogen carbon or nitrogen from outside the molecule—heterorrhopesis. After the peroxide oxygen has been added, the splitting of the peroxide linkage between the oxygen atoms permits a further migration of electrons from oxygen to hydrogen, carbon or nitrogen within the molecule—isorrhopesis—with the burning of the hydro-

gen to water and the burning of carbon to carbon dioxide. The two sets of electron migrations normally set up corresponding disturbances in the electro-magnetic field which, being propagated to other molecules of similar structure, are absorbed and resonated in the form of a similar reaction which again emits like vibrations and so the oxidation process is propagated. A fluorescent substance of appropriate structure may absorb these radiations and re-emit them at a lower vibration rate, one which does not propagate the process but rather inhibits it—negative catalyst. Thus the normal oxidation procedure is blocked, unless, of course, the oxidations present are going on at a rate sufficiently energetic to burn up the fluorescent intruder, but where the metabolites concerned are depleted by some measure, as suggested above, the intruder has the upper hand and the pathology has its beginning.

Should the deficiency be made good by the presence of dynamic metabolites that can initiate the electronic migrations discussed above with sufficient vigor, then the intruder is destroyed by oxidation, and the pathology is corrected at its very start. It is on this basis that the treatment described in this paper is designed and employed, and it has proven definitely successful.

The fluorescence of the carcinogenic intruder has a further importance. It determines the character of the neoplastic lesion. Two phases are present always in neoplasia, and these two phases are always present in the granuloma exhibiting allergic necrosis. In each instance there is necrobiosis which features a shorter or longer phase of mitosis and hyperplasia, ending ultimately in cell death. Since in the late necrotic phase the amount of tissue killed is great in proportion to the amount of toxic agent acting, when speaking of the granulomata, it is termed a sensitized or an allergic necrosis. This can only mean that the necrosis is mediated by catalytic or basically photochemical action, and herein the fluorescence of the toxic agent plays its part. It is my position that neoplasia is the same phenomenon

differing only in that the hyperplasia is greater and more successful in its survival over the ultimate cell death, and this survival is a direct physical result of the character of the causative fluorescent agent.

It is a well known fact that necrobiosing cells show increased mitosis. It is also established now that cells undergoing death emit rays that can be measured quantitatively by the amount of light sensitive silver preparation they can effect. Likewise it is known that radiation of somewhat slower frequency stimulates mitosis. Such radiation is called mitogenetic radiation and it can be quantitatively measured with reference to its energy content and its effects. The energy that is stored up in the synthesis of the cell structure is liberated as radiation when this structure undergoes disintegration during necrobiosis. During this process the functional mechanism is first destroyed and later the more primitive structures represented by the embryonic cell structure. However, the radiation frequencies for the two phases of necrobiosis have not yet been differentiated.

The necrobiotic rays measure from about 1800 to 2300 Å units and the mitogenetic rays measure from about 2000 Å to 2500 Å. Thus about half the necrobiotic rays run within the mitogenetic range and as a result cell death automatically stimulates mitosis and cell multiplication, but in the presence of the correct fluorescent substance, the necrobiotic rays are all shifted to the mitogenetic range and an extra amount of cell division is induced, enough to establish the advancing hyperplasia of a necrosing granuloma or a neoplasm or the mitosis of the multinuclear giant cell in areas of destructive inflammation. The relation of neoplasia to allergy, whether visceromotor, vasomotor or necrotic as in the granulomata, is so close that a common mode of genesis should not be surprising. Moreover, the same basic clinical measure abolishes both allergy and neoplasia, which to my mind settles their common basis, and it is this relationship that forms the subject of this paper.*

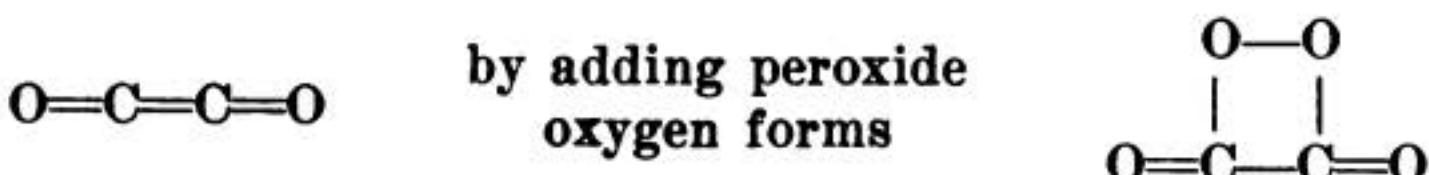
Chapter II

STRUCTURE AND PRODUCTION OF THE METABOLITES

If we compare the ability of aromatic molecules and the unsaturated aliphatic structures as to their power to add peroxide oxygen, we see that while the latter will take up the peroxide oxygen quite quickly and in all the unsaturated stations, the benzene ring according to circumstances will take it up only at one or two of its unsaturated positions, instead of the three, and the still more complex structures, like benzopyrene, are less active in this respect. Moreover, the peroxides of the aliphatic molecules thus formed are very active even to the point of explosiveness by slight warming or impact or even the presence of sharp points or dust. Such reactivity increases with increase in the peroxide oxygen content, so that when enough is present to completely combust the molecule to carbon dioxide and water, the highest explosiveness and clinical usefulness is had. On the other hand, the peroxide of benzopyrene is nearly as sluggish as its parent substance. The different physiological derivatives of cholesterol, which are not in themselves carcinogenic, may be made so by increasing the number of unsaturated groups so as to resemble benzopyrene. This gives the fluorescence necessary for carcinogenesis.

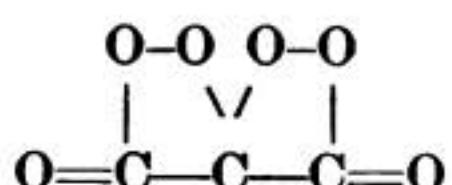
*In 1933 Braunstein and Heyfetz, *Biochem. Z.* 259, p. 175, showed that even though glycolysis goes on in the blood of experimental cancer animals, the mitogenetic rays are not present. Fatigue and poisoning with the fluorescent substance quinine likewise removes these rays from the blood. These investigators suggest the possibility of a substance acting as a filter that absorbs the normal radiations. G. Protti, *Boll. Soc. Ital. Biol. Sper.* 8, 1412 (1933) reports that the ultraviolet radiation of the blood is proportional to the enzyme and metabolism rate of action. Capisarow reports in *Protoplasma*, 21, 73, (1934) that the ultra violet radiation is a general feature of the normal metabolism of organized matter, and is associated with the chemical function of the respiratory enzymes—the oxydase-dehydrogenase activity, that there is no radiation after deactivation of the enzymes either temporarily or permanently, and that vitamins and hormones do not produce radiation. Wolf and Ros, *Zentr. Bakt. Abst.* 128, 305, (1933) have shown that radiating bacteria with a wave length of 2800 A.U. and also the radiation of bacterial filtrates and nucleic acids but not glycogen causes the emission of secondary radiation. (Other confirmatory observations are available.)

In order to induce oxidation at these stations in the molecule, radiations emitted by a similar but very energetic oxidation must be provided, so a molecular structure must be used of the aliphatic type where enough peroxide oxygen can be taken up with vigor, followed by the oxidation isorrhopesis with conversion of all the carbon and hydrogen atoms to carbon dioxide and water, with as close to explosive velocity as possible, and the ideal structure should be a molecule of the most labile sort existing only transiently while performing the two phases of oxidation mentioned above. The structure here presented answers the requirements ideally and indeed it is exactly what is provided by the two metabolites, formic and glyoxylic acid at least.



which undergoes isorrhopesis changing to carbon dioxide.

Malonic acid offers an internal anhydride of a more stable nature which can take up peroxide oxygen and serve in a similar way. Thus $\text{O}=\text{C}=\text{C}=\text{C}=\text{O}$ by adding two molecules of peroxide oxygen forms

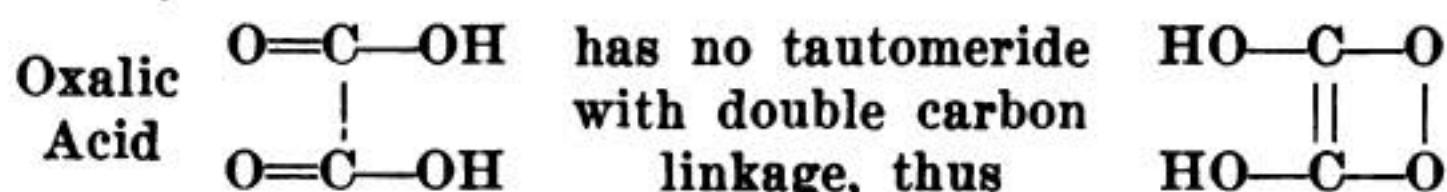


which undergoes isorrhopesis change into three molecules of carbon dioxide.

The two electronic migrations are necessary,—that from without the molecule and that taking place within. When the first takes place, the second will follow, but the second alone has not shown curative value so far in our studies.* This is well exemplified in the dissociation values and tautomerism of formic and oxalic acids. Oxalic acid would have to have very different properties from what it possesses if it could form a tautomeride with a double bond between the carbon atoms. It contains no hydrogen directly attached to carbon to split

*Footnote found on page 155.

off with a hydroxyl of the other carbon atom. Spectrographic observation demonstrates that no double linkage occurs between the carbon atoms, under any circumstances.



Therefore, oxalic acid can never add two atoms of peroxide oxygen to its carbon atoms directly from without, and it can take no part therefore in the first oxidation migration (heterorrhopesis) needed for therapeutic value. Hence, even though it can form an explosive peroxide yielding complete combustion through isorrhopesis, it has no therapeutic value. Hence the unsaturated union of the two carbon atoms is essential.

Formic acid, on the other hand, behaves like none of the organic acids. It forms no anhydride or chloride. It is a stronger acid and the hydrogen dissociates with an energy of about 1300 A. from the carbon, instead of at above 2000 A. from the oxygen of the hydroxyl. Hence, in this molecule we have a hydrogen cation and a formate anion comparable to the dissociation of inorganic acids. Not only are the acid properties greater, therefore, but its reducing powers are also explained, for in the anion the hydroxyl co-ordinates with the carbonyl group, conferring a negative charge to the anion as here pictured, and this arrangement provides the "lone pair" of electrons that give the anion its reducing powers and permits the dissociated molecule in dilute solution to form the double bond union between two carbonyl groups which will take up peroxide oxygen when it is present. The structure here given is verified spectrographically, and also by the fact that an alkaline solution of formic acid always contains formaldehyde. The tautomeric possibilities are here pictured and the likelihood of production of peroxide oxygen in the dissociation is quite evident.

Besides serving as a catalyst, promoting oxidation photochemically, the quick combustion of the peroxide

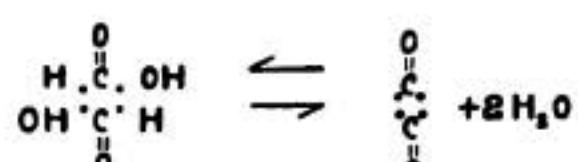
formed leaves only the most minute amount present at any time, and thus the oxidation process is not blocked by the accumulation of product but rather it is hastened, and at the same time the solution of the formic acid and its transient unsaturated form are kept in the very dilute state so essential to greatest effective dissociation. Even if peroxide oxygen be at low pressure, the formic acid may dissociate to form it itself with the concomitant production of formaldehyde that can be disposed of in several very interesting ways, and thus a degree of further oxidation may be provided. Here too is an opening for serious pathology for the catalytic removal of the peroxide oxygen thus formed, if done excessively or in a not physiological direction will catalyse an excessive production of formaldehyde and a secondary formation of lactic acid and other harmful products.

But here also a spontaneous production of an important immunity mechanism is accomplished, for the formaldehyde formed can act upon the disturbing toxin and convert it into "toxoid" as is performed in the laboratory so successfully. The chemistry of the carbonyl group is therefore of great immunological importance, and the di-carbonyl or di-keto group with which we are concerned has a key position in that form of oxydation which mediates immunity.

STRUCTURE OF FORMIC ACID

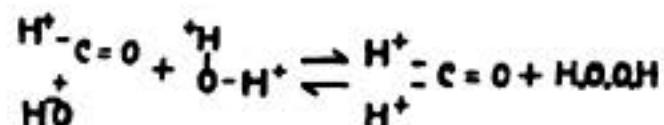


Two molecules of formic acid dissociate in alkaline solution with equilibrium between the unsaturated two carbon form, water and the ordinary form

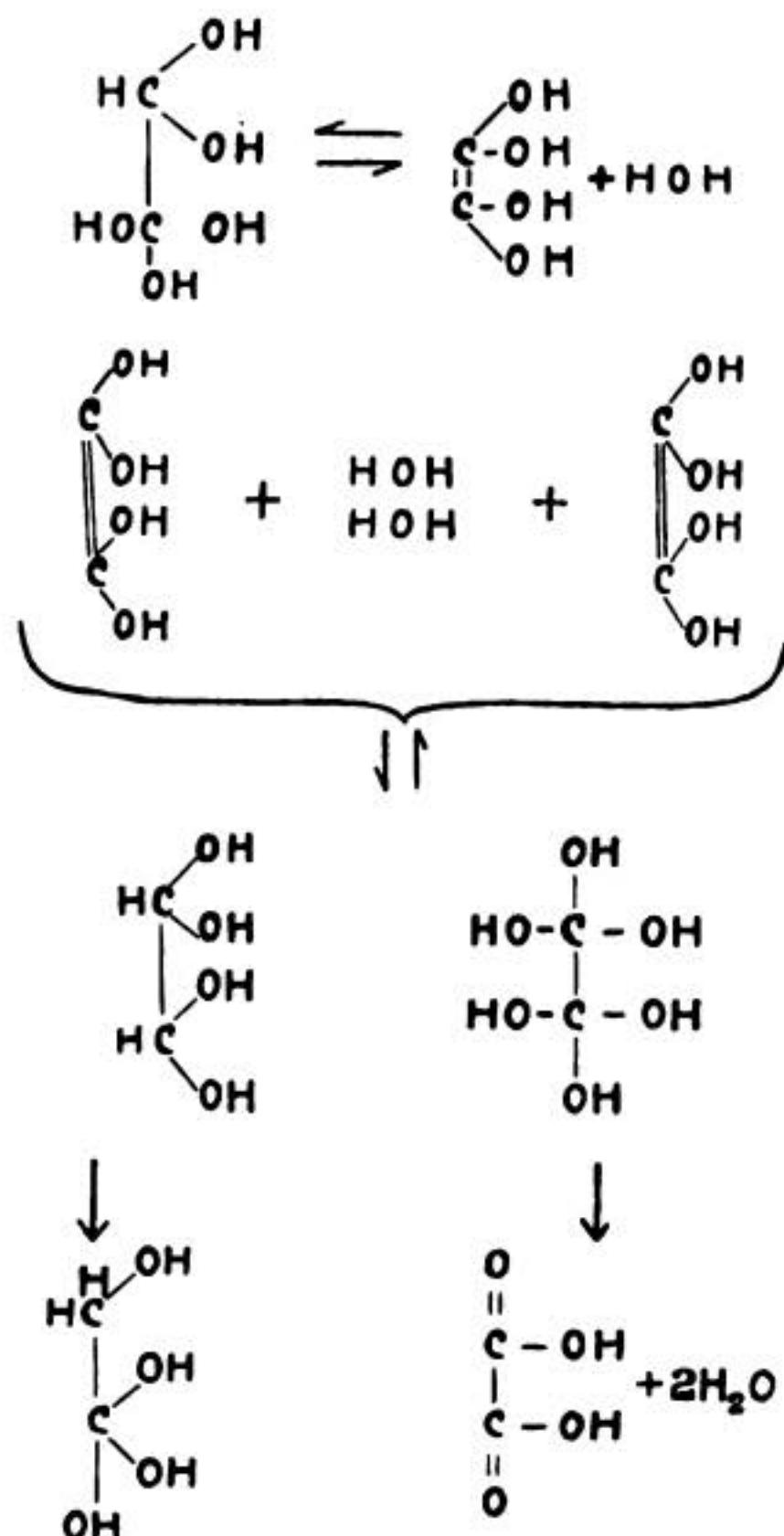


Formic acid in alkaline solution dissociates to form

formaldehyde and peroxide with reduction of the carbon, and the unsaturated form as an intermediary.



Another theoretical source of the ideal structure for the photochemical catalysis of oxidation that we are concerned with is glyoxalic acid, thus,—



Glyoxalic acid in hot alkaline solution passes by way of glyoxal into glycollic acid and oxalic acid with the unsaturated diketone, vinyl dioxide in hydrated form as an intermediary, as shown above.

While formic acid in alkaline solution readily dissociates to form formaldehyde, the unsaturated diketone and hydrogen peroxide possibly also, glyoxalic acid requires boiling with alkalis to set the hydrogen atom free from its union with carbon, and thus two molecules produce one of glycollic acid and one of oxalic acid. Intramolecular change is required for this conversion, such as pictured above, and in a measure the hydrogen atoms of formic acid and glyoxalic acid that are attached to carbon are comparable. By virtue of these two hydrogen atoms, both molecules behave as unsaturated carbon compounds under favorable conditions, and the tautomeric change is possible.

The practical application of both methods is restricted by the dominant tendency of the aldehyde groups present to polymerize and produce cancer stimulating bodies. Two molecular structures therefore are essential to curative action, the double union of the two carbon atoms, and the double bond union of each carbon atom with oxygen. The carbonyl group existing alone as in carbon monoxide or in another molecule or the double union of carbon atoms in any other molecule are quite valueless.

The acetylene carboxylic acids, namely propargylic, acetylene dicarboxylic and di-acetylene dicarboxylic acids, offer an additional source of rapidly burning peroxides and ozonides. These acids and their oxygen derivatives have in special cases yielded very interesting results, but they are not adaptable for general use since they are not related directly to the naturally occurring physiological metabolites, though perhaps a possible relation to the burning of lactic acid may explain the results so far observed.

In the combustion of organic compounds containing a two carbon chain, there is always the possibility of the unsaturated diketone derivative of glyoxylic acid being formed, and if we can stop the combustion at the point that holds the greatest amount of this substance, espe-

cially when the precursor and products are such as to hold an equilibrium with the substance which is most favorable, our method will be successful. Thus by passing acetaldehyde or ethyl ether over platinum metal heated to just less than red heat, it is burned with the production of glyoxylic acid and under favorable conditions the unsaturated derivative. Thus by using platinum or palladium as hydrogen acceptor in the catalytic oxydation of acetaldehyde or ethyl ether the glyoxal and glyoxylic acid formed are respectively by dehydrogenation and dehydration changed to the internal anhydride of glyoxylic acid, the vinyl dioxide which we call "glyoxylide" for short. Various peroxides of glyoxylic acid, formic acid, diformaldehyde peroxide hydrate produced and the difficulty of regulating the admission of oxygen and water to the reaction field make the method very impracticable indeed. Carcinotonic aldehyde polymeres are also usually produced.

A much better procedure is to produce the sulphonic acid derivatives of ethyl ether and other bodies, paraldehyde glucose or fructose. Of these there are a number that are possible, which can be made to yield the "glyoxylide" in goodly quantity and also a five member ring favorably unsaturated. These substances hold a favorable equilibrium with the contaminating vinyl alcohol, vinyl ether, and other bodies, and thus offer the most satisfactory method. It is the one generally employed.

The method of extracting the substances from tissues that I used early in this work is expensive and only occasionally successful. Beef heart or brain is taken fresh from the animal and rapidly ground up into three times the weight of ice cold absolute alcohol in which a good quantity of anhydrous sodium sulphate powder was added. Thus the tissue is dehydrated and the protein precipitated. It may stand over night. The alcohol is filtered off and then the residue is extracted with dry ether, several times. The extract is concentrated and precipitated with acetone which ex-

tracts some fats and cholesterol. The precipitate is then freed from acetone by vacuum and extracted with ether again. This extract contains the lecithin and cephaline fractions with the metabolites adsorbed. It can be precipitated again with absolute alcohol to separate the lecithin solution from the cephalin precipitate, which carries the largest fraction of the metabolites. By extracting away the fatty substances with petroleum ether, and dialysis further concentration of active substances is had.

Heart and brain, because of their greater survival than any other tissue against starvation, contain the richest lipoid content and thus hold in absorption the richest supply of metabolites for function and immunity. The kidney also shares this property but to a lesser degree, but the placenta is especially well supplied, serving as a safety storehouse for the embryo where the afferent blood is enriched should the maternal blood be depleted at any time, and thus protecting the embryo.

The preparation of the unsaturated diketone from formic acid and glyoxylic acid by inducing tautomeric change or the catalytic use of platinum has demonstrated a limited degree of success with few complete recoveries from very advanced malignancy. Though the results are too meagre for practical purposes, they serve well to establish the theoretical position outlined. The uncontrollable tendency to form cancer activating aldehyde polymeres is one factor that restricts their practical application. The internal anhydride of malonic acid which we call "malonide" for short shows more decided curative action. The best method for producing the substance has proven to be from the sulphonic acid derivatives of ethyl ether, acetaldehyde, glucose and fructose and other bodies. The patients here reported have received the glyoxylide obtained from this source. These methods of preparation are being patented, and the rights will be distributed among deserving institutions at the proper time.

Chapter III NEOPLASIA

When a certain tissue is called upon to perform its function less and less from generation to generation, a hereditary anaplasia of the tissue concerned is encouraged. Thus the breast which can easily serve the nursing of a dozen or more children in a life time is in our modern times a rather neglected organ and so it is tending to gradually become rudimentary, and the constitutant cells suffer loss of their differentiated mechanism and become anaplastic with increased tendency to cancer.

Hyperfunction may wear out the working mechanism of a cell and leave it in a state of necrobiosis with only the primitive nutritional and reproductive mechanisms present over a long enough period for it to make some response as an anaplastic structure. Likewise chronic irritation, physical or chemical, may bring about slow death in which the differentiated structure is first lost and the primitive still remains active over a definite period.

If during this period an allergic response is induced in the anaplastic cell, the result can only be a progress of cell division and mitosis, which is exceedingly great in proportion to the amount of exciting agent. Indeed such chemicals as benzopyrene have the power of producing both the anaplasia and the excessive cell division of malignancy which terminates only with the end of the necrobiotic process, the death of the cell. Should the anaplasia be incomplete, then the mitotic rate can be tempered by some functional response, and the degree of malignancy is lessened. The response of the functional mechanism need not be successful enough to show an effect in work done when such a mechanism is not a perfect one and represents an early stage of anaplasia. It however may divert the energy of an allergic response largely away from mitosis, and account for the benign nature of many neoplasms.

Allergic responses are the result of toxic action and may be considered attempts at detoxication or protection. Living tissues characteristically respond to small doses of toxic agents with an opposite type of action. A small amount of oxydation inhibitor is reacted to by an excessive oxydation behavior and the cell's functional elements are forced into an hyperactivity of a magnitude disproportionate to the amount of excitant, in contradistinction to ordinary physiological and drug behaviors where the response is regulated by the demand for activity or by the amount of drug employed. Thus involuntary muscle spasms or excessive secretion characterize the allergies of certain tissues. Should the functional elements be deficient, the plastic, or if this is exhausted, the autolytic cell functions may respond excessively and neoplasia or allergic necrosis be the result.

Several orders of allergic necrosis and hyperplasia may be cited for illustration. In the granulomata of tuberculosis and syphilis, the normal differentiated mesodermal cells are affected. In psoriasis the normal ectodermal epithelial cells are concerned, and in neoplasia anaplastic cells from all three germ layers play the role in which the degree of anaplasia determines the degree of malignancy. In each instance the hyperplasia is only a phase of the necrobiosis.

In the hypersensitivity expressed in the common allergic conditions, heredity plays its part, and in the individual afflicted with cancer years of allergic conditions may precede the appearance of the growth; thus colitis, epilepsy, psoriasis, and migraine are to be met, and very occasionally an anxiety neurosis or schizophrenia. The glands of internal secretion rarely escape injury yet it is not very frequent that a frank Basedow's disease or a true diabetes mellitus is encountered. In the sense that they are either "hyper-" or "hypo-" responses not completely under physiological control and disproportionately great in comparison to the amount of causative agent, they too must be classified as allergies. Any of these allergic states may be followed by can-

cer, and tend to be greatly ameliorated or to disappear with the development of the malignancy. Sometimes after the growth is removed surgically, the allergic symptom returns, and with recurrence of the growth it again disappears. Both clear up by correcting the catalytic inhibition of the addition of peroxide oxygen to unsaturated carbon valences. Thus, their common basis is demonstrated.

Cancer Cases

To illustrate how the removal of the fundamental pathology—the interference with oxidation—permits restoration of complete normalcy with tissue reconstruction and return of function, the following case reports are given. They are selected from among a large number of the most interesting cases that have recovered for me and examples are also given from the practice of other clinicians to illustrate the practical applicability of the method in the practice of any physician.

Four Children Born After Recovery From Cancer of Uterus

Mrs. C. T.—Age 31. Housewife. History taken August 7, 1923. Diagnosis by physical findings, history and microscopic findings of two pathologists.

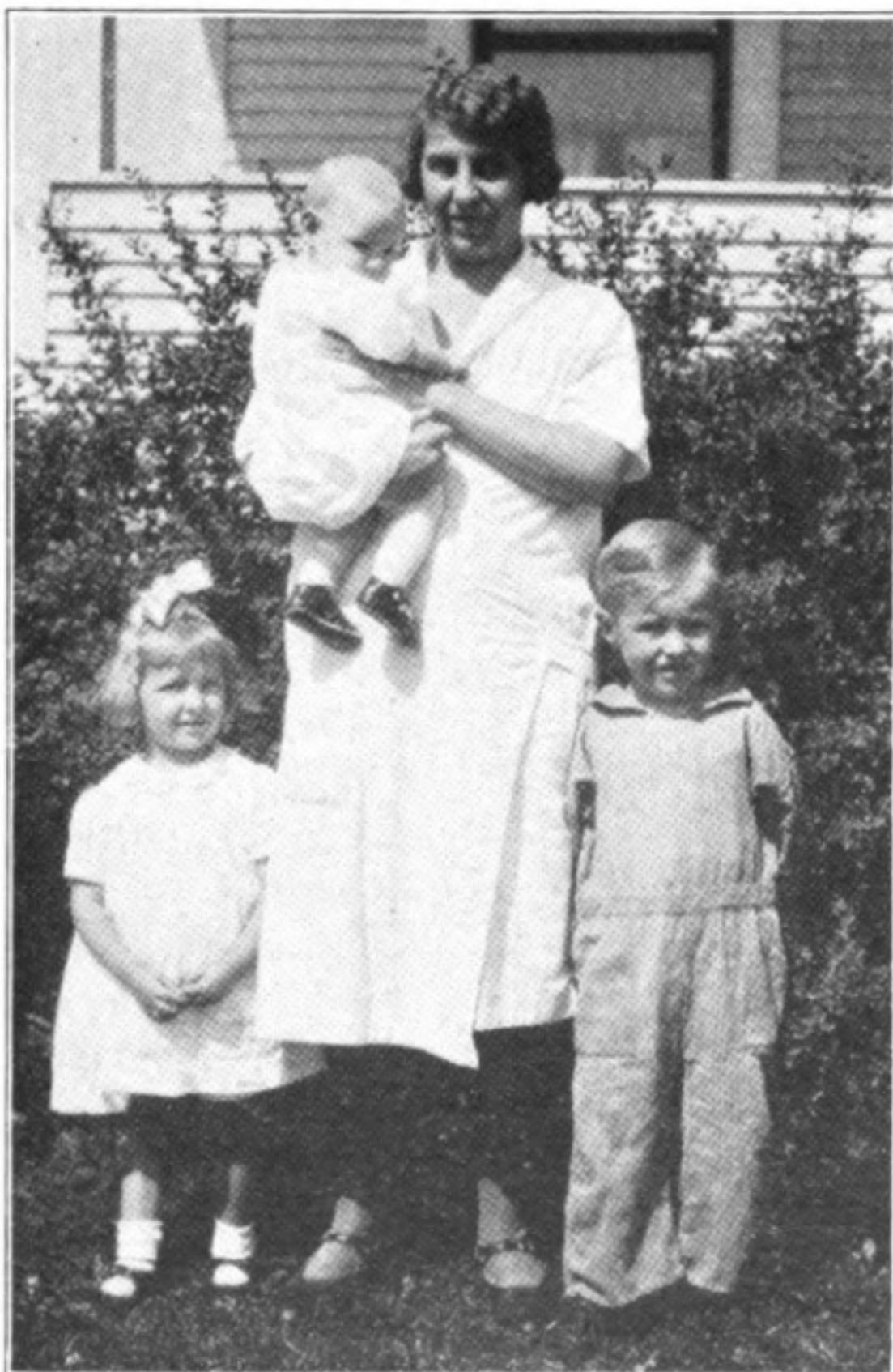
Pregrowth Symptoms—Subject to dizziness and headaches for eight years. Unable to support gestation. Several miscarriages.

Family History—Suggests possible cancer, but no definite proof.

Past History—Appendectomy two years before.

Present History—Irregular bleeding from uterus for over a year. Pain in lower back and down legs. Had characteristic discharge of watery sanguineous fluid quite steadily, becoming worse during this period. A few severe bleeding spells.

Physical Examination—Was first made by the family physician who found cancer grossly involving uterus and adnexa. Biopsy was made which confirmed the diagnosis. Microscopic report reads: "Sections show



Mrs. T. and her three children, which were born after recovery from extensive cancer of the uterus. Diagnosis made by physical examination, the history of the case, and confirmed by microscopic examination of specimen removed from the growth. Specimen was reviewed by other pathologists to confirm correctness of original diagnosis. Treated 15 years ago, now has four children and is in perfect health.



Mrs. C. with baby born three years after recovery from very advanced cancer of the uterus, adenocarcinoma microscopically. In this case the whole pelvis was solid with the growth and the uterus seemed mostly eroded away. Patient could not walk, cachexia was advanced and she was bedfast. All parts are perfectly reconstructed and she and the baby are perfectly normal.



Mrs. F. and child. Mother had complete diagnosis of cancer and judged far advanced and inoperable 10 years ago, completely cured by one dose of glyoxylide 9 years ago.



Mrs. P. and two children born after recovery from generalized melanotic cancer recurrent after two operations and involving liver, stomach, uterus and pelvis generally, causing apparently great destruction of uterus. All have perfect health.

an atypical proliferation of squamous epithelial cells which have markedly infiltrated the underlying tissues. Diagnosis—Squamous cell carcinoma (Epithelioma)."

My examination was made August 7, 1923, and the uterus was found fixed, enlarged to the size of a large fist, involving cervix, body of the uterus and the right adnexia. The cervix showed a typical cauliflower ulcerative tumor, from which the biopsy was made. The sections were reviewed later by another pathologist of national reputation and confirmed to be a very malignant squamous cell carcinoma. Generally there was some cachexia and weakness, but nothing extreme.

Treatment—One cc. of glyoxylide solution was given subcutaneously August 7, 1923, and was repeated in fourteen days. Reaction of slight chilliness and fever came on the fourth day and during the third and twelfth weeks. Bleeding stopped within two weeks completely and in two months there was no more drainage or pain. Health started to return very satisfactorily during the second week but steadily after the fourth week until the very best health was attained and has remained to the present time. By the end of the first year the uterus had returned to normal completely, with reconstruction of the invaded and destroyed parts, the tumefactions having all been absorbed within the first six months.

Four normal pregnancies followed and four normal, beautiful children were born since recovery. The last was a breech presentation. There have been no abortions or other abnormal occurrences and physical examination reveals perfect normalcy. Thus true recovery from the physical changes both before the growth developed and after it became established have been removed by correcting the fundamental pathology. She is still in perfect health twelve and a half years after admission for treatment.

Among the cases of advanced cancer of the uterus cured by this treatment, there are eleven who have

given birth to normal children and in each instance remain well.

CANCER OF TESTIS

Mr. G. T.—Age 38. Salesman. History taken June 10, 1925, by Dr. A. W. Hoyt.

Diagnosis—By history of two unsuccessful surgical attempts at removal of widespread recurrence, physical findings and two microscopic examinations of tissue removed at two operations.

Pregrowth Symptoms—None recorded, except rather unusual lack of muscular strength for a few years back.

Family History—One sister developed cancer of breast with marked bone metastases and destruction.

Present Illness—Started as a swelling above the right groin in December, 1923, which increased rapidly in size and then remained stationary until May 8, 1924, when he noticed the growth starting to increase in size and become painful. At this time it reached the dimensions of $5\frac{1}{2}$ inches long, 4 inches wide and 3 inches thick, and spread over the region of the inguinal canal.

The mass was dissected away and found cystic, containing about a half cupful of brownish black, thick jelly-like, bloody fluid. Microscopically the tissue was found to be a rapidly growing carcinoma of the testis.

In about a year it recurred as a mass above the old scar about $2\frac{1}{2}$ inches long, $1\frac{1}{2}$ inches wide, hard, tender and immovable. This mass was removed for microscopic examination but further attempt to remove the extensions into the abdominal wall muscle and fascia was given up as impossible because of the widespread extent of the infiltration. The tissue microscopically proved to be a rapidly growing carcinoma of the testis, as in the former instance. The laboratory report read: "Carcinoma probably secondary to previous carcinoma of testis as the cells were histologically similar."

At this time, June 10, 1925, the patient was weak and cachectic. Weight 128 pounds, with the surgeon's prognosis of four months life expectancy.

Treatment—Only one cc. of the glyoxylide solution was given intramuscularly on June 10, 1925. This is the only treatment the patient received.

Results—In about ten days there was definite improvement in health and strength, and at the end of three months he had gained in weight to 142 pounds, with a very great gain in strength, and resumed his occupation. The abdominal wall infiltration subsided in the meantime. Quite characteristically, rather than strangely, his muscular development and energy is much greater than in an ordinary person. He has unusually high resistance to fatigue and against the ordinary infections, and no signs of recurrence have shown up. He has remained in perfect health to date, a period of more than ten years since treatment.

CANCER OF LARYNX

Mr. C. F.—Age 48. Salesman. History taken November 26, 1923.

Diagnosis—By history, physical examination and microscopic findings.

Pregrowth Symptoms—Marked dizziness for about ten years.

Family History—Nothing definite relative to malignancy.

Past History—Well all his life. Usual weight about 205 pounds until three years ago when he had a “nervous breakdown.”

Present Illness—Started with hoarseness, in May, 1923, which persisted and increased to aphonia by the end of November. In the meantime he was examined by at least four throat specialists who diagnosed the condition clinically to be cancer of the larynx. A specimen was removed on November 2, 1923, which microscopically proved to be squamous cell carcinoma.

Physical Examination—The left side of the larynx was one mass of cauliflower tumefaction that obscured the natural structural characteristics. The lesion spread posteriorly over the midline and anteriorly to involve the epiglottis. Extensions were visible and palpable on both sides of the neck, mostly on the left side along the anterior border of the S.C.M. muscle which was somewhat displaced by the glandular enlargement. The metastases numbered four, varying in size from a bean to a walnut. There was difficulty in breathing and swallowing, and aphonia.

Treatment—One cc. of glyoxylide solution was given on November 29, 1923.

Results—There was some fever in twenty-four hours after the treatment and general achiness. After this subsided the patient improved in several respects. Within twelve weeks recovery was complete, so far as function was concerned. He could speak and swallow normally and had regained his strength and a weight of 225 pounds, but there was some redness and asymmetry within the larynx which did not entirely come to absolute normalcy until about the sixtieth week after the treatment. He remained in excellent health until 1933 when he had moved to Chicago. A finger was amputated by some other doctor for a felon, but he was otherwise well, he stated. Since then no report has been received from him.

CANCER OF LARYNX

Mr. M.—Age 58. History taken November, 1928.

Diagnosis—Made by history, physical and microscopic findings.

Present Illness—Like Mr. F.'s case, the trouble started as hoarseness and cough. Examination by several specialists resulted in a clinical diagnosis of cancer

of the larynx. Biopsy resulted in microscopic confirmation reading thus:

"The pathologist reports definite squamous cell carcinoma, showing many definite pearls."

Physical Examination—The growth was not so extensive as in the former case, but had spread to the glands on the outside of the neck and was diagnosed as entirely hopeless and inoperable. He was strongly warned not to try any new treatments because his condition was incurable. My examination revealed the largest metastasis to be smaller than the ball of my thumb, and two others, the size of a bean, were located.

Treatment—One cc. of glyoxylide solution was administered.

Results—Within twelve weeks recovery was complete and he remains well today, which is seven years after treatment.

CANCER OF STOMACH

Mr. R.—Age 69. Farmer. History taken August, 1926. Patient referred to me by Dr. Kannel.

Diagnosis—By clinical history, physical and microscopic findings and recurrence after attempted removal.

Family History—One sister had cancer of breast.

Past Illnesses—Only childhood diseases.

Present Illness—Started in the Spring of 1924 with vomiting, gastric hemorrhages and emaciation. He consulted Dr. Kannel, who found an obstructing mass at the pylorus. About half of the stomach was removed on June 28, 1926, in an attempt to cure a large carcinoma which microscopically was found to be a very malignant medullary growth. After a few weeks, trouble started again and by August, 1926, the old symptoms, pain, vomiting of food and some blood and cachexia, had again set in.



Mr. R. before treatment. Note the bulging of the cancer masses throughout the abdomen. (History not reported here.)

Physical Examination—Examination made by me August 25, 1926, revealed a mass bulging somewhat and easily palpated to be the size of a big orange, but irregular in shape and fixed. It was painful on manipulation and was observed by the patient who was aware of its rather rapid rate of growth. He weighed 103 pounds and had the yellow cachexia so typical of advanced malignancy. Hemoglobin 45 per cent.

The following is the microscopic report:

“**Microscopic Examination**: Small alveoli combined with a diffuse growth of atypical proliferating epithelium form the structural picture of this neoplasm. The epithelial cells are generally polyhedral or round in shape, with large hyperchromatic nuclei. One portion is necrotic—a superficial ulceration. This may be classified as the diffuse type of gastric carcinoma. I am unable to determine this point exactly as it is necessary to know something of the gross appearance. If there were extensive involvement of the wall, this would be the correct interpretation. If the growth were sharply defined, rounded and ulcerating, it would be placed with



Mr. R. after recovery—abdomen completely normal, all traces of the cancer masses have been absorbed.



*Mr. R. abdomen drawn in to show the freedom from cancer growths.
Recovery complete.*

the circumscribed types of carcinoma simplex.

“This type is always infiltrating and early invades the lymph nodes with widespread metastases.

“Diagnosis: Carcinoma of the stomach. (Type dependent upon the gross pathological anatomy.)”

Treatment—One cc. of glyoxylide solution was given on August 25, 1926.

Results—Vomiting stopped about the second week and in nine weeks no mass could be palpated. In the meantime he gained strength and weight, a good color and a splendid digestion. Now, nearly ten years after treatment, age 79, he is in perfect health, weighing 178 pounds and working hard right along. His abdomen is normal.

CANCER OF STOMACH

Mr. B.—Age 46. Grocery proprietor. History taken March, 1924.

Diagnosis—By clinical history, x-ray findings and exploratory operation, diagnosis of cancer of the stomach was made.

Past History—Well all his life except for pregrowth symptoms.

Pregrowth Symptoms—History of gastric ulcer for ten years with occasional vomiting, spells of alternate exacerbations and relief, pain throughout the period, relieved by eating or taking soda.

Present Illness—Started in 1921 with constant pain in epigastrium, made worse by riding in automobile which caused it to radiate into the lower dorsal vertebrae intensely. Vomiting became worse, sometimes blood, fresh and "coffee ground," great loss of weight. During the years 1922 and 1923, he lost from 220 pounds to but 120 pounds body weight. In November, 1923, he entered the Henry Ford Hospital for diagnostic service. At this time he could retain nothing in his stomach, vomited blood with whatever he ingested and suffered severe pain on attempting to swallow. The frequent vomiting of ingesta had been going on for six months and the patient recognized something wrong with his spine.

Next he went under the care of Dr. V. but rapidly grew worse, and finally entered St. Mary's Hospital for

the period of March 12-19, 1924. X-ray examination revealed that the mass that occupied the epigastrium was an extensive carcinoma of the stomach, and so an exploratory operation was done. The entire stomach wall as well as the liver was found to be involved, and secondary growths were found throughout the abdomen. A prognosis of two or three weeks to live was made. Patient was removed to his home and on April 6, 1924, was bedfast and practically starved to death, persistently vomiting putrid material and tissue debris, and suffering severe pain in the back.

Physical Examination—Abdominal examination revealed an incompletely healed incision from the intercostal angle to the umbilicus. A large protruding hard mass filled the abdomen above the umbilicus. The rest of the abdomen was emaciated and sunken. Other masses were palpable in lower abdomen, supraclavicular masses on left side. Body weight perhaps 100 pounds.

Treatment—One cc. of glyoxylide solution given on April 6, 1924.

Results—Vomiting continued and no food could be retained for two weeks longer. However, though the patient at the time of treatment was bedfast and could just walk across the room with help as a supreme test of his strength, in two weeks after the treatment he was able to walk alone and slowly climb a stairs, and in the meantime over one-third of the mass was absorbed. Thus the nutritional value of the involuting cancer tissue is demonstrated.

About the fourth week he could hold the food he took and swallowing was not attended with pain as formerly and he gained in strength and weight. Vomiting had stopped completely. He could eat a large meal containing fried potatoes that digested with comfort at the eighth week. At the tenth week no mass could be palpated but some pain still existed in the spine on exertion. This did not clear up completely until the sixth

month had passed, when the patient was back to work. Within a year he was back to his normal weight of over 200 pounds, perfectly cured, and remains well to date.

CANCER OF STOMACH

Mrs. P.—Age 61. Housewife. History taken November 3, 1919.

Family History—Negative to cancer.

Diagnosis—Made by clinical history and findings at exploratory laparotomy.

Pregrowth Symptoms—Gastric distress for four years.

Present Illness—Best stated in the words of the surgeon who referred her to me for treatment, after making an exploratory operation to settle the diagnosis:

"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 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 upon the following morning by Dr. A. and myself. To our surprise, we found the liver and gall bladder perfectly normal—no stones, no thickening of the duct walls, and so forth. But the lesser curvature of the stomach was one large 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 gastro-enterostomy or any modification of

such operation would be of no avail. We closed the wound and about November 1st 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." (Signed) Dr. H.

Physical Examination—On admission for our treatment at Detroit, November 1, 1919, the patient was fairly well exhausted. She had lost 70 pounds in weight. Her weight was 110 pounds. All food was vomited and had been for some eight weeks previously. Blood count showed 3,100,000 red cells, hemoglobin 60 per cent. Stools were black and scanty, urine very scanty. Physical examination showed a large tumor mass filling the epigastrium and extending to below the umbilicus and involving the liver. Supra-clavicular glands on left side were involved, also the base of the left lung. Left pelvis revealed a mass as big as a fist and smaller masses were found throughout the abdomen.

Treatment—Three treatments were given at two week intervals. Two weeks after treatment was instituted, the pylorus opened and food went through thereafter, with consequent gain in patient's health, increase in urine and stools. At this time, fever also developed to 104° and lasted a few days, but strength returned very rapidly and patient was able to return home six weeks after her entrance to the hospital. No cancer tissue palpable after the sixteenth week. She gained to 187 pounds, which she has held. She is in perfect health today, sixteen and a half years after being brought for treatment in an absolutely hopeless condition. This is one of the patients who received the naturally occurring metabolites obtained from the cephalin fraction of heart muscle. Later she was given a dose of the synthetic "glyoxylide" as a matter of insurance.

CANCER OF URINARY BLADDER

Mr. H. A.—Age 69. Salesman. History taken February 16, 1931.

Diagnosis—By history, exploration and physical and x-ray findings.

Pregrowth Symptoms—Psoriasis on both elbows for many years and neuritis for last five years.

Past Illnesses—No serious sickness except a Neisserian infection many years ago.

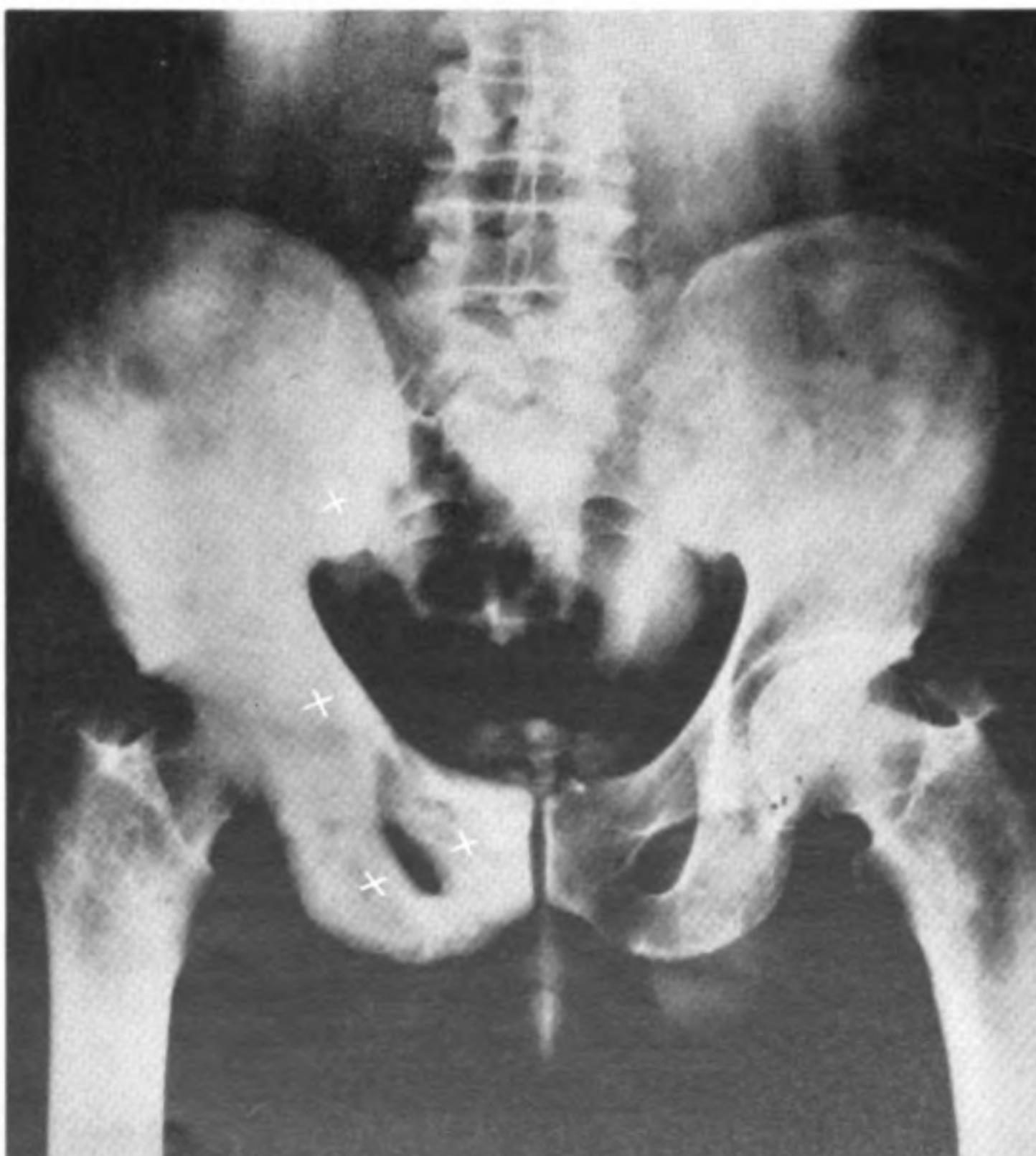
Present Illness—The trouble started as difficulty in passing urine, pain and frequency every half hour when on his feet and almost as bad at night. Cystoscopy at the Cleveland Clinic revealed a well-developed cancer of the bladder and calculi embedded in the growth. X-ray examinations showed that the pelvic bones were involved. At least one-half of the ilium and ischium were involved in a mass that could be palpated through the abdominal wall to be as large as three fists. They gave him an x-ray treatment and he grew progressively worse.

Physical Examination—He presented himself at my clinic, suffering twice the frequency of attempt to pass the urine and the pain was worse. The growth extended so as not simply to occupy the bladder wall and the pelvic bones, but it reached to high in the abdomen above the umbilicus on the left side and there was another mass half the size of a man's fist bulged from beneath the liver. These masses were easily detectable and palpable after the bowels were emptied by a four-day fasting and enema regime. The posterior wall of the bladder was found on rectal examination to be one large nodular mass that bulged into the cavity of the bowel, nearly filling it. The circulation in the feet was impeded by the pressure of the growth within the pelvis, so his feet were cold. Evidently the x-ray did not shrink the growth. On the contrary, the condition was aggravated.

Treatment—Our treatment was given February 16, 1931.

Results—Recovery progressed steadily until completed. He is now perfectly well nearly five years after

treatment. Rectal examination reveals perfect normalcy. The bladder was opened about eight months after treatment was given because of calculi. The surgeon reported that the bladder was all healed, that no more cancer tissue was left, but that a more vascular area than the rest was present where the cancer had been. Seven months later the cystoscope was used and this area was seen to have the normal vascularity, and the bladder wall was found completely reconstructed. At this time the remaining calculi were removed. His health is normal.



Mr. A.—Radiograph of pelvis after complete recovery showing bone area originally destroyed by the cancer invasion now reconstructed with denser and stronger bone than the normal bone of the unaffected parts, (shown at X).

CANCER OF RECTUM

Mrs. D.—Age 50. History taken May 2, 1934.

Diagnosis—By history, physical findings and microscopic characteristics.

Family History—Mother died of cancer of the uterus at age 49. One sister died of cancer of the uterus at age 49.

Past Illnesses—Influenza in 1918. Quinsy and tonsillitis several times. Tonsils removed seven years ago.

Pregrowth Symptoms—Neuritis in left arm and shoulder for several years.

Present Illness—In April, 1931, surgical removal of very large (gallon) multilocular cystoma of left ovary. Thereafter immediately a discharge of bloody fluid from the rectum developed, which persisted with small hemorrhages. In the fall of 1933 a large hemorrhage took place, and in April, 1934, she went to the University of Michigan Hospital where a cauliflower type malignancy was found in the upper sigmoid. A specimen was removed and the following microscopic findings reported from the pathological laboratory of the University of Michigan:

“Biopsy from the lesion was reported as ‘early carcinoma’.”

The condition was reported inoperable to the patient and she was requested to submit to colostomy because already considerable obstruction had developed.

Physical Examination—Made May 2, 1934, revealed a mass that could be bimanually palpated to reach from high up in the rectum into the abdomen reaching nearly as high as the level of the umbilicus. The epigastric region was tender but one could locate a mass the size of an egg below the liver, near the mid line.

Treatment—One injection of glyoxylide solution was given May 2, 1934.

Results—Improvement set in immediately with less tendency to bleeding and pain or urgency to stool. This phase lasted during the second week, but the third week was marked with more bleeding and frequency, though an increase in strength and restfulness was apparent. Thereafter improvement in every detail was steady and by the end of the twelfth week, when a fever and chill occurred, no more growth could be palpated by rectum or abdomen. For several months in the spring of 1935 there were hemorrhoids that cleared up spontaneously. She is in perfect health at present.

CANCER OF RECTUM

Mr. M.—Age 44.

Family History—Negative to cancer.

Past History—Fairly well all his life. Had childhood diseases.

Pregrowth Symptoms—Pigmentation in patches and areas with total absence of normal pigment distributed over the body, coming on in last few years. Dizziness started about ten years before growth was found.

Diagnosis—Made by history, physical findings and microscopic findings.

Present Illness—For several years prior to 1921 he passed blood at stool and experienced a mass of tissue protruding that could be pushed back into the rectum. Specimen was removed by Dr. R. A. and examined by Professor A. Warthin at the University of Michigan Pathological Laboratory. Another specimen was removed and examined by Dr. J. D. The diagnoses of rapidly growing adeno-carcinoma were made by both pathologists. Operation April, 1921, at Providence Hospital, Detroit, by Dr. A. X-ray and radium applied.

In March, 1922, another cautery, and radium needles again used. X-ray treatments once a week for a period. Continued to grow worse, so much so that he could not sit down. Dr. A. had the patient examined by Dr. A. M. who said the condition was hopeless but to continue with the radium. In May, 1922, radium was again applied for twenty-four hours and three more x-ray treatments given, but patient grew worse rapidly and the physicians advised the family that he was getting worse and hopeless. The bladder started to give trouble after the last radium treatment and continually grew worse. Bleeding from the rectum became severe in August and September, 1922, and a rectovesicular fistula developed; so that feces came through the penis, and urine through the rectum. Greater and greater pain, loss of weight and strength and obstruction of the bowel progressed. In October, 1922, the patient called his old family doctor who found the rectum completely involved and the disease spread to the liver and generally throughout the abdomen. Dr. W. E., a radiologist, was consulted, and he also looked upon the condition as hopeless.

Thus the disease had progressed from a small lump that caused but little inconvenience, outside of the bleeding, to a generalized carcinomatosis with rectovesicular fistula and marked cachexia, and this in spite of all the surgery, cautery, x-ray and radium that could be used. The usual course of cancer was rapidly aggravated.

Physical Examination—Our examination was made and we found the rectum full of cancer. It was impossible to introduce the finger beyond the internal sphincter. The abdomen was involved throughout, the liver mass reaching to umbilicus. Weight 114 pounds. Tissues were dropsical. Irregular patches of pigment were distributed over the body and there were unpigmented areas not subject to darkening from sunburn. Feces

passing through penis and the urine with stool through rectum.

The report of the patient's condition is stated as follows by his physician, Dr. E. R.: "The malignancy at this time had spread to the abdomen, involving practically all of the liver, large and small bowel, more extensively on the right side, perforation between bladder and rectum, marked cachexia, loss of weight, anorexia and a continuous passage from the bowels of mucopurulent material."

Treatment—Glyoxylide administered on November 5 and 19, 1922.

Results—Recovery was complete by September, 1923, with gain in weight to 142 pounds, a complete disappearance of all cancer masses and a return to the best health he ever enjoyed. His first year back at work was sufficiently energetic to win for him the prize for being the most successful real estate salesman in his association. Not until after the last traces of the cancer growths had been absorbed did the pregrowth toxic states of dizziness and leucoderma improve. The dizziness was accentuated at the sixth month for a week and then left permanently. The leucoderma, which of course involved sluggish tissue changes, required over a year to make a favorable change. The bleached areas are barely noticeable but are not pigmented in summer like normal skin areas. He is in perfect health now, more than thirteen years since treatment was given.

CANCER OF PROSTATE

Mr. B.—Age 68 at time of receiving treatment.

Diagnosis—By history, physical findings and biopsy, cancer of prostate.

Family History—His father and mother both died of apoplexy. One aunt died of cancer of the stomach.

Present Illness—His trouble started in 1922 as pain in the prostate and end of penis. The urinary frequency steadily increased and he became worse in every way until in three or four years he had to pass the urine painfully every hour or so. Pain and wakefulness and the toxic injury made him weak, emaciated and of yellowish complexion. He went to the Battle Creek Sanitarium where complete diagnostic routine with radiographic and microscopic examination of a specimen proved he had a far advanced cancer of the prostate. They wished to operate but he refused. Six months later he went to the Mayo Clinic where the same diagnosis was made, but they considered the condition entirely inoperable and hopeless and sent him home to die. On his way home he stopped at one of the large clinics in Chicago where the diagnosis was again confirmed, and one of the doctors privately suggested that he come to see us. He left for Detroit the same night and we made our examination the next day, October 24, 1927.

Physical Examination—Rectal examination revealed a hard, somewhat nodular growth that was at least the size of a baby's head occupying the anterior rectal wall, and bulging both towards the sacrum and into the abdomen. It expanded the width of the bowel cavity. The mucous membrane was tight, hard and nodular, being thoroughly infiltrated by the growth. The condition was so well advanced that bladder function was destroyed so far as storage of urine was concerned and complete obstruction of urine threatened. The glands in both groins were involved as walnut sized masses.

Treatment—Two injections of glyoxylide solution were given, one in October, 1927, and one in June, 1928.

Results—Recovery was not completed until the spring of 1929. Improvement set in promptly, however, and progressed to complete recovery much quicker than the disease developed. When we consider that a large area of the bladder and bowel walls, as well as the pros-

tate itself, required reconstruction to complete the recovery, we must understand that time was needed. Examinations were made each year and also in the summer of 1933, all of which confirm his recovery. He does not have to pass urine at night, his bladder functions normally and every vestige of the growths has been absorbed. His prostate has the same size and texture as a young man's, and his nutrition and health are perfect. He is now 76 years old and can work as hard as any man of middle age. He reports perfect health still, more than eight years after treatment.

CANCER OF RECTUM AND LIVER

Mrs. M. G.—Age 67. Housewife. History taken June 5, 1933.

Diagnosis—By history, physical examination, by exploratory laparotomy and biopsy, cancer of rectum.

Family History—Sister died of stroke at age 79. Mother died at 87. Father died at 77.

Previous Illnesses—Rheumatism of knees and ankles for the last four or five years. Thirty years ago had 18 pound fibroid tumor removed with the uterus. Good health since until two years ago when obstipation asserted itself and she concluded that she had a growth in the bowel. Examination by a good surgeon found a growth in the sigmoid in December, 1932. Obstruction became complete by April 27, 1933, when a "window" colostomy was performed, and a biopsy was made that demonstrated that carcinoma of high grade malignancy was present. The patient so informed me but a search of the hospital records by the surgeon showed the biopsy report missing. A prognosis was made at the time of about a month to live.

Physical Examination—Examination June 5, 1933, revealed an enormous mass occupying and completely filling the lower bowel, palpable through the abdominal wall to be the size of a large cantaloupe. The liver was

enlarged by a fist sized mass, hard and lumpy and bulging. Fortunately the colostomy was a lateral opening without severing the bowel. The patient was extremely cachectic and weak. A copious drainage of foul bloody fluid and regular vomiting of food and decayed material was noted. The pain was very distressing.

Treatment—One cc. glyoxylide solution was given on June 7, 1933.

Results—A reaction took place in three days, with some achiness. Thereafter there was improvement in her general health and less toxicity. The vomiting stopped. Soon she was relishing food and the pain left. By the end of three months some feces were passed per rectum, and in a year the colostomy healed spontaneously and all movements were discharged per rectum. She came to something approaching normalcy. Yet there was always some growth remaining and some discharge from the bowel. On July 30, 1934, a dose of Glyoxylide was given and thereafter a strong reaction took place, on the fourth day and during the ninth and twelfth weeks, fever, achiness, pains in the abdomen and diarrhoea for a whole week. True recovery followed quite rapidly and she is in perfect health now, strong, free from cancer symptoms, and without any growth traceable in bowel or liver. Her bowels move normally.

CANCER OF UTERUS

Mrs. Mc. A.—Age 43. Housewife. History taken July 29, 1929.

Diagnosis—Made by clinical history, physical findings, exploratory laparotomy and microscopic findings.

Family History—Father's sister died of cancer.

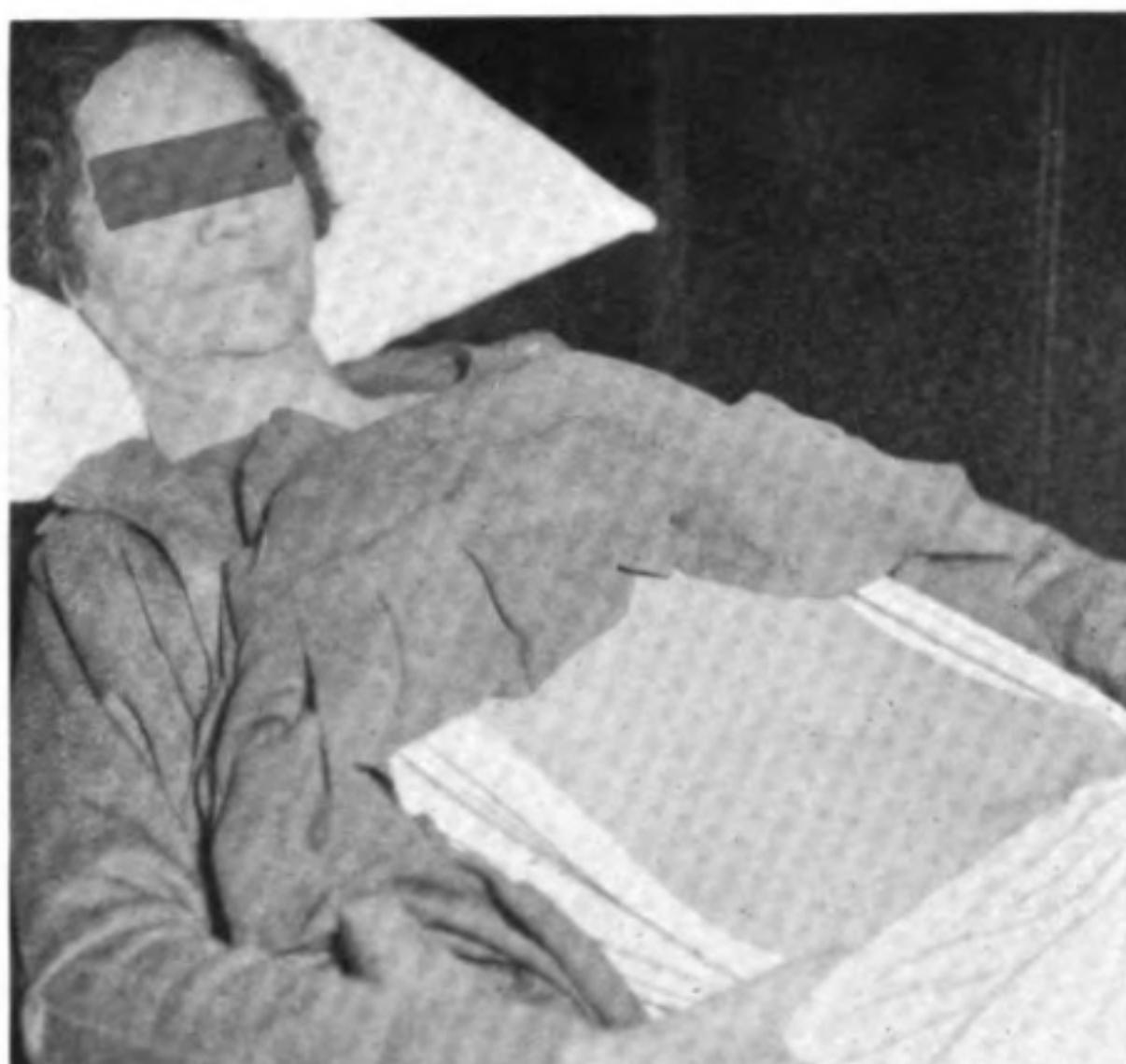
Past Illnesses—She was rather healthy all her life except that since the influenza epidemic in 1918, when she had an attack, she was subject to stomach trouble.



Mrs. McA. showing bulging cancer mass in abdomen before treatment. Diagnosed by exploration and biopsy far advanced cancer widespread throughout abdomen.

Pain in abdomen and right shoulder came in attacks that caused vomiting. Several doctors diagnosed gall bladder trouble and gall stones, but the x-ray did not reveal any stones. Nevertheless the attacks of pain were exactly like gall stone attacks, so she was placed in a hospital July 15, 1929, and an exploratory operation was made by Dr. T. He found a state of generalized cancer throughout the abdomen. The stomach, bowels and uterus were all involved. He removed a specimen for microscopic test which confirmed the diagnosis of cancer. Because of the hopelessness of the condition, he closed the abdomen and sent the patient to us for treatment.

Physical Examination—At the time of our first examination on July 29, 1929, the patient was in a state bordering on shock. On careful examination the great

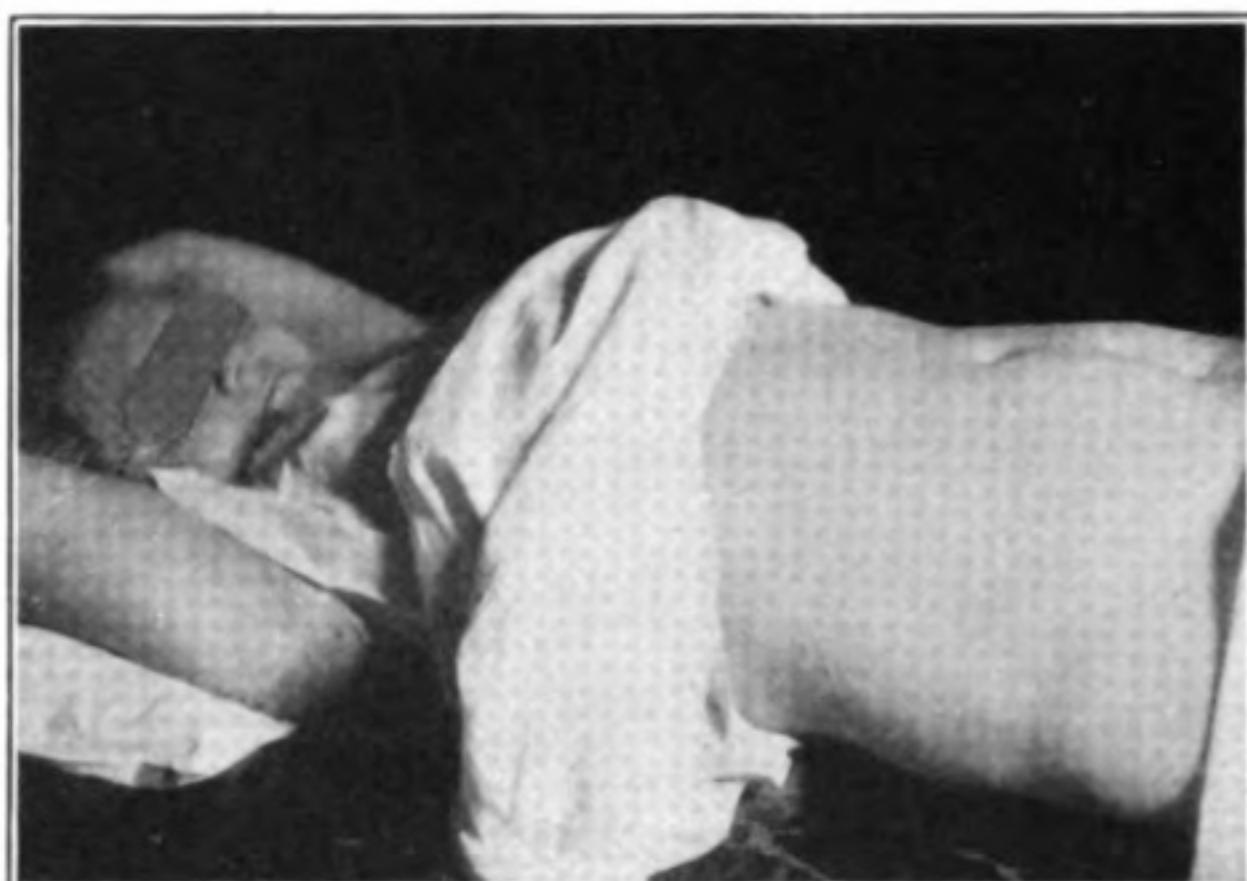


Mrs. McA. taken within six months showing complete recovery.

extensiveness of the malignant masses could be determined. Besides a large three fist sized bulging mass about the uterus, there were other smaller masses involving stomach and liver. Her heart was very weak and there was some cyanosis and dyspnoea.

Treatment—The glyoxylide was administered on July 29, 1929.

Results—Recovery was slow at first. During the period between the sixth and ninth weeks there was constant vomiting and the already emaciated patient lost considerably more weight. In fact, several times we lost hope that she could recover. At the end of the ninth week she probably weighed about 75 pounds. After the ninth week reaction of chilliness and slight fever, she became able to retain food and soon started to gain at an appreciable rate, two and a half pounds a day for a while, then about five pounds a week and finally about



Mrs. McA. taken in 1933 showing improved nutrition and complete recovery. She remains well still seven years after treatment.

two pounds a week until she about doubled her weight. After she reached 140 pounds, the increase was slow up to 180 pounds and thereafter still slower up to 200 pounds. All of the masses had absorbed by the time the weight increase was noted. She is entirely well. No trace of cancer can be found on most careful examination. She now weighs 220 pounds, more than six years after treatment, and is in perfect health.

CANCER OF BREAST

Mrs. C.—Age 43. Housewife. History taken by Dr. Stiers in October, 1925.

Diagnosis—By history, physical findings and microscopic examination.

Past Illness—Never had real good health. Abscess of left breast eighteen years ago.

Present Illness—Bruised left breast three years ago. Thereafter lumps developed that were painful and steadily grew larger. Pain in arm and shoulder.

Physical Examination—Examination made October 26, 1925, revealed a mass the size of a goose egg in the left breast attached to skin and parietes. Left axilla presented several enlarged glands, the largest about the size of a pecan, the smallest about the size of a bean. There was also an enlarged gland in the fifth interspace near the sternum. Above the clavicle were several small metastases. A biopsy revealed the following microscopic findings:

"Inflamed cystic adenoma in which there are developing early but definite signs of malignant change. Many of the small ducts and acini are filled with typical gland cells. Normally there are but two or three layers of acinar epithelium, whereas in many of the sections from this specimen, the number is increased to forty or fifty layers. Most of the proliferation is into the ducts, but occasionally there is beginning infiltration into the stroma."

The malignancy was, therefore, well confirmed.

Treatment—One cc. of glyoxylide solution was given on October 30, 1925.

Results—Reactions of fever and chills twenty-four hours after treatment, lasting half a day, presented themselves, and in the third, ninth and twelfth weeks. At these periods the breasts both became swollen and painful for a day or so, but between the reaction periods improvement in general health and in the condition of the breast, axilla and metastases above the clavicle could be observed. After the twenty-fourth week, all vestiges of the growth were absorbed, and the patient enjoys better health than for many years. She is still well, more than ten years after treatment.

LYMPIOSARCOMA

Sister M. A.—Age 49. Teacher. History taken on November 30, 1934.

Diagnosis—Made by clinical history, physical ex-

amination, exploratory laparotomy and microscopic findings.

Past Illnesses—Measles. Pulmonary tuberculosis 28 years ago, made good recovery. Nine years ago had goitre. Refused operation. Hyperthyroidism persists. Left breast removed for a growth seven years ago, microscopically negative. Hives for last three years and hyperacidity for last six years.

Present Illness—Started losing weight April, 1932. Easily fatigued. Radiographs made in the Spring of 1934 revealed a large mass in the abdomen and x-ray therapy was employed without benefit in May, 1934. Pain increased, and the growth enlarged rapidly while the patient became cachectic. The surgeon decided to explore the abdomen and on October 23, 1934, exploration was made, which revealed a large mass involving the omentum and intestines. He removed a specimen for microscopic examination, the report of which is here given verbatim because of the survival of the neoplasm over the x-ray effects and the onward march of the malignancy both in the tumor and in the effects upon the patient's health.

"Sections from the biopsy material removed from the mesentery show a mass of old scar like fibrous tissue with much hyalinization in places with many thick walled vessels surrounding masses of round cells, lymphocytes in type which had a tendency to form in nests but these nests have no resemblance to the ordinary germinal centers, they are simply masses of cells and between these masses is a thinner sprinkling of the same type of round cells. In some sections a few of these cells are hyperchromatic. Frozen section examination was done on this tissue and a diagnosis of lymphosarcoma was made. Fixed tissue diagnosis coincides. This is apparently a lympho-sarcoma which has been treated with radiation until there has been a large amount of scarred tissue formation. Diagnosis: Lymphosarcoma."

Physical Examination—Examination made November 30, 1934, revealed a patient very weak and cachectic, weight 131 pounds. The exploratory incision was noted. Occupying most of the left half of the abdomen and extending into the right side was one large mass that bulged rather prominently. It was hard and fixed, probably between one and a half and two liters in volume.

Treatment—One cc. of glyoxylide solution was given December 1, 1934.

Results—Recovery was rapid and immediate, with subsidence of the pain and steady diminution in the growth until by October 24, 1935, no trace of the mass could be palpated, and the abdomen was found healthy throughout. In the meantime she gained weight to 152 pounds and regained even better than her former strength. She works every day and is well in all respects (Oct. 24, 1935). However, the large amount of radiated tissue absorbed might ultimate in a fatal x-ray coma at any time, like the case of Mr. L., reported below.

TOXIC GOITRE AND CANCER

Mrs. W.—Age 58.

Heredity—She could not trace cancer in her ancestors but exact knowledge was lacking. Her husband died of cancer of the stomach eight years previously, a fact that might have a significance. Her daughter, age 28, developed a brain tumor some years after an accident and was cured by the glyoxylide.

Her home is in the goitre belt of Ohio. In this location she both developed and recovered from the disease.

Present Illness—She had been nervous and had a rapid pulse for several years before consulting a physician. X-ray pictures of the chest in 1927 showed heart enlargement. The pulse was exceptionally rapid and her fingers trembled and her eyes bulged. The exophthalmus was not always equal in both eyes and some-



Mrs. W. before treatment showing typical exophthalmus from toxic goitre reported in this series.

times the right eye protruded much more than the left and would turn downward. She became short of breath, the veins in the head enlarged and engorged with blood, this condition being worse when she was lying down. The skin became bronze color and tumors developed in the abdomen. She lost from 150 to 108 pounds in weight, in spite of a gradually developing dropsy of the feet and legs that extended up above the knees at the time of her visit to my clinic.

Examination—Her chief complaint was a distress in the liver and stomach region, and our examination revealed a large mass in the epigastrium the size of a big fist and four smaller masses below the umbilicus and one the size of a walnut above the clavicle on the left side. The presence of a large tumor in the mediastinum was suggested by the difficulty in the return of blood



Mrs. W. showing recovery after the antitoxin.

to the heart from the head region. Marked exophthalmos tachycardia and tremor.

Treatment—One cc. of glyoxylide solution was given September 28, 1929.

Results—Reactions of chills and fever followed several times at three week intervals as she came to complete recovery with disappearance of every abnormal change. Her last examination was made June 18, 1933, and recovery confirmed. She claims she has perfect health, according to a report made a few months ago.

PRIMARY CARCINOMA OF THE BRONCHUS

Mr. W.—Age 46. History taken March 7, 1931. Weight 98 pounds. Normal weight, 185 pounds.

Diagnosis—By physical findings, history, radiology and bronchoscope.

Present Illness—Started in November, 1930 as cough sufficiently severe to seek medical aid. Saw several doctors and was examined in several of Detroit's best hospitals, where at first a diagnosis of tuberculosis was made, but after constant failure to find bacilli of this disease in spite of increased cough and several hemorrhages from the lungs, the rapidly spreading pathology revealed in the radiographs was interpreted as malignancy. A bronchoscopy was made at Detroit Receiving Hospital in January, 1931, which settled the diagnosis. X-ray treatments were given without benefit.

Examination—I examined the patient on March 7, 1931. The patient was unable to walk without help. There was considerable dyspnoea and some cyanosis. He had lost weight of over 90 pounds and was very emaciated and cachectic. Hemoglobin 30 per cent. The lungs revealed some interesting findings with considerable consolidation. The liver was enlarged.

Treatment—One cc. of the glyoxylide solution was given.

Results—A rapid recovery set in. In less than a year he gained back the weight that was lost and all pathology had disappeared. He was back to work full time. He still remains in perfect health.

CANCER OF UTERUS

Mrs. S.—Age 60. Housewife. History taken May 3, 1932.

Diagnosis—Cancer of uterus involving whole abdomen by exploratory laparotomy.

Heredity—Mother died of cancer at age 88.

Past History—Urethral caruncle for last eleven years, very painful and troublesome for last two years. Ulcer of duodenum demonstrated by x-ray four years ago. Large fibroids were removed at time of menopause twenty years ago. Four successive attacks of pneumonia

more than five years ago. Weak heart for last five years, causing blood pressure to fall from 200 to 160 in last year in spite of increasing toxemia. She became short of breath and cyanotic, her feet and ankles swollen with dropsy. Severe hemorrhages from vagina and pain in the back for the last six months. The abdo-



Mrs. S. before treatment. Note the enormous bulging of the cancer masses above the scar of the operation incision.



Mrs. S. showing abdomen returned to normal—note position of scar with reference to rest of abdomen.

men was enormously enlarged with cancerous tumefaction.

Examination—My examination revealed a large transverse operative scar and a smaller vertical exploratory incision scar. The whole abdomen bulged from the presence of the large masses of cancer within, as is shown by the first photograph taken before treatment May 3, 1932. Thus the stomach, bowel and uterus were all involved and she was suffering hemorrhage because of the malignancy. The large ulcerated urethral caruncle was noted and the vagina found well filled with the malignancy that involved the uterus and abdomen. She was weak, cyanotic, short of breath and the heart was so dilated that one was forced to doubt if she would reach home before her heart failed.

Results—Recovery was comparatively rapid, the cancer masses disappeared, the vaginal bleeding stopped and a return to normal was complete by April 10, 1933, when the second photograph was taken. At this time no pathology could be found, every trace of the growths had disappeared, all the stomach symptoms gave way to perfectly normal function and, although the heart action was not as perfect as in the average healthy person, it had improved so much that we considered her cured. In 1934 she had an attack resembling appendicitis. Her surgeon made an appendectomy and at the same time thoroughly explored the abdomen, and reported to me that no trace of cancer could be found. From last reports we learned that her health was still excellent.

MALIGNANT CHANGE IN MYOFIBROMA OF UTERUS

Miss G.—Age 45. History taken December 2, 1930.

Diagnosis—Malignant change in large fibro-myoma of uterus.

Present Illness—She had suffered with backache for a number of years and three years ago felt the presence of a tumor in the lower abdomen. It grew larger, espe-

cially after the menopause two years ago, when with a spurt of speed it began to bulge even above the umbilicus. Glyoxylide was given on December 2, 1930, May 16, 1931, and May 9, 1932.



Miss G. before treatment. Note the large bulging growth that filled the lower abdomen and compressed its contents.



Miss G. after recovery, every trace of the growth absorbed, and abdomen normal.

Results—Recovery was complete before the end of 1932, as the second photograph shows. At that time no more of the mass could be palpated by most thorough examination. The first few months brought the greatest change in the size of the growth. The material that underwent most rapid digestion and absorption we consider to have been the tissue of malignant character, and the slower portion to leave was no doubt the original fibroid material. After the majority of the growth, the malignant part, had disappeared, she had a return of pre-growth symptoms, iritis and photophobia for a week, that was very troublesome but did not prevent her from attending to her work. Since that time her vision has improved and her hearing is definitely better. She is in perfect health.

This case demonstrates the common basis for non-malignant and malignant neoplastic development and the removal of the essential pathology by a single agent.

MALIGNANT GLIOMA OF BRAIN

Mrs. T. R.—Age 35. Normal weight 209 pounds. Weight on admission about 70 pounds.

Diagnosis—By clinical history, x-ray and physical findings, malignant glioma of brain.

Family History—Negative to cancer.

Past History—She had a fever in Russia many years before, but was well otherwise until the present illness began in the summer of 1921.

Present Illness—The trouble started as headache, interference with vision and a gradual loss of the use of the right arm. In December, 1921, a piece of skull as big as the palm of a man's hand was removed from the right side. A diagnosis of glioma was made and two deep x-ray treatments were given. Her condition became progressively worse. A gradual swelling of the decompression area was observed. This increased until



Mrs. J. before treatment, note abdomen bulging in places from the growths within.



Mrs. J., abdomen returned to normal.

July, 1922, when we were called to see the patient. A hard mass as big as a grapefruit projected from the decompression area. The patient at this time was reduced greatly in body weight, paralyzed, blind and there was persistent projectile vomiting of the most severe type.

This was seven months after the x-ray treatments had been given.

Treatment—One cc. of glyoxylide was given.

Results—Recovery was rapid. All traces of growths completely disappeared in five months, paralysis, vomiting and blindness disappeared and her weight was restored to 180 pounds. In another ten months her weight reached 220 pounds, where it stands today. She works hard every day. The bone removed from the skull has been completely reconstructed and there has been no return of the trouble.

FAR ADVANCED CANCER OF THE UTERUS

This case is reported as much by way of tribute to Nature's, let me say, infinite power of healing as it is to exemplify anything instructive concerning the treatment employed. This patient was in utter extremis when she was given the glyoxylide injection, that is she was in final coma for a day. Yet she recovered. Perhaps the most important lesson to be gained from this history is that it is never too late to try to win a recovery considering the matter from the patient's standpoint, although from the professional standpoint it might seem foolhardy. This patient gave testimony regarding her case before the supreme court of the State of Massachusetts nine years ago and again before the Circuit Court of Michigan in January 1936. The pathological diagnosis was testified to by an official of the University of Michigan Hospital where one of the diagnoses of cancer was made, and there were several other diagnoses of cancer made by experts in different parts of the state. Briefly the history is as follows:

Mrs. M. P.—Age 47. Housewife.

Pregrowth Symptoms—Dizziness for twenty years. Double vision with overlapping of objects above each other apparently, from Oct. 1925 to July 1927.

Past Illness—Cardiac lesion, mitral stenosis, for many years, with consequent cyanosis, dyspnoea, etc.

Present Illness—Started as brownish discharge from uterus in fall of 1925. By June 1926, tumefaction of lower abdomen, pain uterine bleeding and foul discharge. Examination by several surgeons and radiologists were made. Malignant infiltration found so widespread surgery was refused. Radium applied early in November, patient drove automobile then. Fourth radium treatment given on December 30, patient bedfast, had to be moved in ambulance. X-ray then tried, declined in health even more rapidly; hemorrhages, pain and tumefaction increased. Examined at University of Michigan Hospital, diagnosis con-

firmed, but refused treatment, sent home as hopeless. Two exhausting hemorrhages on May 29, 1927 completed her decline and by June 2, she was in coma. At this time the growth was enormous, filling vagina and compressing bowel, causing abdominal bulging.

Treatment—One dose of the glyoxylide was given June 2, 1927 while patient was in coma.

Results—Within a few days there was substantial improvement. Before the twelfth week she could work a bit in the garden. Within six months all cancer tissue was absorbed, but some radium scars remained which did not clear up until the ninth month. The diplopia disappeared soon after the glyoxylide was given. She is perfectly normal now; no cancer; health perfect; except for the cardiac lesion. Weight normal.

MELANOTIC SARCOMA

Two cases of melanotic sarcoma will be briefly reported to complete the list of examples of malignancy usually observed.

Miss S.—Age 18. Schoolgirl. History taken December 8, 1925.

Diagnosis—History of two recurrences after two surgical attempts at removal, last one with widespread metastases, and by physical findings.

Present Illness—Started as dizziness for a few months prior to the development of a deeply blue colored growth on the right side of the lower lip the size of a small grape. It was removed surgically in June, 1925, and showed its first indications of return in three weeks. After growing to the previous size, it was again removed, this time with the cautery. In less than a month it had again returned and this time grew faster than before. Moreover there was the development of a weakness and cachexia, vomiting, pain in epigastrium, pain in left leg and pelvis and in the back, and the inability finally to raise the left leg to walk up the stairs.

Examination—Made December 8, 1925, revealed a grape sized blue broken mass on the lower lip. The epigastrium presented a mass the size of my fist involving the stomach and liver, and no doubt accounting for the vomiting and gastric pain. In the pelvis another mass

was found involving the uterus and more prominently the left part of the pelvis.

Treatment—Glyoxylide given and recovery started immediately. In twelve weeks no more vestige of growth tissue could be found by most careful examination and the lip was clear and healed. By May, 1926, her health was restored to the best it had ever been. She married in 1927, and gave birth to a fine baby boy before the end of the year. In March, 1929, she gave birth to another normal healthy child. The family has been very healthy all these eleven years. Photograph page 31.

Comment—Here we observe recovery from the most malignant type of cancer after it had spread to involve the vital organs to a very marked extent, including the uterus, and with recovery the uterus returned to normal so as to function normally for the patient and for the race, to give birth to children. The immunity to the disease has been retained now for longer than ten years.

The other case, Miss M., is one of interest in that it started in the eye where it caused blindness, but also spread to the lungs and liver.

Examination made in April, 1927, revealed a blue black mass bulging from the outer aspect of the left eye. The area within the eye, the vitreous, was occupied by the growth also, in its outer upper segment. Several areas of consolidation were present in the lungs, and the liver was enlarged by three finger widths on the right side. There was cachexia and certain foot symptoms pointing to possible brain metastases.

Glyoxylide given at the time resulted in a slow recovery with complete absorption of all growths taking over two years to become complete. The reactions were very disagreeable in this case, with marked jaundice during the time the liver growths were undergoing reaction and absorption.

No recurrence of the trouble has shown up to date. The eye is blind but no pathology remains in the lungs or

liver. She has maintained her immunity now for nearly ten years.

RECOVERY FROM RAPIDLY RECURRING CARCINOMA OF RIGHT BREAST AFTER RADICAL REMOVAL AND IRRADIATION

Patient—Mrs. C. N. Age 43. Housewife. History taken September, 1926, when glyoxylide was administered.

Family History—Aunt died of tuberculosis, sister of diabetes, grandmother of cancer.

Past History—Abscess of right breast following injury in childhood. Rheumatism at 13. Appendectomy in 1914. Gall bladder explored in 1920, also tonsillectomy. Since 1920, enlargement of finger joints, helped by colchicum.

Present Complaint—A hard mass above the nipple, egg size, first noticed in 1921 as a soft swelling which recently grew rapidly large and hard causing retraction of the nipple. In January, 1925, right breast was radically removed with axillary glands and pectoral muscle, carrying the dissection to the midline over the sternum upward to the clavicle and outward to the latissimus dorsi muscle, and downward including the upper part of the rectus fascia. The pectoralis major and minor were included. This was done at the Henry Ford Hospital. The microscopic examination made there is reported thus,—1: Sections from tumor proper show larger and smaller gland alveoli lined with many rows of epithelium or entirely filled by epithelium. These cells are of moderate size and have relatively large deeply staining nucleus and many of them are undergoing mitosis. In addition to these large gland alveoli the fibrous stroma of the breast is infiltrated in all directions by compressed alveoli of the same type of cell. 2: Sections some distance from the tumor show hypertrophic gland alveoli and also large atypical alveoli like those seen in the tumor proper. 3: Other areas some distance from the tumor show no invasion, but alveoli containing large clear epithelial cells of the type designated "hyperplastic number 2" by McCarty. 4: Sections from nipple show no invasion. 5: Sections from axillary glands show large tumor alveoli in those from the midaxilla only. Diagnosis adenocarcinoma of breast. She left the Ford Hospital February 12, 1925. The Ford Hospital reports their examination made June 2, 1925, after a series of radiations from February 9, 1925, to May 3, 1925, to show no evidence of recurrence. Likewise in July, 1925, no recurrence was noted. However, patient returned to the Ford Hospital in September with pains in the right subcostal region, nausea, and vomiting. Examinations were reported also in November and December, 1925, and no recurrences mentioned except the possibility of liver involvement. In late 1926 the right arm began to swell which her surgeons accounted for as due to lymphatic obstruction.

Examination—On applying to me for examination in September, 1926, examination revealed a mass above the right clavicle a little larger than an English walnut. In the right axilla two tumors were found one the size of a hickory nut and one the size of an almond kernel. The operation area showed some malignant induration as three small tumefactions in the line of suture. The liver was enlarged by three finger-widths below the right ribs as a definite hard mass attached to the liver. She was somewhat icteric in color, very thin and toxic.

Treatment—One cc. of glyoxylide was given September 21, 1926. There was some definite reaction of grippiness, slight chills and fever several days later and during the third week. The metastases cleared up completely before the end of the twelfth week. The large one above the clavicle disappearing first of all, namely, during the fourth week. In the meantime the gastric symptoms also cleared up and the liver envolve-



Before



After

Miss P. before treatment, showing metastases of recurrent cancer of breast over the clavicle, after surgical escarotics. There was also well developed metastasis in the axilla and infiltration of breast area.

Miss P. after treatment with two injections of the "Glyoxylide," showing disappearance of the recurrences. She has remained perfectly well with every trace of cancer abolished.

ment was no longer detectable after the sixth week. Her health improved steadily and her weight increased from about 87 pounds to 103. Examination made in November, 1936, ten years after treatment shows no involvement by cancer whatever and general good health.

Discussion—This case of very malignant cancer of the breast that recurred vigorously during the year following operation of the most radical sort, and deep X-ray therapy, made a prompt, complete recovery on the glyoxylide even though the recurrences were so widespread as to involve the liver as well as the glands and tissues of the operation area and above the clavicle. This case could not be fairly regarded as a surgical case, and such expert service as she had could not be expected to accomplish a complete removal of the invading malignancy, and even when complete removal of the neoplasm is accomplished the toxic cause of the allergy it still unaffected and ready to start a fresh neoplasm. Vigorous oxidation catalysis which removed the negative oxidation catalyst that caused the mischief, and at the same time re-established the normal oxidation reaction chain of perfect health cured the disease.

AUTOPSIED CASES

Several patients with extensive adequately diagnosed cancer within the abdomen were treated in the past and made full recoveries, but died from other causes than cancer. Autopsies were made to establish the cause of death and to investigate the possibility of recurrence of malignancy. They are briefly reported here.

CANCER OF UTERUS INVOLVING WHOLE ABDOMEN

Mrs. E. F.—Age 38.

Diagnosis—By clinical history and exploratory operation, July, 1919.

Family History—Negative to cancer.

Past History—Well all her life until present trouble.

Pregrowth Symptoms—Dizziness and a sensation of falling long distances on closing the eyes, for a period of nine years before the growth could be felt in the lower abdomen by the patient. These attacks let up about six months before she noticed the growth.

Present Illness—Started with nausea, vomiting and pains in the back and lower abdomen, and attacks of pain that doubled her up. From July, 1918, to June, 1919, loss of weight from 172 pounds to 97 pounds took place and the growth in the abdomen enlarged until the patient noticed the umbilicus to be displaced to the right and become fixed. At the same time, the abdomen became large and hard and a change to a yellow cachexia

took place. Several physicians made a diagnosis in June, 1919. Exploratory operation was performed to settle the diagnosis and with the following report: "Found trouble to be cancer of the uterus, and in such shape that an attempt to remove it would undoubtably prove fatal; consequently there was nothing to do but close the wound and keep the patient as comfortable as possible. Prognosis: six months."

At this time the body weight had dropped to 97 pounds. Patient kept failing rapidly, vomiting became continuous, pain constant, she became bedfast and several hemorrhages from the stomach took place. Patient was brought to Detroit November 17, 1919. At this time her weight was about eighty pounds, her legs were drawn up by the pain so that attempting to walk was made very difficult.

Physical Examination—Examination revealed a mass that involved all of the organs of the lower abdomen and pelvis and had also spread to the liver and stomach, causing frequent vomiting of blood.

Treatment—One cc. of solution of natural metabolites from heart muscle was administered intramuscularly in November, 1919.

Results—Recovery and complete absorption of the growth was completed in about a year and the patient remained perfectly normal and in the best health she had ever experienced until the Spring of 1935 when she sustained a cerebral hemorrhage. There were severe body bruises suggesting an accident. Autopsy was performed by Dr. W. The abdomen was carefully searched and no trace of malignancy found. The uterus and adnexa were preserved. They are free from cancer. A few days later an autopsy was made by the county coroner and the cause of death established to be cerebral hemorrhage.

In this case recovery from cancer, which was far advanced at the start, was complete and permanent for over fifteen years without recurrence.

SARCOMA OF ABDOMEN

Mrs. J. W.—Age 43. Housewife.

Diagnosis—By clinical history, physical findings, exploratory laparotomy and confirmed by microscopic examination, small round cell sarcoma.

Pregrowth Symptoms—Dizziness, headaches, and transient blind spells for some five years, that let up just prior to 1920, when disturbances, referable to a mass the patient felt in the region just above the umbilicus, became troublesome.

Present Illness—In the Spring of 1922 her legs started to swell and severe attacks of pain, that doubled her up, came at intervals. These attacks finally became rather frequent and were diagnosed as attacks of intestinal obstruction. At this time she could feel the growth that distended her abdomen and was referred to the surgeon for operation.

An exploratory operation was performed on August 7, 1922. A specimen was removed for microscopic diagnosis and the wound closed without any attempt at removing the growth, which was found to extend throughout the abdomen. The surgeon thought she might live ten days and she was taken home to die. Her strength rapidly failed and in ten days she could no longer raise her hands to feed herself. At this time we were called to see her.

Physical Examination—Examination showed a large mass distending the abdomen and extending from the ribs to deep in the pelvis. Its size was much larger than a man's head. Both legs were swollen enormously because of the tremendous pressure of the growth on the large vessels in the abdomen. The patient was in great pain and very weak, suffering the cramps that characterize intestinal obstruction. The family was advised that it was most likely too late to obtain any results from the treatment as the heart was failing, but they wished to make the effort.

Treatment—The glyoxylide solution was administered in August, 1922.

Results—Recovery was gradual. She was back to her household duties within five months. All traces of the mass had disappeared, the swelling of the legs and feet had long since left, and her natural vigor had returned. She was in perfect health until the winter of 1927, when she developed pneumonia which caused an adhesive pericarditis. Thereafter a labored heart action persisted until death occurred by cardiac failure on November 20, 1928. An autopsy by three physicians demonstrated that not a vestige of cancer could be found and that the abdominal organs had been completely healed and reconstructed. However, examination of the heart explained its abnormal behavior for the past ten months and proved heart failure to be the cause of death.

CANCER OF TONGUE

Mr. G. A. L.—Age 55.

Family History—Father died of cancer of the stomach.

Past History—Good health all his life except pre-growth symptoms.

Pregrowth Symptoms—Dizziness on stooping, lying down or getting up, spells of blindness and tachycardia, spells of loss of muscle control. These symptoms were much better after the growth came.

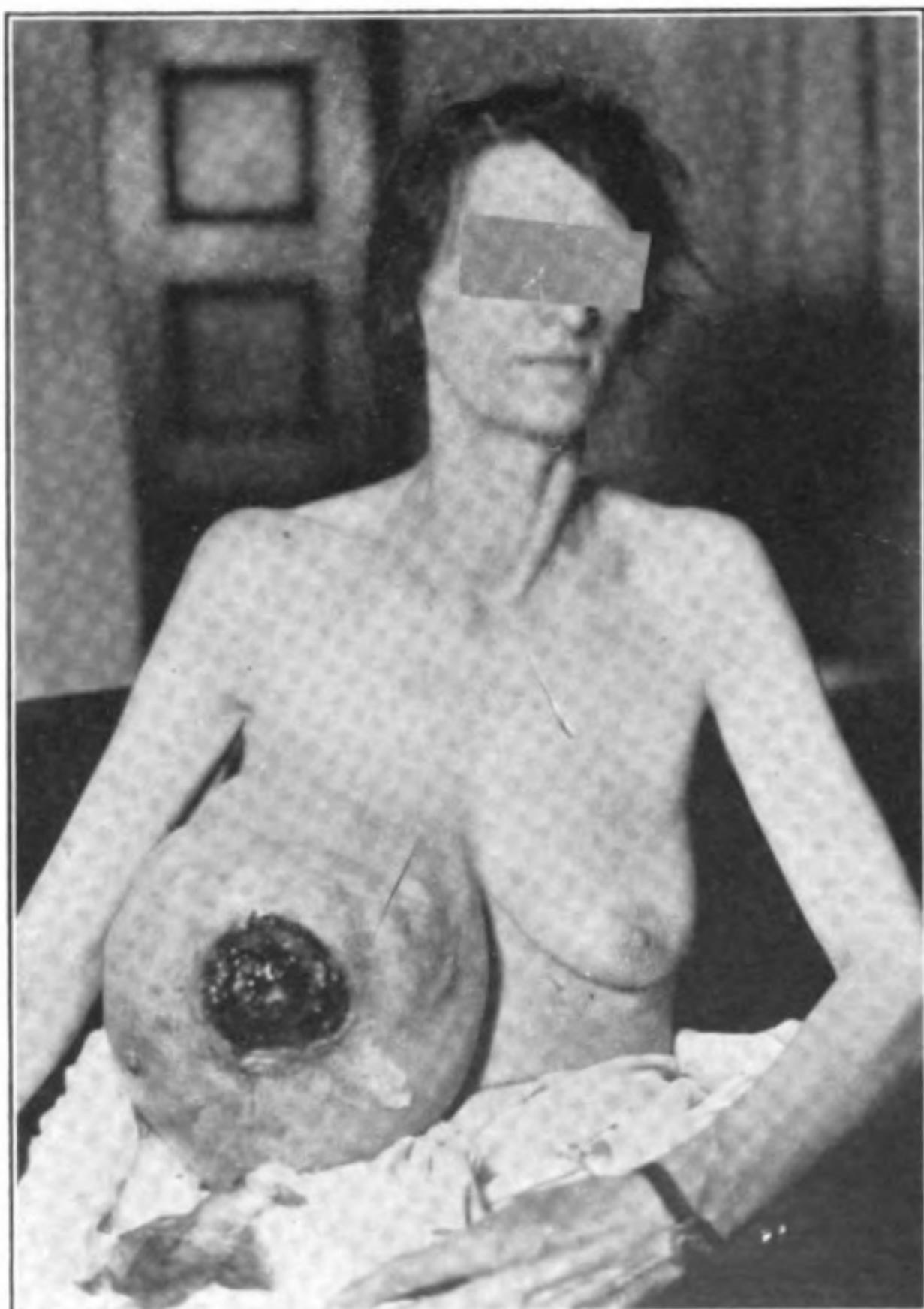
Present Illness—In the summer of 1923, noticed a growth under the middle of the tongue. He went to the University of Michigan Hospital where Dr. C. removed a specimen for diagnosis. Laboratory report: "Squamous cell cancer." September 15, 1924, the growth and part of the tongue were removed surgically and radium applied. The radium was applied at monthly intervals three more times. The second radium treatment was followed by a more rapid extension of the growth,

which increased with each subsequent radium exposure. Finally in March the cautery was used radically after the last radium application. In three weeks the disease spread with terrific speed, so as to involve the whole mouth, palate and cheeks. The lower jaw bone was exposed and largely necrotic. The base of the tongue was represented by a large cancer mass that occluded the pharynx, preventing any attempt at speech or swallowing. The sides and front of the neck and chin region were entirely infiltrated and swollen hard and blue. The patient was practically bedfast and emaciated and suffering severely. Hemorrhage was severe. First glyoxylide was given April 11, 1925, and the second May 12, 1925.

Results—In one week after the second treatment patient was able to take heavy liquid foods without aid and the extension of the disease over the cheeks had cleared up. Three weeks later patient was taking regular diet conveniently. Reconstruction of the jaw bone and tongue were satisfactory after one year. By September, 1925, cure was completed. Patient back to work at the automobile plant where he had been employed before his illness. Gain of nearly 55 pounds in weight.

In the summer of 1931 he fell while out walking, was taken to the hospital in an unconscious state and so remained for three weeks. The doctors could not satisfy themselves as to the diagnosis. He came out of the state of unconsciousness suddenly and soon was back to work, but shortly afterward another spell of the same kind proved fatal. Autopsy revealed that there was no trace of cancer to be found anywhere in his system but that the brain cells showed a hydropic degeneration characteristic of radium injury. Thus though he was cured of cancer by the antitoxin, radium injury still progressed to fatality.

Recoveries demonstrated at autopsy as long as sixteen years after treatment certainly speak for the permanency of the recovery.



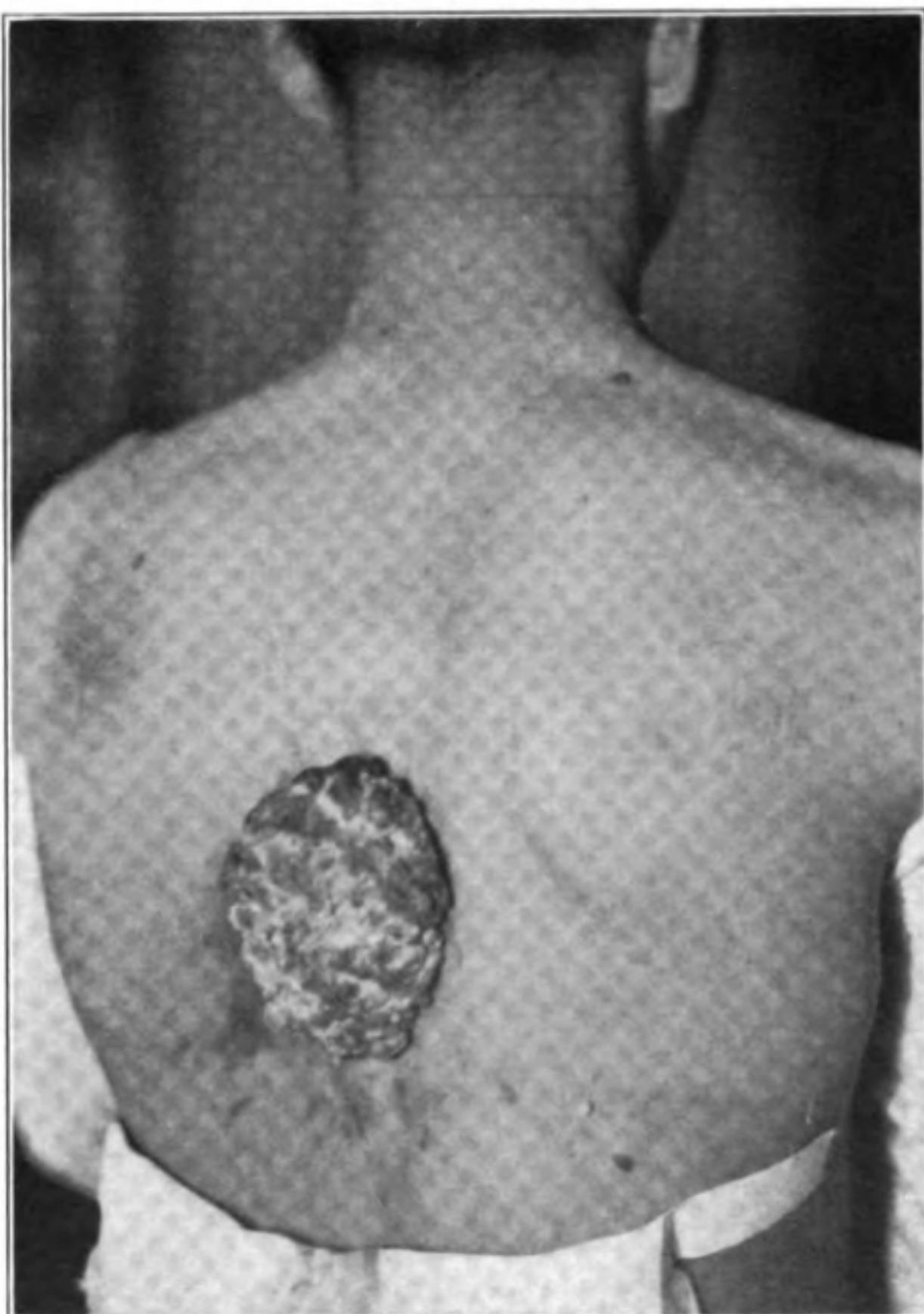
Miss N. after growth started to become digested after the antitoxin just before its removal.



Miss N. after complete recovery.

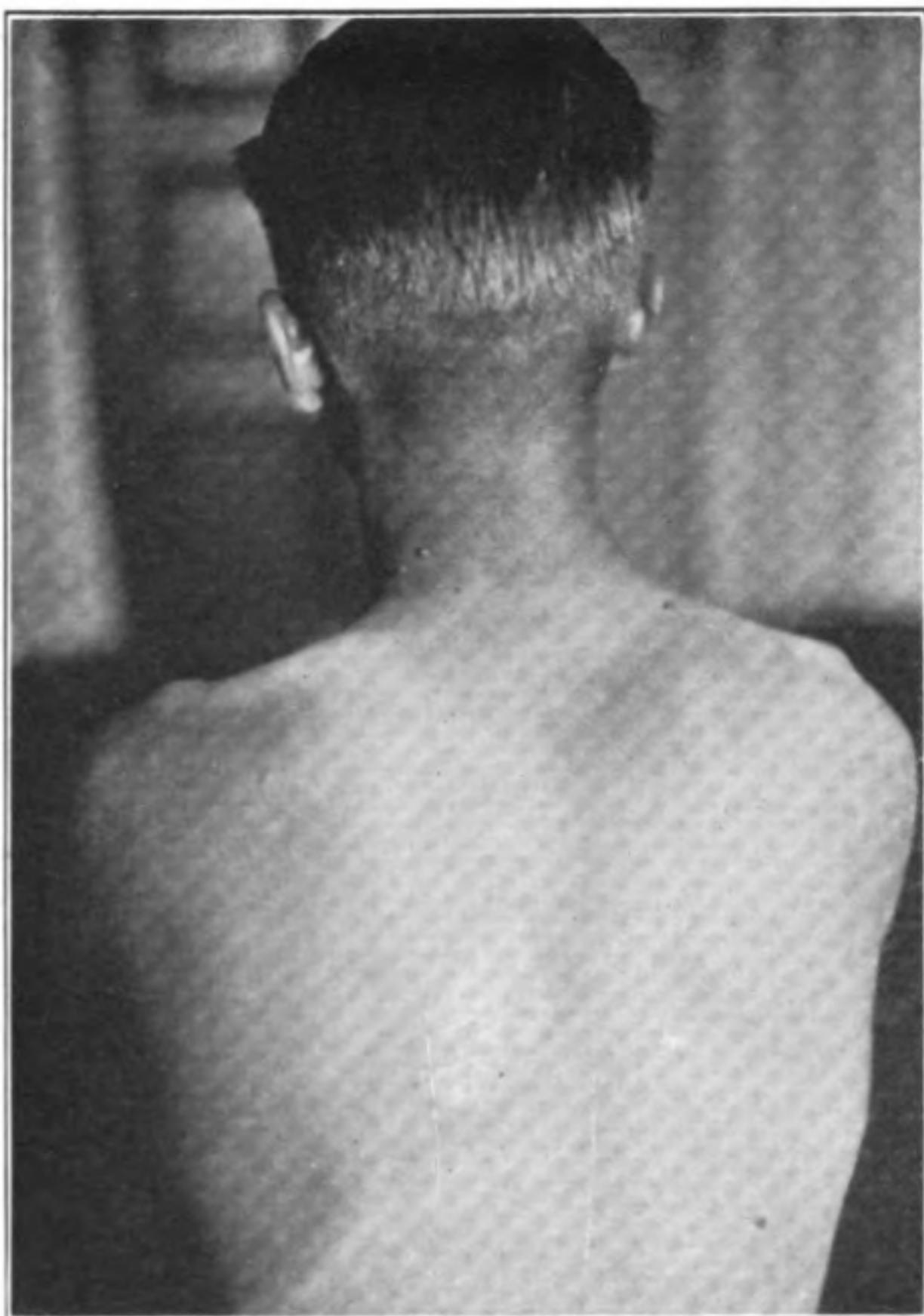
*The Adjunctive Use of Surgery with the
Glyoxylide Treatment*

Photographs show a case of enormous cancer of the breast with metastases. The growth was largely gangrenous and its absorption would have been too toxic to the patient. So after the glyoxylide was given and the metastatic nodules were all absorbed, and the



Mr. L. after treatment when growth was undergoing digestion, just before removal. Note the areas of malignant pigmented infiltration which were not touched surgically. Also the two nonmalignant pigmented moles on shoulder and right side.

growth tissue was undergoing digestion and vascularization to accommodate its absorption, we removed the greatest part of it but did not attempt a radical removal which would have necessitated the resection of number of ribs. Recovery was complete. She was treated about ten years ago and remains well. The diagnosis was confirmed by biopsy.



Mr. L. after recovery, three months after treatment. Note the malignant pigmented infiltration disappeared, but the nonmalignant moles still remaining though undergoing absorption and becoming smaller.

*The Adjunctive Use of Surgery with the
Glyoxylide Treatment*

Photographs show a very malignant melanotic cancer of the skin diagnosis confirmed by biopsy. After the glyoxylide was used and the growth showed definite signs of regression we removed the infected debris of

dying tissue to spare the boy the bad odor and toxicity waiting for its absorption would entail, for he had to work while under treatment. If this growth were touched surgically alone it would have proven rapidly fatal, and so he was advised by several physicians before he applied for treatment from me. He was treated ten years ago also. The extensions of the growth into the tissues in all directions were not touched surgically but absorbed completely because of the treatment with the glyoxylide. These cases indicate how surgery may sometimes prove helpful.

To illustrate that curative results may also follow the use of the "Malonide" the following cases are briefly mentioned:

Mrs. T. age 53. Father's brother died from cancer. Present illness started as pains in the upper abdomen and vomiting of bile. Exploration was done in July, 1933. Surgeon found a large malignant mass involving the stomach and other masses in different parts of the abdomen. He gave a prognosis of three months to live, finding that nothing could be done.

Our findings October 9, 1933, were a large bulging mass that filled the whole abdomen above the umbilicus, and a large fist size hard nodular fixed mass obscuring the uterus and filling the vaginal vault. She suffered with vomiting, gastric distress, pain in the back and weakness. One cc. of the treatment was given and recovery followed steadily. In August, 1934, examination revealed complete recovery. Re-examination July, 1936, confirms recovery. Her health is perfect.

Mrs. S. age 51. Sister died of cancer of the breast. Present illness started as a tumor under right arm when seventeen years old. Did not trouble until 1927, when it started to grow and pain her. Radical removal of breast was made in November, 1927. Recurrence about operation incision and in the axilla and above the clavicle was well advanced as numerous growths ranging from pea size over the chest wall to egg size axillary growths upon presenting herself in September, 1929. There was also a metastasis in the lower end of the right femur. Treatment was given and recovery followed steadily and was completed within nine months. Reports at present confirm completeness of recovery.

Chapter IV

PSORIASIS

Psoriasis represents an allergic hyperplasia and necrosis in a matured epithelial ectodermal tissue showing some detoxicating function, but grossly inadequate in that its cause is never completely removed by the allergic effort. Prompt recovery, following the rhythmic cycle characteristic of recovery from cancer and other conditions is featured in the cases cited below. Some are cases with both psoriasis and well developed cancer. Others are pure psoriasis cases. The similarity in the recovery process of both classes of cases is evident.

Mrs. W., age 43.

History, taken March, 1926.

Family History—Father died of brain tumor, one sister died of cancer of breast, one sister died of cancer of uterus, one brother died of glandular tuberculosis. Ten-year-old son had tuberculosis cured by the Glyoxylide.

Past History—Right ovary, tube and appendix removed twelve years ago, and "flu" in 1919. Tonsils removed five years ago and turbinate operation three years ago.

Pregrowth Symptoms—Dizziness for the last fifteen years, diplopia for last two years. Psoriasis started twenty-three years ago and persisted throughout as itchy, scaly spots on the scalp and spots about the size of a quarter piece on the arms. Similar areas were distributed meagerly over the legs and trunk. The advent of the psoriasis was preceded by a period of intense unyielding headache, stiff neck and internal strabismus of left eye. The psoriasis nearly disappeared two years ago with the coming of a cancer growth in the uterus. Likewise, the other pregrowth symptoms were ameliorated.

Present Illness—Trouble started as bleeding from the uterus two years ago in spells that lasted a month at a time with short remissions. Pain in lower lumbar

region and reflex gastric disturbance and loss of weight and vigor. Presented herself for examination March 9, 1926, cachectic and exhausted. Examination revealed a uterus enlarged to the size of a grapefruit by a mass that had infiltrated throughout the whole organ into both broad ligaments and up into the abdomen, fixed and infiltrated into all surrounding structures. Above this mass and attached to it was a smaller fixed mass the size of a lemon. The cervix presented a cauliflower growth bleeding and discharging a characteristic odorous fluid, typical squamous cell carcinoma. Weight, 106 pounds.

Glyoxylide was given March 9, 1926. Results—Recovery completed itself within four months. The remnants of the psoriasis lesions cleared up by the ninth week and the uterus returned to normal by the end of the twelfth week. Reactions occurred two days following treatment, from the fourth to the seventh weeks, during the ninth week and from the twelfth week to the fourteenth week, when a transient but intense earache occurred on the left side with some rigidity of the muscles of the neck. Gain in weight to 122 pounds and in perfect health within six months.

Mr. H., age 49.

History taken May, 1924.

Family History—Mother died of pneumonia, father died of cancer of throat, age 56.

Past History—Influenza in 1918.

Gastric ulcer with history of several severe hemorrhages from the stomach 13 years ago, 8 years ago, and nearly every two months since May, 1924. Psoriasis showed up at first 15 years ago, as a spot about the size of a half dollar when first noticed, on the outside of the right thigh. At practically the same time, similar lesions occurred on the inside of the left thigh. These lesions remained stationary, resisting treatment until in 1922, when a series of symptoms indicated the presence of gastric cancer, when the psoriasis lesions lost some of their itching and burning and shrunk somewhat.

These lesions completely disappeared by the eighth week following treatment with the glyoxylide. Dizziness with loss of muscle control occurred over a period of 4 years between 1918 and 1922, after which the cancer growth was first noticed.

Present Illness—In 1922, patient found it impossible to continue his work, lost strength and weight, and suffered severe attacks of pain in the epigastrium and through to the back. Attacks of pain became more frequent and the patient felt the epigastric region become hard and enlarged. In May of 1924, several severe hemorrhages from the stomach took place. In these two years, both the psoriasis and the dizziness grew less. Three distinct metastases showed up in the meantime. One in the back was attached to the skin and parieties the size of two thumbs, one in the left supraclavicular space the size of a large walnut, one under the left jaw the size of a small walnut, all of them fixed, hard and nodular. The whole region between ribs and umbilicus was occupied by a hard, fixed, bulging cancer mass constituting extensive stomach involvement.

Treatment—One cc. glyoxylide May 24, 1924.

Results—The characteristic reactions followed at 3-week intervals. Disappearance of the growths, the dizziness, and the psoriasis. The return to perfect health was accomplished within a year.

Miss N., age 32.

History taken April 2, 1926.

Family History—Negative to cancer, brother has psoriasis.

Past History—Tonsilitis one and one-half years ago (March, 1925), and an antrum infection at the same time.

Pregrowth Symptoms—Tachycardia on changing position from sitting to standing posture, constipation all her life.



PLATE No. 5—Showing pregrowth psoriasis lesions in Miss N. before treatment with the cancer antitoxin.



PLATE No. 6—Showing recovery from the pregrowth psoriasis after the cancer antitoxin treatment.

Present Illness—The psoriasis started one month after tonsilitis in April, 1925, at a spot on the left thigh about the size of a dime when first noticed. In a week, it had grown to the size of a quarter piece, and at the same time another spot was found on the left side of the abdomen. Then in rapid succession spots developed on the left forearm and below the left knee and on the right arm and leg. They each grew to about the size of a half-dollar. The various known treatments were used without benefit.

Remained stationary till March, 1926, when a sudden flare up occurred and the lesions rapidly spread all over the body including the scalp. The face and hands were somewhat spared but the lesions became confluent over the rest of the body. She took a series of ultra-violet treatments twice a week for a month, that burned so intensely that the suffering became unbearable and without improvement. Body weight, 98 pounds.

Treatment—1 cc. of glyoxylide was given April 5, 1926.

Results—No reaction followed for a week when chills for three nights and mornings occurred. Temperature was not taken. Appetite improved, felt better and started gaining weight, lesions started to improve during the second week, itching and burning grew less, and entirely disappeared by the fourteenth week. During the twelfth week, as in cancer cases, there was a fever and general achiness, and for about three hours, very intense pain in the left side of head through the left temporal bone. The muscles of the back and left side of the neck were spastic for about a day. This condition eased away in about two days. During the last six weeks of the reaction period, she gained 11 pounds in body weight and after the twelfth week reaction, her gain was more rapid until her weight reached 121 pounds. She is in the best health she ever enjoyed and no trace of the lesions are observable. Luxuriant ingrowth of hair had taken place and the skin is perfectly healthy.



CASE No. 61—Mr. E. front view before treatment, showing extensiveness of the lesions—even the palms of the hands, and the nails were affected.

M. E., age 13.

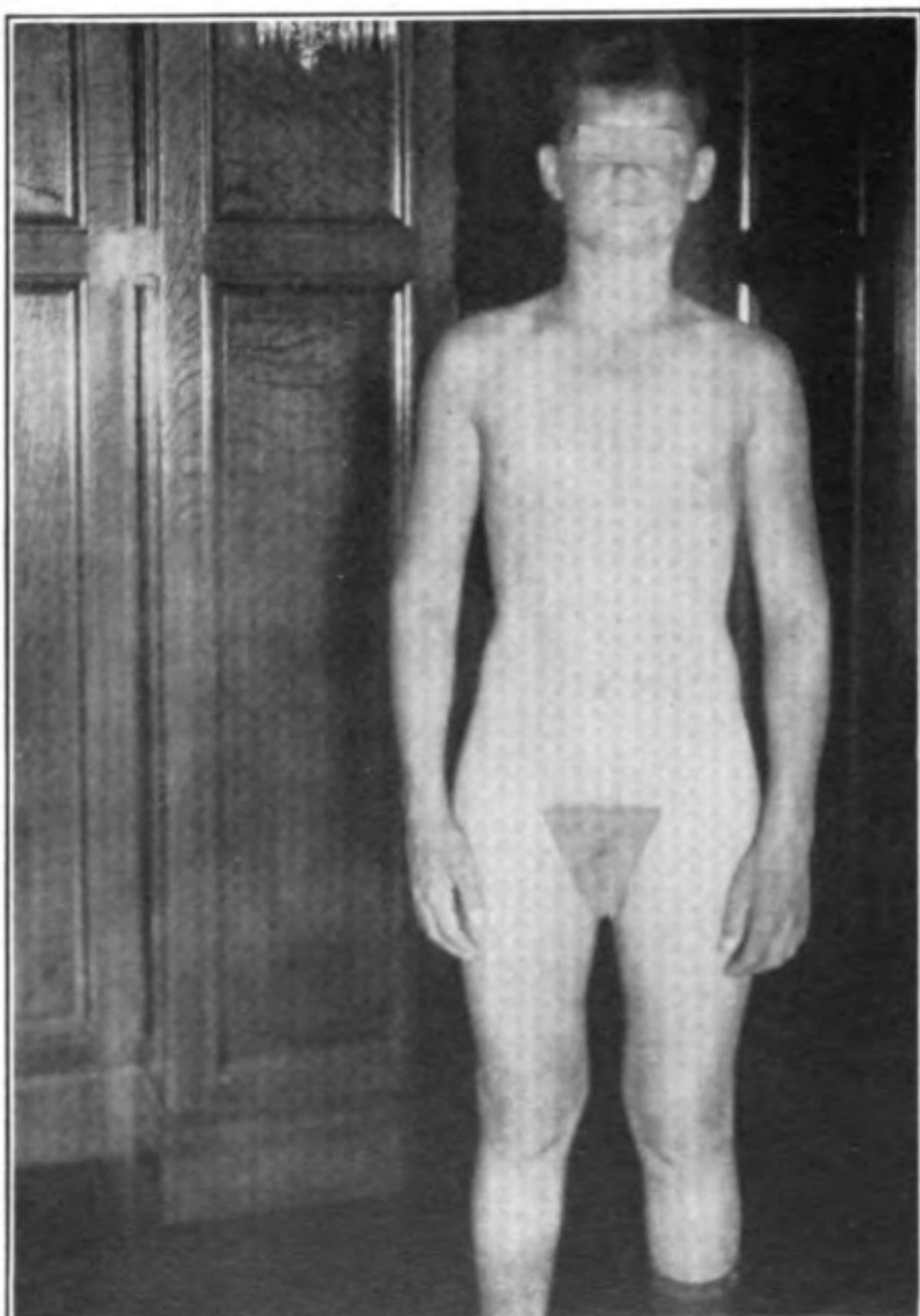
Condition—Generalized psoriasis, with loss of nails and some hair, lesions quite painful. Duration, 6 years. Resisted all known treatments.

Treatment—1 cc. glyoxylide given December, 1931.

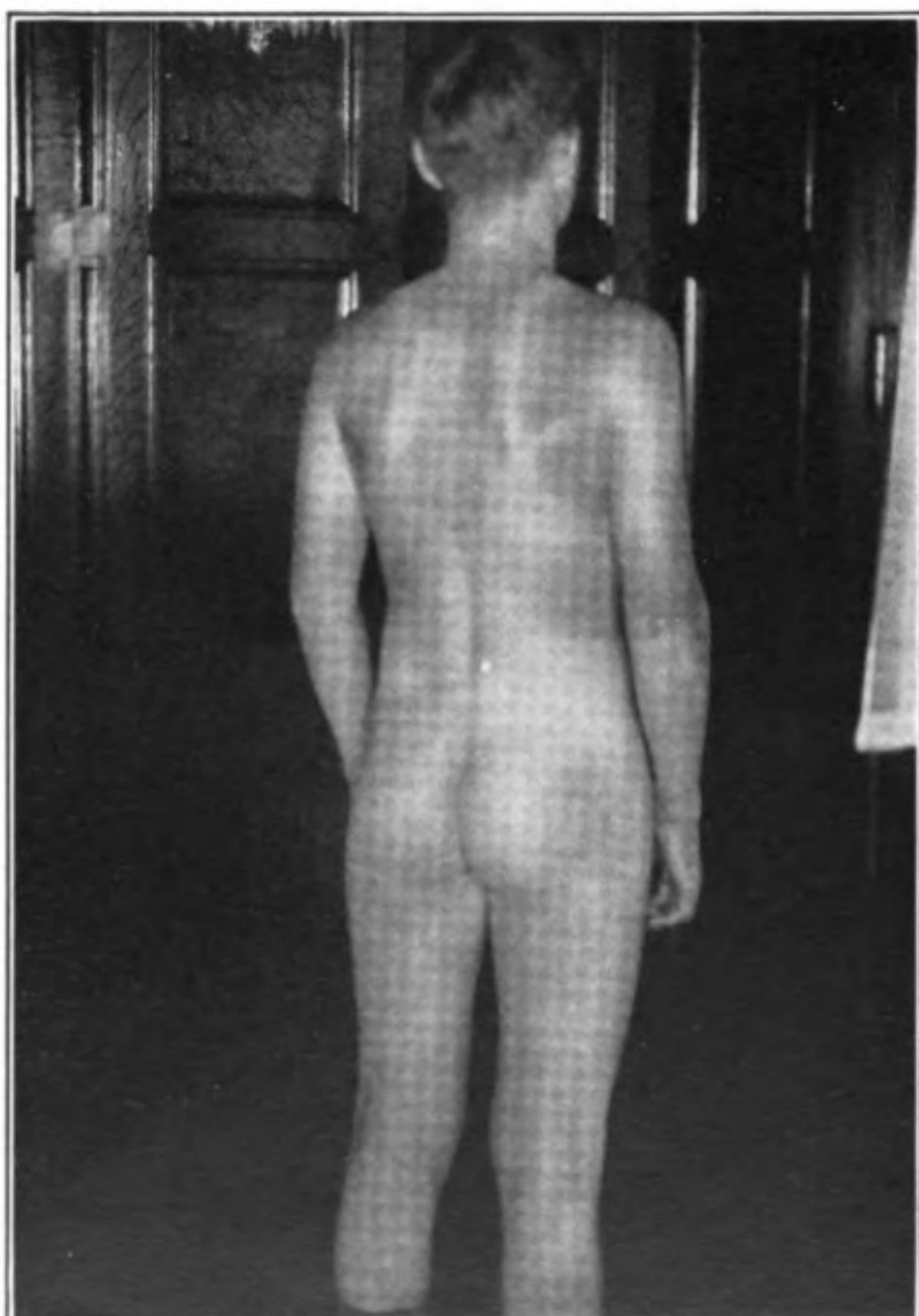
Results—Recovery in less than six months appeared complete. Two years later condition relapsed and recovered completely in four months from an additional dose.



Mr. E. Back view before treatment.



CASE No. 61—Showing front view after recovery.



Mr. E. Back view after treatment.



Mr. C. before treatment.



Mr. C. after treatment.

Mr. C., age 62.

Condition, as shown in photograph, generalized psoriasis for four years with much denuding of epidermis and consequently infernal suffering. Resisted all known treatments.

Treatments—Given June, 1934, and July, 1935.

Results—Recovery completed in 1 year from first treatment as shown by photograph. (Courtesy of Dr. Dove.)

Chapter V CHRONIC INFECTIONS TUBERCULOSIS

The recognized relation between cancer and tuberculosis has long defied explanation. Medical reasoning must be excused for not being able to relate two very different disease complexes to a single fundamental cause. However, besides the statistical indications that cancer appears to protect against the development of the infection, one fact should be sufficient to establish the relation, namely, that both conditions even when occurring in a far advanced state in the same or different individuals can be completely and lastingly cured by one dose of the same chemical substance. Thus they must exist on the same common basis. The toxic state which on the one hand lowers the resistance to infection, on the other creates the anaplasia and allergic hyperplasia of malignancy. A few cases are here reported to illustrate.

Tuberculosis Generalized

Miss A.—Age 16. Schoolgirl. History taken July, 1922.

Present Illness—Bedfast with either spontaneous pneumothorax or entire destruction of left lung by tuberculosis and far advanced tuberculosis of right lung, tuberculosis of left kidney, which increased the size of that organ to equal the volume of a large grapefruit, tubercular meningitis with fever running as high as $105\frac{1}{2}^{\circ}$ in the afternoons. She vomited every few minutes for the last three weeks preceding our visit, whether food was taken or not. Heart was found displaced to the right of the sternum because of the absence of lung tissue in the left chest. Pulse registered over 130 per minute and was very weak. Color very livid and cyanotic, appeared as though bloodless, hemoglobin 20 per cent, breathing rapid, shallow and labored. She had been in a tuberculosis sanitarium until the progress of the disease had warranted the convic-

tion that recovery was hopeless and she was given up and taken home to die.

Treatment—The glyoxylide solution was given in July, 1922.

Results—The fever dropped from 105½ to 101 within a week, vomiting stopped entirely within two weeks and general improvement in nutrition was evident in three weeks. All tubercle bacilli were found undergoing fragmentation and digestion in the leucocytes by the sixth week. Examination from week to week gave evidence of improvement of the right lung and kidney, but the left lung gave no evidence of breathing until after a year had passed. In the meantime, the left chest became completely solidified by fibrosis and the heart remained displaced to the right side of the chest. Thereafter the solid left chest gave faint breath sounds as lung tissue began to form at the upper central part of the chest. This new lung tissue gradually increased until the whole left chest became occupied by normal tissue. As this process of new lung generation went on, the heart slowly changed its position to its normal location in the left chest and gradually resumed its normal rate and strength of beats. She is in perfect health today without any signs of tuberculosis, presents a perfect health picture and works every day without fatigue. She claims that she is no longer susceptible to colds as she formerly had been.

She married and gave birth to twins. These children are vigorous and during their six years have never had a severe cold, showing that the immunity is passed on to the offspring.

TUBERCULOSIS OF BONE

Miss S. S.—Age 20.

Duration of Illness—Fourteen years.

Diagnosis—Tubercular osteomyelitis and osteitis of distal end of femur.

Principal Symptoms—At six years of age had osteomyelitis operation which helped somewhat for two years,

but trouble returned and another operation was necessary. At twelve years of age a third operation was performed. The knee was left quite stiff and deformed. About July 14, 1934, she began to have pain in the knee day and night, getting worse rapidly. Knee became swollen and inflamed and too painful to use in walking.

Physical Examination—Examination made July 31, 1934, revealed a much swollen knee, the swelling involving the lower third of the femur. The knee was fixed. The patient could not stand on the leg (was carried into the office crying with pain). A photograph was taken and also a radiograph with the following report:

"X-ray examination of the right knee joint in two positions shows an irregularity in contour of the shaft of the femur and irregular bone structure throughout the lower femur.

"There is a defect in calcification in the center of the distal end of the femur, irregular in outline, and about one by three cm as seen on the anterior-posterior view.

"The articular surfaces show slight clouding with some narrowing of the joint space at the outer angle of the joint.

"*Impression*: Probably an old osteomyelitis of the shaft of the lower third of the right femur with extensive proliferation around the periosteal border. Possible beginning chronic arthritis of the joint."

Two operation scars and deformity were noted.

Treatment—One cc. glyoxylide solution, was given on July 23, 1934.

Results—Recovery set in promptly. However, a week after the treatment was given there was increased pain for twenty-four hours. A slighter reaction showed during the third week and was followed by steady increase in strength and weight, disappearance of pain and swelling, and a loosening of the knee joint. Examination on September 17, 1934, revealed that recovery was symptomatically established.

A radiograph taken a year later reveals the following changes:

"A comparison of x-ray plates taken of the right knee joint July 20, 1934, and October 29, 1935, respectively, shows a much more regular periosteal line of the shaft of the lower third of the right femur at this time. This would suggest an absorption of new bone thrown out during the past year.

"The articular surfaces of the joint now show a more regular smoothness in their outline.

"There is a small calcified area approximately one cm. in diameter lying posterior to the external condyle of the right femur.

"Impression: Healed osteomyelitis or (tuberculosis) of the lower third of the right femur."

The femur has straightened out, there is no limitation of motion and she walks as well as anyone. Furthermore, her general health is better than it has been since she can remember.

**SUMMARY OF TWENTY-THREE UNCLASSIFIED
TUBERCULOSIS CASES TREATED WITH
GLYOXYLIDE**

REPORTED BY G. J. WARNSHUIS, M.D., DETROIT

1. **Patient—Mr. M. L.—Age 45—**

Date of First Treatment. July 31, 1934.

Duration of Active

Symptoms From August, 1933.

Principal Symptoms... Was gassed during service in First Division in 1918. In August, 1933, took a cold and developed a chronic cough with a steady loss of weight.

X-ray Had X-ray pictures taken at Herman Kiefer Hospital in September and was told he had two cavities in upper right lung. Had a right phrenicectomy in November. Remained in sanitarium until June, 1934. Continued to cough and expectorate.

Physical Signs..... Decreased resonance in right apex and below right clavicle. Bronchial breathing in this area. Decrease in resonance and breath sounds in lower left axilla. Weight 145 pounds.

Progress Fever, chills, coughing and increased sputum December 5, 1934 (18th week). Weight 148½ pounds.

(July 2, 1935).....Weight 138 pounds. Increase of sputum since 33rd week. Raised one-half cupful of blood on June 21. Raising a cupful and a half of sputum daily.

(July 21, 1936).....Continued to cough and expectorate from July until November 4, 1935, although weight increased on more nutritious diet to 151½ pounds. After second treatment on November 4, 1935, there was no more coughing and raising. Passed medical examination for employment at Briggs' in March and worked there one month without ill effects. Went over to Ford Motor Company, passed medical examination and worked there eight weeks in metal finishing department. Is working on P. W. A. now. Worked 72 hours last week, including two fourteen hour days. Weight 153 pounds. Good muscular development and there have been no reactions and no return of symptoms since second treatment.

2. Patient—Mr. S. H.—

Duration of Disease....Since 1929.
 Principal Symptoms....Autumn, 1929, pleurisy. December, 1930, hemorrhage. Loss of weight.
 X-rayCavity in left apex. Considerable infiltration.
 Operation.....Permanent right phrenic. Many pneumos. In sanitarium one year.
 Date of Treatment.....February, 1934.
 Present Condition
 (Sept. 20, 1935).....X-ray—Cavity well walled off and healing nicely. Gradual gain in weight and strength.

3. Patient—Mrs. I. G. B.—

Duration of Disease....Since 1932.
 Principal Symptoms....January, 1932, cough. February, 1932, hemorrhage.
 X-rayCavities in both apices. Collapse of two-thirds of right lung.
 Operation.....Crushed right phrenic and pneumos. Developed fluid. Drained twelve times. In sanitarium 1½ years.
 Date of Treatment.....June 27, 1934.
 Present Condition
 (Sept. 20, 1935).....X-ray May, 1935, showed right lung completely filled out except for reduction due to phrenectomy. Weight 129 pounds. Strength good.

4. Patient—Miss G. V. P.—

Duration of Disease....Since 1928.
 Principal Symptoms....Susceptible to colds. Non-productive cough. Loss of weight.

X-ray Right lung cavity size of a quarter. Left lung, involvement in apex. Also had tubercular kidney.

Operations Permanent right phrenic. In sanitarium from August, 1928, to April, 1934.

Date of Treatment.....April 8, 1934.

Present Condition

(Sept. 20, 1935) X-ray—Showed greatly improved lung fields. Greatly improved general health. Able to do light work.

5. *Patient—Mr. A. J. S.—*

Duration of Disease.... Since 1931.

Principal Symptoms.... Pleurisy. Susceptible to cold. Asthma. Weight 131 pounds.

X-ray Tubercular infection in right apex.

Operations Permanent right phrenic. In sanitarium 27 months.

Date of Treatment.....October 20, 1934.

Present Condition

(Sept. 20, 1935) X-ray—Lungs practically all cleared up. Doing hard manual labor and has gained eight pounds.

6. *Patient—Miss A. B. J.—*

Duration of Disease.... Had curvature of spine in childhood. Positive diagnosis April, 1933.

Principal Symptoms.... Coughing and raising. Pneumonia, 1930-1931. Weight 117 pounds.

X-ray Left lung—Cavity size half dollar in hilus. Right lung—Cavity size of dime.

Operations Crushed left phrenic.

Date of Treatment.....May 4, 1934.

Present Condition

(Sept. 20, 1935) X-ray—Lungs cleared up. Cavities healed. General health good. Gain in weight to 122 pounds. Working. Posture greatly improved, although curvature has not entirely disappeared.

7. *Patient—Miss M. E. B.—*

Duration of Disease... Since 1931.

Principal Symptoms.... Severe cold. Cough. Raising a great deal positive sputum.

X-ray Cavity upper right lung. Spots in upper part of left lung.

Operations Permanent right phrenic. Confined to sanitarium 3½ years.

Date of Treatment.....April 2, 1934.

Present Condition

(Oct. 26, 1935) Good gain in weight and general health. Working five months. X-ray—Cavity entirely healed and lungs clear.

8. *Patient—Mr. G. W. B.—*

Duration of Disease.... Five years.

Principal Symptoms.... Greatly swollen glands in sterno mastoid area producing a huge bulging of neck below left ear. This appeared for three succeeding springs. Positive sputum.

X-ray Showed involvement of both upper lungs, mostly on left side.

Operation None. Confined to sanitarium one year.

Date of Treatment.....March 8, 1934.

Present Condition

(Oct. 26, 1935).....Glands normal in size and appearance after six weeks and only showed swelling for a few days in the fifty-fourth week reaction. No coughing or raising. General health greatly improved. Free from symptoms. X-ray—Diminished infiltration.

9. Patient—M. S. S.—

Duration of Disease....Since December, 1928.

Principal Symptoms....Night sweats. Coughing and raising. Frequent and severe hemorrhages. Bed case for four years.

X-ray Cavities in left lung.

Operations In sanitarium. Left phrenectomy. Pneumos for three months. Third stage thoracoplasty. Continued to hemorrhage.

Date of Treatment.....April 3, 1934.

Present Condition

(Oct. 26, 1935).....Hemorrhages ceased after treatment except for slight bleeding in twelfth week and in the thirty-sixth week after second treatment. At present there is no cough, patient is up all day and weighs 150 pounds.

10. Patient—Mr. H. C.—

Duration of Disease....Since June, 1929.

Principal Symptoms....Cough. Positive sputum. Soreness in spine, loss of weight. In Herman Kiefer Hospital and Northville Sanitarium from September, 1931, to July, 1934. Weight 126 pounds.

X-ray Bilateral upper lungs involved. Cavity in both lungs.

Operations None.

Date of Treatment.....November 18, 1934.

Present Condition

(October, 1935).....Weight 141 pounds, a gain of 15 pounds. No coughing or raising. Endurance good. Is able to be up all day without fatigue.

11. Patient—Miss S. Y.—

Duration of Disease....Cough began fall 1934. Admitted to St. Joseph's Mercy Hospital and told she had tuberculosis and should be sent to Herman Kiefer Hospital. Came to us instead.

Principal Symptoms....Coughing and raising. Positive sputum. Vomiting and gagging since February, 1935. Loss of weight from 125 to 110 pounds. Mentally depressed. Cries easily. Apprehensive.

X-ray May 13, 1935. Numerous densities, irregular and feathery in outline. Probably cavity 3 cc. in diameter in right upper lung. Left lung showing changes similar to right.

Date of Treatment.....May 13, 1935.

Present Condition

(October 26, 1935).....Gained to 125 pounds. Feels good. Sleeps well and is cheerful. No cough or raising or rales. No physical signs of tuberculosis. According to all indications, recovery was complete in six months. X-ray on September 20, 1935—Comparison of plates shows great improvement with cavity well healed and small outline.

12. *Patient—Mr. V. K.—*

Duration of Disease....X-ray picture taken at Herman Kiefer Hospital diagnosed condition infiltration in right lung. Hypertrophied heart.

Principal Symptoms....Tires easily, short of breath on exertion. Marked cyanosis (blueness) of lips.

X-rayAugust 8, 1934—Chronic bronchitis with possible peri-bronchial and apical tuberculosis. Heart shadow larger than normal.

Date of Treatment.....September 17, 1934.

Present Condition

(Oct. 26, 1935).....Weight 170 pounds. No coughing or raising. Heart improved. Cyanosis gone. Strength good. Walks more than five miles daily without fatigue for past three weeks.

13. *Patient—Miss L. K.—*

Duration of Disease....Since cold contracted in October, 1930.

Principal Symptoms....Coughing and raising. Positive sputum. X-ray picture Herman Keifer Hospital—Two cavities at apex and middle of right lung. Spot in lower part of left lung. Bed patient in sanitarium for three years.

OperationsCrush phrenectomy on left side. Permanent phrenectomy on right side.

Date of Treatment.....May 24, 1934.

Present Condition

(Oct. 26, 1935).....No coughing or raising. Appetite fine and strength good. Able to work and be on her feet all day for past two months. Apparently a complete cure in spite of almost total loss of right lung from tuberculosis. X-ray October 16, 1935—Left lung clear. Right lung, a heavy density in hilus region characteristic of healed cavity. Apex does not show any cavity. Physical findings negative for tuberculosis. Right diaphragm higher than normal. Heart displaced to

right, indicating that there had been considerable destruction and collapse of right lung. Remaining tissue healthy and shows no sign of active disease.

14. *Patient—Miss C. P.—*

Duration of Disease....Since April, 1931.

Principal Symptoms....Coughing, fever. Positive sputum. Susceptible to colds.

X-rayAt Herman Kiefer Hospital showed cavity in apex of left lung.

OperationsPermanent left phrenectomy. In sanitarium 1½ years.

Date of Treatment.....September 2, 1934.

Present Condition

(Sept. 20, 1935).....X-ray after working for nine months showed healed cavity. General condition excellent.

15. *Patient—G. A. McL.—*

Duration of Disease....Symptoms cover a period from 1919 when pleurisy developed. Pneumonia, 1925. Susceptible to colds. Sinus trouble.

Principal Symptoms....January, 1934, pleurisy. Night sweats. Cough. Positive sputum. Loss of weight and strength.

X-ray.....July 23, 1934—Heart shadow large. Calcified areas in right hilus region. Increased densities throughout left chest, obscuring the diaphragm.

August 26, 1935—Comparison of X-ray plates shows considerable improvement in entire left lung. Density noted in left lung has completely disappeared except for a slight fluid level opposite tenth thoracic vertebrae.

TreatmentGiven on July 23, 1934. Bedfast at that time.

Present Condition

(Oct. 26, 1935).....Now able to be out-of-doors. Strength and general condition good. Does a little light work about the yard.

16. *Patient—Mr. V. S.—*

Duration of Disease....Pneumonia in 1928, followed by tuberculosis symptoms.

Principal Symptoms ...Hemorrhages, roughened breath sounds at base of right lung. Voice fremitus increased after left phrenic crush. Hoarse since pneumothorax.

X-rayLeft lung involved, upper portion and part of right apex.

OperationsCrush phrenicectomy on left side. Number of pneumothorax treatments. Three

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stage thoracoplasty at three week intervals in 1931.

Date of Treatment.....August 12, 1935.

Present Condition.....Gain of weight to 129 pounds. Sleeps well, does not tire. No raising. Returned to work in Fall of 1935 and is still working every day. No return of symptoms.

17. *Patient—Miss V. G.—*

Duration of Disease....In sanitariums from 1931 to May, 1934.

Principal Symptoms ...Easily exhausted, tired on arising.

X-rayX-ray examination revealed involvement of upper left lung.

OperationsPermanent left phrenicectomy.

Date of Treatment.....May 16, 1934.

Present ConditionGained steadily in strength. Weight increased from 107½ pounds to 119 pounds, which she holds.

18. *Patient—Mr. C. P.—*

Duration of Disease....Since 1930.

Principal Symptoms ...August, 1930, developed cough after severe cold. Severe pain in right side. Pleurisy. Pale and undernourished. Lost from normal weight of 170 pounds to 147 pounds.

X-rayRevealed cavity in middle of left lung and infiltration into lower right lung.

OperationsLeft phrenic crush August, 1933. Empyema operation April 11, 1931. Pneumothorax on left side.

Date of Treatment.....May 4, 1934.

Present ConditionFeeling fine. Has been working steadily since Summer of 1934. Good strength.

19. *Patient—Mr. M. K.—*

Duration of Disease....In sanitariums and hospitals for almost two years.

Principal Symptoms ...Susceptible to colds and sore throat. Frontal headaches. Loss of weight from normal 169 pounds to 138½ pounds. Stomach trouble.

X-rayRevealed cavity size of a dollar in left lung. Positive sputum test.

OperationsPermanent left phrenicectomy.

Date of Treatment.....June 3, 1934.

Present ConditionGained in weight to 154 pounds. No coughing or raising. Color good. Has been working for over a year and a half.

20. *Patient—Mr. F. S. S.—*

Duration of Disease....Diagnosis of tuberculosis by positive spu-

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tum in 1929. In sanitariums almost continually from 1929 until 1934.

Principal Symptoms . . . Pleurisy yearly for ten years. Susceptible to colds. Coughing and raising. Hemorrhages.

X-ray Revealed spot in right lung and involvement of left lung.

Operations None.

Date of Treatment April 18, 1934.

Present Condition Steady gain in strength. Has been working for over a year.
(April, 1936)

21. *Patient—Mr. J. C.—*

Duration of Disease Tubercular kidney removed in 1920. Bladder and urinary symptoms continued and in 1933 other kidney became enlarged. Left testicle swelled in 1934 and surgeon operated on scrotum. Lump the size of a pea developed at upper end of incision. Began to swell, not painful.

Principal Symptoms Soft, fluctuating bugling of skin at upper left part of scrotum. Smooth outline. Skin reddened on outer margin. Not tender on pressure. Tumor is movable. No enlarged glands in groin or elsewhere. Lungs negative.

Operations Operation on scrotum in 1934.

Date of Treatment May 11, 1935.

Present Condition The tubercular sinus healed in the twelfth week after treatment and there has been no return of symptoms except for a slight renal irritability during the thirty-sixth week, which cleared up in a few days' time. It is a remarkable circumstance in a case of this kind which exhibited such advanced form of disease, where one kidney had already been removed because of the serious damage and there were definite symptoms of additional involvement in the other kidney, to say nothing about the lesion in the epididymis, that in spite of such an extreme form of disease, this patient made an uneventful and very rapid recovery and is so free from symptoms at the present time.
(April, 1936)

22. *Patient—Mr. B. W.—*

Duration of Disease Since 1932.

Principal Symptoms Began with a cold December, 1932, followed by a cough with raising in the morning. Sent to sanitarium. Positive sputum test. Raised blood at times. Many pneumothorax treatments. Raising about a cup of sputum each day. In bed

all the time. Advanced bilateral pulmonary tuberculosis.

X-ray Pictures showed two cavities in upper left lung and spots all through right lung.

Operations None.

Date of Treatment..... May 2, 1934.

Present Condition While this patient has shown a steady and marked improvement, he has had symptoms at too recent a date to classify him as a cured case although the disease is sufficiently arrested so that his recovery appears to be assured, and he is well enough to return to his former occupation.

The history is included in this series because it presents some rather unusual features and demonstrated the specific character of the treatment and its effectiveness in a case that offered under ordinary conditions a very poor prospect of recovery.

Upon the occasion of his last visit, we discussed the feasibility of his returning to his former trade of radiator repairing. He thought the acid fumes in brazing and soldering might be harmful and ventured the opinion that the inhaling of such fumes might have been responsible for his illness. My reply was that that was highly improbable. I said, "Your previous healthy condition and the rapid progress of the disease and the extensive damage in the lungs indicate to me that you must have acquired it from some unsuspected contact very shortly before you became ill. There may have been someone in your shop who had an advanced form of tuberculosis of a highly virulent strain. You might have been exposed to such a person only once and it would have been sufficient in that kind of a case to have contracted the infection. There are times when veritable showers of tubercle bacilli will appear in a patient's sputum and, under those conditions, if they are of a virulent strain, a person who has not acquired any immunity from an early childhood infection with the disease will contract the disease as rapidly as taking a cold. I do not think the conditions of your work had anything to do with lowering your resistance."

This impression was confirmed in a very striking manner by the information that followed. He told me that a short time before he became ill his brother-in-law visited his home for a few days and

they played cards several times. Six months later the brother-in-law died in Herman Kiefer Hospital from tuberculosis.

Another interesting point about this case is the course that his recovery followed after his treatment. Previous to treatment with Koch antitoxin, there was a period of over two years characterized by fever, several hemorrhages and continued cough and raising of sputum. At the time he received the treatment, he was raising a cupful of sputum daily and his weight had decreased to 109 pounds. Within three weeks after treatment his weight had increased ten pounds. During the following month he had a severe reaction and lost weight again, but after the twelfth week all his symptoms had disappeared and from that time on he grew steadily stronger and increased in weight.

As may be observed from the X-ray report, this patient had an abscess at the base of the lung as well as in the apices, a very grave form of the disease and one in which spontaneous recovery seldom occurs.

A feature we have already called attention to in this case that made the outlook unpromising was the fact that there was nothing in the history to indicate tubercular infection in earlier life, as we usually find it. The widespread involvement of both lungs shows that his resistance at the onset was poor but a naturally healthy constitution enabled him to rapidly build up a partial immunity and to keep the disease under check to some extent until, with the help of the Glyoxylic acid, he was able to overcome it.

23. *Patient—Mr. A. D.—*

Duration of Disease....In sanitarium from April 17, 1933 to January 5, 1934.

Principal Symptoms....Underweight and losing strength since February, 1933. Coughing and raising.

X-rayX-ray examination April, 1933 showed tuberculosis of both lungs.

OperationsCrushed right phrenic and pneumothorax on left side.

Date of Treatment.....August 14, 1934, and January 25, 1936.

Present Condition.....(April 18, 1936) Steady gain in weight and strength. No coughing or raising. Weight increased from 151½ to 162 pounds.

Comment:

April 17, 1933, after having pneumothorax on left side, Mr. A. D. sus-

tained a spontaneous collapse in his sleep and was in a bad state of collapse for 24 hours.

This patient had no severe reactions at any time after his treatment but showed a steady gain in strength and weight until his 27th week when he weighed 160 pounds. He still had some cough at that time and continued to raise sputum until August 26, 1935, the end of his 54th week from treatment. At that time the only signs of tubercular activity was a roughening of the breath sounds in the lower right axilla.

January 18, 1936, he weighed 160 pounds and reported he had had an abscessed tooth extracted three weeks previous to that date.

January 25, 1936, tuberculin skin test was negative. The second treatment was given 76 weeks after initial treatment and two weeks later had gained in weight to 162½ pounds, although he had already been doing heavy manual labor for three weeks.

March 14, 1936, still working hard and weighed 162 pounds. Had slight chills, raised a little sputum and had pains in left sinus region during the fifth week from last treatment.

General Comment

With one exception, all of these were chronic cases that had had sanitarium care for from two to seven years without improvement. In fact, most of them were getting worse and were induced to try our method because of that fact. Four of them have been working for several months without showing any ill effects. Three more are ready to work as soon as the opportunity offers. The one who had not had previous sanitarium treatment and the only one who had not had any surgery recovered in less than six months.

LEPROSY

The similarity of leprosy to tuberculosis suggested that perhaps the treatment was applicable here too, so Dr. Stanley M. Haley, of Santurce, Puerto Rico, was asked by us to make the trial. The following case report shows that splendid results can be obtained:

Miss C. O. L.—Age 32.

Diagnosis—Spanish leprosy of some twenty-four years standing.

History of Disease—Began after some sort of infection in left hand, probably from being inoculated by an attendant in dressing hand. Brown spots began on left

arm, which gradually spread to legs and body. She was treated for different blood conditions until a test was finally made and proved positive for leprosy. Nodules had then begun to develop on arms. This was in 1918. From then until 1920, she was under treatment with chaulmoogra oil injections and by mouth, from 30 to 150 drops daily. As there was no improvement, she was transferred to the Quarantine Hospital at San Juan. She remained there under chaulmoogra oil treatment for three years and a half. She was then allowed out on parole as the condition was supposed to be under control, but was ordered to continue the chaulmoogra oil treatment for the rest of her life. She was finally forced to discontinue the treatment, as it had affected the kidneys badly and she had also become worse otherwise.

Treatment—She was given the first injection of the Koch antitoxin on February 22, 1932. At that time she had been confined to her bed for some time and was not expected to live but a short time. One eye was so far gone it had to be covered continually. Her physical condition was in a deplorable shape and nerves so she was not able to sleep. The outside of both arms and hands, also legs, were anesthetic and the last joints of both small fingers nearly destroyed.

Results—There was a very decided improvement from the time the treatment was given and she was able to sleep the first night. In a week she could use the eye that had been affected, and the anesthetic areas became less until they finally disappeared. Where the skin had always been dry and harsh and never perspiring, it became soft and she perspired normally after the fortieth week. The bacilli, that were present in uncountable number before treatment with the antitoxin, became less and less with each test until in February, 1933, there were only some twenty-five on the slide. From there they have decreased in number until at a later report they ranged from three to six to a slide and showed

fragmentations. The latest report reveals no bacilli whatever but a few leucocytes carrying fragments of possible bacilli debris in the nasal secretion. She is in the best health she can remember having. Ultimately a complete recovery may be obtained in this case. The patient received treatment under several severe disadvantages, and the nature of the disease was not sufficiently understood to adjust the treatment procedure with best efficiency. However what we have been able to learn from this case has been of use. Recent reports from Dr. L. M. Henry of the Mission Hospital Assuit, Egypt, describe deep leprous ulcers healing in six weeks completely. Most important of all are the observations in progress on leprous rats in Belgium and upon a very large number of human lepers in the Belgian Congo by Prof. Maisin. So far his results demonstrate total disappearance of the germs from the nasal secretions, the lymph, and the lesions, and a complete healing of the lesions within six weeks after treatment, in seventy-five per cent of the cases treated. When the time is ripe complete reports will be made.

LUETIC CONDITIONS

A number of luetic cases in the later stages have been given the antitoxin with most excellent results. Some of these were associated with malignancy and both lesions cleared up and the serological tests became negative. Others were purely luetic and equally good results followed the use of the treatment.

A special paper will be devoted to this subject, but to exemplify the type of benefit derived from restoring the natural immunity mechanism, a few cases are briefly mentioned.

A man 42 years of age was carried into our clinic with so-called cancer of the stomach. Examination revealed a very much enlarged spleen and a slightly enlarged liver. There was a mass at the pylorus the size of a fist, and there was great pain and inability to take care of food. The arms showed the late circinate lesions of lues, some noncontractile scars and typical luetic ulceration below knees. The glyoxylide was given and brought rapid recovery in every respect remaining permanently.

A Mr. K. was treated in modern fashion with mercury, iodides and arsphenamine for a year and a half. The Wassermann was positive right along. He became worse under treatment. His throat was very sore and ulcerated and the neck infiltrated and swollen, and finally there was loss of voice and development of skin lesions—a florid case of lues. He was a choirmaster and the holidays approached, requiring immediate vocal work which he could not do. He was steadily getting worse. Glyoxylide was given on November 20, 1923. In two weeks he was able to sing some and in four weeks was fully restored to activity. In another month he was apparently well, and has so remained, at least for the three years in which I was able to keep track of him.

The amount of material required to mediate a rapid uninterrupted recovery process in these cases is comparable to the amount of allergy toxin, a very small amount indeed and does not resemble the large amounts of metallic materials ordinarily employed.



Gumma of skull B. W. 4 plus, confirmed by biopsy. Appearance before the treatment was instituted. (Courtesy of Prof. Maisin.)



Six months after first of three injections. Complete recovery. B. W. negative. (Courtesy of Prof. Maisin.)

Chapter VI

COMMON CLINICAL ALLERGIC REACTIONS

The allergy factor in infection in general is now being appreciated more universally. Both functional and reproductive elements of the cell may be affected and either effect predominate. In ordinary acute inflammations the functional, in chronic inflammation the hyperplastic and necrotic features, rule the picture. The effect of the unsaturated union between carbon atoms of various molecules resembling benzopyrine or such groups as the imidazole ring of histamine become evident. The tissue destruction in acute anterior poliomyelitis might possibly be explained on this basis. At any rate, the prompt response to the Glyoxylide favors this interpretation. On the other hand, the rapid response of an acute severe angioneurotic edema to the same remedy indicates that the causative agents of both types of allergy must be chemically similar. A variety of allergic manifestations and their responses are briefly reported to illustrate.

Syphilitic Dermographia

Mrs. C. F.—Age 37.

Diagnosis—Syphilis, tertiary stage, presenting an outstanding symptom, dermographia, and angioneurotic edema.

History—First discovered the character of the infection in 1925, when she had a blood Wassermann made following the appearance of a skin eruption on the back of the neck. The blood Wassermann was four plus at that time. She had active treatment from time to time since then with arsenicals and mercury, but repeated Wassermanns continued to give a positive reaction.

Examination—She showed a conspicuous dermographia and stated that she had had hives almost continually for the past four years. On the slightest irritation,

large weals would appear on the skin, sometimes four to five inches in diameter.

Treatment—One cc. of glyoxylide solution was administered on November 30, 1935.

Results—Five hours after treatment with the glyoxylide her skin showed only a reddening reaction to pencil strokes, without any elevated weal, and while she still had some hives after going to bed, there was three months after treatment not the slightest degree of dermographia. The Kahn test is negative. Her health is excellent in all respects.

Obliterative Endarteritis

Mr. S. K.—Age 50. History taken July 23, 1928.

Diagnosis—Obliterative endarteritis.

Past History—Enjoyed good health until 40 years of age. For last ten years suffered with gastric ulcer, but obtained comparative comfort by careful diet, taking soda and so forth. In the summer of 1927 he found it progressively more and more difficult to walk about when playing golf. Walking caused pain in the feet, and rests became necessary at shorter and shorter intervals. He consulted all the best known Detroit physicians, who agreed on the diagnosis, but could offer no help. He then placed himself under the care of Henry Ford Hospital, where the diagnosis of obliterative endarteritis was confirmed and where it was discovered that an abnormal amount of sugar was present in the urine. The blood sugar was found to read 350. He was given insulin treatment but grew worse. He was finally advised of the hopelessness of his case, that he should stay in bed, take such opiate as was necessary, submit to the necessary amputations and await the end.

Present Illness—Our examination made July 23, 1928, disclosed considerable nutritional injury, the yellow waxy color of one suffering rapid blood coagulation, but no tumor mass could be found. Although both feet and the right leg were severely involved with the ex-

darteritis no gangrenous decomposition had yet taken place. The toe nails, however, appeared dead. There was great pain on motion, but he could get about some.

Treatment—One cc. of the glyoxylide was given in July, 1928.

Results—In a few weeks a rapid improvement took place and he was able to return to work. Within twelve weeks the anemia gave way to a normal blood quota and fine healthy color. During this period the gastric ulcer symptoms completely cleared away and the left foot and leg practically gained normalcy. The solid cord-like vessels became thin, compressible and pulsating and after pressure on the skin the blood came back with normal rapidity, and by the fifteenth week he could walk all day without pain or inconvenience. The toe nails regained much of their normal pink color. However, the right foot and leg did not regain true normalcy until after the eighteenth week had passed. With his recovery he acquired the best health he had experienced since he was thirty years old and his urine remained free from sugar. Blood sugar dropped to between 80 and 90 mmgs. and remained normal. He indulged in periods of excessive work, and in May, 1933, after a prolonged period of exertion he dropped dead from heart failure.

Angioneurotic Oedema

Mr. J. H.—Age 23. Salesman.

Heredity—Father had cancer of stomach. Recovered under Koch treatment.

Past Illness—Ordinary childhood infections and colds with some hay fever last few seasons.

Present Illness—Occurred on a chilly evening in November, 1934, when after a long sales talk, warmed up and perspiring he went into the cold to drive home for dinner, a distance of two miles. After driving about half a mile, he felt his face swelling. He began to have difficulty in breathing and gradually his vision became obscured—approaching automobile headlights looked like small points of light, and he found it extremely

difficult to get through the traffic. When he arrived home, his breathing was so difficult that he was almost choking and his whole face was swollen, closing his eyes. Chest seemed too full and tight to get a breath.

Physical Examination—Face and neck very oedematous, stridulous breathing, dyspnoea, asthmatic breathing throughout chest. Cornea appeared oedematous.

Treatment—One cc. of glyoxylide solution was given immediately intramuscularly.

Results—In four minutes breathing was definitely easier and the oedema visibly improved. His eyes were opening and he said he felt better and was not "strangling" any more. Within one hour he was practically normal but some moist rales could be heard. The next morning the patient reported that he was all well.

Hay Fever

Mr. L. K.—Age 48. Business manager.

Heredity—Father died of cancer of stomach.

Past Illness—Usual childhood diseases.

Present Illness—Regular autumn hay fever for last ten years. Had to go North for relief. Suffered quite badly. After suffering for two weeks in Fall of 1934, he decided to try the cancer treatment. One cc. of glyoxylide solution injected at four in the afternoon and the next morning he awakened without distress and remained free from all allergic symptoms to date.

As in this case, occasionally the symptoms of hay fever are removed completely within twenty-four hours, in some instances permanently, in others with a mild attack the following year that clears up completely and permanently with another dose of the antitoxin.

Effect of Metabolites on the Asthma of Tuberculosis

Mr. M. F.—Age 39.

Diagnosis—Advanced tuberculosis in both lungs with cavitation and positive sputum.

History—Repeated and frequent asthmatic attacks over a period of years. He had been a sanitarium case for seven years. Had the right phrenic nerve cut to paralyze the diaphragm in an attempt to collapse the cavities on that side, and was advised to have a thoracoplasty.

Treatment—One cc. of glyoxylide solution was given on January 13, 1935.

Present Condition—At date of treatment his lips were cyanotic and there was difficulty in breathing on the slightest exertion.

Results—He continued to have attacks of asthma, lasting several hours, about every third week during the reactions to his treatment until the twenty-seventh week when he had a febrile reaction, and since then there has been no return of the asthma except for occasional spells of difficult breathing with change of weather during reaction periods, but not such as to cause any serious discomfort or necessitate confinement to bed as they formerly did. He received his second treatment on November 1, 1935, following the forty-second week and has continued to show a steady improvement and gain in strength and vigor since then. Recently no asthma has been experienced.

Asthma

Mr. A.—Age 56.

Asthma for some twenty years following prolonged exhaustive work for many years. Sought relief in various climates without avail. Asthma constantly day and night, aggravated to great distress in closed room or room with a carpet or drapes or when he was with a group of people. Every animal fur gave severe reaction, also fried onions, burned grease fumes or dust of any kind. He obtained very little sleep and had to struggle greatly for breath.

He was given glyoxylide in December 1932, one evening at 9:00 P. M. That night he had the first fair

sleep in a long time and the next day he could breathe quite well. His recovery was fairly rapid with reactions of increased irritability of respiratory tract every third week for a short time, until he was comparatively well.

True asthma never returned, but the respiratory tract was mildly hypersensitive, especially to the former provocative conditions. Therefore the recovery was practical.

Multiple Sensitivity

Mrs. W. R.—Age 43.

Family History—Grandfather had asthma badly.

Past Illness—Severe cystitis twenty-five years ago and off and on since. Improved after treatment for hay fever May, 1934.

Present Illness—Started in Fall of 1932 as persistent hay fever, constant sneezing, rhinitis, coryza and severe headache just above both eyes. Also a constant nausea and distressing gas in the intestines that could not be controlled. There were colored, itching hives in both axillae.

Physical Findings—Normal in all respects. Tests with 120 different proteins August 26, 1933, at the University of Michigan Hospital. Also the sinuses were examined and found extremely inflamed. Of the 120 substances tested, 50 were found definitely and extremely toxic. Immediate reaction, like a very high, quarter-size mosquito bite, was had from whole wheat, egg, tomato, canary, chicken, goose, cattle, hog, rabbit, kapok, silk, tobacco, and these outlasted all others. Of the other fifty substances, the reaction to test showed up after a few hours and did not last as long as those just mentioned. She could not sleep on a pillow for two years nor eat toast. She was advised to seek help in another climate.

Treatment—One cc. of glyoxylide solution was given May, 1934.

Results—Recovery was completed within two weeks.

There has been complete relief ever since, and although originally very highly sensitized to feathers and other things, she today can live with birds and eat all the formerly toxic substances without the slightest signs of allergy. Neither do the test procedures elicit any reactions. She seems to be immune to common colds and is happy that the condition has cleared up instead of progressing into the asthma that threatened.

Allergy to Tuberculin Temporarily Aggravated by Glyoxylide

The allergic responses to the tuberculosis poison are altered in two ways by the treatment. In one an immediate subsidence of the reaction to tuberculin is had and in the other at first an aggravation of the tuberculin reaction is observed before it subsides. The latter class of patients is not numerous. In fact, only two have been observed by us. They were sisters, natives of Mexico, who were given the antitoxin at the time of tuberculin tests. Two of their brothers had had thoracoplasty operations, one a three stage and the other two stage. The brother who had the three stage operation died in spite of receiving the antitoxin shortly after the last operation. The other brother left the sanitarium after his second stage operation and for this reason had better vitality and made an excellent recovery after the antitoxin was given. Another sister had died previously from a rapidly progressing pulmonary tuberculosis.

Neither of these girls showed any active symptoms or physical signs except for a slight roughening of the breath sounds in the youngest one, but on account of the unfavorable family history, it was thought advisable to give them the glyoxylide. They were given the treatment at the same time that they received an intradermal tuberculin test. The reaction to the tuberculin was greatly exaggerated and was very slow in subsiding. There still remained considerable oedema and reddening six days after the injection.

Allergy to Tuberculin Abolished After Glyoxylide

Mr. H. C.—Onset of illness in 1929 following a painful twist of the spine. Entered Herman Kiefer Hospital September, 1931, and had sanitarium treatment until July, 1934. Had artificial pneumothorax for three months on the left side, when treatments were discontinued on account of obliteration of the pleural cavity. Pneumothorax treatments were continued on the right side until he was discharged from the sanitarium. X-ray showed partial collapse of the left lung with pleural adhesions. A distinctive feature of his case was a chronic history of severe frontal sinus infection and nasal polyps with frequent headaches. He stated that he had had these headaches for about fifteen years. They disappeared almost entirely after the glyoxylide treatment, except for an occasional slight attack of short duration during reaction periods. His weight was 126 pounds at the time of treatment November 18, 1934 and had increased to 145 pounds by December 5, 1935. Tuberculin test has become negative since treatment.

Effect of Glyoxylide on Tuberculin Reaction in Pulmonary Tuberculosis

Mr. A. W.—Age 49.

Diagnosis—Examinations at Herman Kiefer Hospital and Northville Sanitarium resulted in diagnosis of tuberculosis with cavities in both lungs.

History—Illness began two years previous to October, 1935, with coughing, raising of bloody sputum, loss of weight. As a result of x-ray examination he was sent to Herman Kiefer Hospital and transferred to Northville January 11, 1935, where he remained until coming to us for treatment.

Examination—Our examination October 16, 1935, demonstrated a definite cavity in the left apex and a widespread pleurisy on the right side.

Treatment—One cc. of glyoxylide solution was administered on October 18, 1935.

Results—A intradermal tuberculin test made October 17, 1935, showed a definite reaction the following day, when he was given the Gyloxylide Solution. The red area about the site of the tuberculin injection began to fade shortly after he received the treatment and had completely disappeared the following day. There has been no return of pulmonary symptoms since he received the treatment, no coughing, no sputum. The third week he had chills and fever and experienced some chilly sensations during the sixth week after his treatment. On December 2, 1935, he stated that he felt very much stronger, had a good appetite, was sleeping well, had no cough and no sputum. Latest radiographs do not show cavitation.

Tuberculin Allergy Overcome with Recovery

Mr. T. F.—Age 49.

History—Had pulmonary tuberculosis, onset in 1920. Positive sputum since 1924. Under sanitarium care for four years. He had a phrenectomy in left side. Artificial pneumothorax attempted but could not be carried out.

Examination—There was cavitation in left apex. Also crepitant rales. His weight had decreased from 164 pounds to 129 pounds.

Treatment—His first treatment of the glyoxylide solution was given on November 14, 1934.

Results—Although he was on welfare relief and suffered a great deal of hardship, poor diet, and so forth, he gained weight consistently after treatment and on December 16, 1935, weighed 136½ pounds. A tuberculin intradermal test made December 9, 1935, gave only a very faint reaction, no more than the majority of normal individuals would show. This indicates that with recovery the allergy is overcome. At present there are no more rales, he is able to work and the cavity is healed. Sputum negative.

Chapter VII
ACUTE INFECTION
ANTERIOR POLIOMYELITIS

Several features of anterior poliomyelitis indicate its allergic nature, its seasonal occurrence, the great amount of destruction as compared to the amount of toxic agent and its localization in a particular tissue, for example. The rapid recovery response after an injection of the Glyoxylide is like that of other acute allergic conditions. The following cases will illustrate:

A boy of two and a half years of age was brought to me in September, 1931, with both legs in flacid paralysis. He had taken sick three days before with headache, vomiting and fever, and awakened two days before my observation with both legs paralyzed and quite ill. The mother had been cured of malignancy of the breast by this treatment several years previously and desired the child to have the same treatment that had cured her, no matter what the condition was, and especially since there was nothing definite for the family doctor to do. The reflexes were abolished and there was foot drop, both legs being equally affected. Treatment was given and the mother was requested to hold the child for an hour. He was then asked to move his legs, which he could do quite well. After another hour he was asked to walk and this he could do for a few steps. Recovery was completed in twenty-four hours.

The other case is that of a boy age 16, six feet, two inches tall, 190 pounds, very strong and muscular, exposed to very cold water and much exertion for six hours nearly to the point of exhaustion. He had been eating plentifully of "hot dogs" for the week previously, and might have carried some intestinal poisoning that lowered his general resistance. He took sick with vomiting, headache, fever and general achiness August 20, 1935, in the evening. The next morning the right leg was paralyzed. He tried to be about, nevertheless, until he

dropped with a more general paralysis that involved all the muscles of the back, trunk, neck, abdomen, diaphragm, pelvis and left arm and right leg. The left leg was too weak to move but there was no foot drop. The right eye turned outward and the face muscles twitched. He had been crying with pain for two days and nights, pain through the spine and abdomen, in spite of narcotics the local doctor had given him. When I arrived August 25, 1935, respiration and swallowing were about paralyzed and the bladder and intestines were also paralyzed. He had not passed urine for two days at a stretch. There was delirium, cyanosis and the "death" odor. Dr. Arnott who hurried with me to the bedside gave a prognosis of a few hours to live, unless the treatment would prove helpful. Glyoxylide solution was given and very soon the pain was better and the face twitching ceased. In twenty minutes the abdominal bloat started to subside and the eye straightened out. Vomiting was not repeated again, the cyanosis lessened and respiration improved.

It was necessary to catheterize him every four hours for four weeks before normal function returned. Five treatments were given at two and three day intervals and recovery progressed rapidly after the fourteenth week. There is no paralysis remaining, but the muscles most affected are still the weaker muscles, especially the quadriceps extensor of the right leg. However, it is rapidly gaining strength and he is able to walk without other defect though not very vigorously. During the reactions every seventh day there was some cyanosis and rapid pulse for several hours but after the twelfth week from the last treatment the readjustment was complete so they did not occur again. This phenomenon reflects the injury to the vasomotor nerves caused by the infection, and also displays the rhythmic nature of the recovery process.

I consider this case a great victory. It should be mentioned that there was some contraction of the flexers

of the left arm during the sixth week. This gradually faded as perfect function returned during the seventh week.

In the same family a younger brother took sick with the early symptoms, on the day of my arrival, terrific headache and general achiness, vomiting and fever. He was given a treatment that evening and awoke the next morning perfectly well. During the third week of the illness of the first boy the mother took sick with the same symptoms, and suddenly while walking the right leg gave way with very sharp pain in the calf and paralysis. She was given a treatment after some six hours and recovery was completed in perhaps twelve hours. The prophylactic value is thus well demonstrated.

A case of a boy of 16 should be mentioned. At the age of three infantile paralysis took charge of his left arm and right leg. When he applied to me for treatment in 1934, the left arm and right leg below the knee were in a state of contracture which had existed according to his history ever since youth. The arm was drawn up in flexion and was useless, and the right foot was turned in so that he hobbled along by stepping on its lateral surface with the aid of a crutch.

Treatment was given at twelve and twenty-four week intervals for a year and a half and gradually the contractures disappeared. The leg is straight and functions normally, and the arm also. Motion has returned to the fingers so that they can be used somewhat. They can be flexed and extended but have not much strength for gripping things as yet. The general health and intelligence has improved very much. Thus the much dreaded contractures of poliomyelitis of many years standing cleared up in months in this particular case.

Although it has been my policy to avoid the treatment of acute infections manageable in other ways several cases of acute violent sinus infection have been treated in patients formerly treated successfully for cancer. The fever pain and tension were in each in-

stance rapidly relieved and recovery was established fully in a day or two. A case of severe streptococcus infection of the left fore arm in a young friend of mine that surgeons wished to amputate is rather instructive. There was fever, jaundice, liver enlargement and severe dizziness. The arm was swollen to the shoulder and at the elbow an infiltrative swelling that yielded no pus on incision, but only a dark bloody fluid. One dose of the glyoxylide was given and recovery took place rapidly. In a week he could drive his car to California.

A complimentary case is that of an old man under treatment for cancer of the tongue and lip. The left hand was drawn up with fingers closed and immovable from the scar of an operation for severe streptococcus infection he had eighteen years previously. During the recovery after the glyoxylide solution was given the scar tissue absorbed so that fair motion of the fingers was re-established. The explanation I think is simply that the scar tissue remained as a capsule for infection that was still present and that after the immunity rose to the point that the infection had no longer a chance to survive, the scary capsule that hampered the fingers all these years had no longer cause to exist and gradually underwent involution.

Chapter VIII
CORROBORATIVE OBSERVATIONS BY
GENERAL PRACTITIONERS

Report of Cases Treated by

D. H. ARNOTT, M. D.

London, Ontario

Many years ago I observed a patient develop sarcoma over the superior maxilla, to the size of a turkey egg split lengthwise. After a time the growth diminished in size, eventually disappearing. Recovering from an attack of pneumonia a year and a half later, the growth recurred in the identical location where it had begun previously and spread over a large part of his head before destroying him.

The recession of the growth had been as orderly and as unobtrusive as its beginning, and it was evident to my mind that an effective resistance to malignant disease had been lost, regained, then lost once more, this time finally.

Upon visiting Dr. Koch in Detroit and inquiring about the results he had obtained, he told me that he was able to cause the regression of malignant disease with such frequency as to eliminate the possibility of spontaneous recovery. On his invitation I returned the following month, spending three days examining cases, observing records and results. Each month for six consecutive months I was privileged to repeat my visits and every two months thereafter for a considerable time.

After living on the diet required and taking an injection of the treatment to see if the medicine was poisonous and being unable to observe any upset whatever, I felt justified in recommending the treatment to G. M., aged 62, suffering with cancer of the sigmoid. There was the history of bowel obstruction, great loss of weight and corresponding loss of strength, with a large tumor visible and palpable over the sigmoid area.

Diagnosis confirmed by x-ray. Treatment given May 6, 1927, was followed by marked reactions off and on. The tumor lessened in size rapidly and disappeared. He did his own plowing that fall and is alive and well today.

A. McG.—Aged 47, with a history of gastric ulcer for sixteen years, had been confined to bed with weakness and vomiting. A tumor over the gastric area as large as a fist could be seen and felt. One treatment given February, 1928, was followed by recovery. He was back to work in six months and has remained well ever since.

Mrs. K. had right breast removed for cancer September, 1927. The left breast was removed for cancer February, 1929, and recurrence in this area was met by further wide resection. Seen April, 1931, the disease had recurred in both operation areas, and had spread up both sides of her neck. She was given the Koch treatment and all signs of cancer disappeared. During the intervening years two injections have been given because of pain in the operated area last noted, with suspicious thickening along the pectoral border.

Mrs. G.—Abdomen opened June 29, 1931. Extensive growths in the liver were regarded as cancerous. Gall bladder drained. Jaundice deepened, the stools became clay colored and the patient was found semi-comatose when treatment was given July 24, 1931. Early improvement was noticed and she was able to leave the hospital in about a month, at which time most of the jaundice had disappeared. She continues well.

With the exception of the last case, all appeared before the Cancer Commission in London, Ontario, October 1, 1931, to show the results which they had obtained from the use of the Koch treatment. Mrs. G. had not been informed as to the basic nature of her disease and her husband came to the meeting to confirm the history outlined.

There has been no dispute that these patients suffered from severe forms of cancer and were far on in

the course of the disease when given the Koch treatment.

Four cases of non-malignant fibromyoma of the uterus, accompanied by severe hemorrhage, have been treated and all responded briskly. The hemorrhage was relieved at once and the growths gradually disappeared. The most interesting is Mrs. T. who aborted while visiting friends in London. A large fibromyoma could be felt through the abdomen, which observation was confirmed by the family physician. An eminent surgeon recommended immediate operation, since she had been flowing very freely during her menstruation. Koch treatment was given shortly after this. She became pregnant and was delivered of a healthy child two years and four months after treatment. No fibromyoma can now be felt. Her periods are normal and were normal from the time the treatment was given.

It was with reluctance that I enlarged my observations as to the field of usefulness of the Koch treatment, but circumstances required me to decide to use it in a severe case of chronic pulmonary tuberculosis. K. B. had been in a sanatorium the best part of the five years during which her condition had been recognized, all of which time she was a bed patient, receiving artificial pneumothorax, phrenectomy and other skillful attentions calculated and hoped to be beneficial. She was doing rather badly when given the Koch treatment. Feelings of improvement were felt early but reactions occurred a few weeks later, during which the sedimentation test advanced from 15 to 45. Gradually this lowered. Improvement warranted bathroom privileges in about three months, with exercise six months later. At the end of a year the entire output of sputum was collected for three consecutive days and found to be free from the tubercle bacillus. Weight had increased from 122 to 138 pounds. Since that time improvement has continued until almost normal strength has been attained.

Lockhart-Mummery has written:

(*1) "Now it is natural that malignant tumors should attract the most attention, but it is often overlooked that no theory of cancer genesis can be accepted that does not explain the genesis of non-malignant or simple tumors."

(*2) A. Primrose recalls how he has suggested that there might be a relationship between tuberculosis and the cause of cancer.

Therefore, that cancer, non-malignant tumors and tuberculosis might yield to the use of the one identical remedy as related above is an idea which has been sponsored by men of great experience and high scholarship.

It has long been recognized that, in addition to exposure to infection by the tubercle bacillus, persons acquiring the disease must present a condition of body highly favorable to the development of the particular bacteria involved. It is Dr. Koch's feeling that his treatment may supply certain physiological conditions which go more or less wth evidences of general immunity. How far this can be demonstrated and developed remains to be seen, but the following observations suggest that clinical investigations along these lines might be fruitful.

M. G. had suffered from 17 attacks of iritis during the previous 25 years. The condition amounted almost to a panophthalmia and always confined her to bed for at least ten weeks, during which time she suffered most severe pain. A return of symptoms had for some days told the patient another attack was impending. Treatment given in the evening July 21st gave so much relief that she was able to sleep that night. Subsequent history showed the attack had been aborted.

(*1) The Origin of Cancer by J. P. Lockhart-Mummery., M.B., F.R.C.S. (Eng.) Chairman of the Executive Committee and Editor of the Annual Report, British Empire Cancer Campaign.

(*2) A. Primrose, M.B., F.R.C.S. (Eng.) Cancer, Journal of the Canadian Medical Association, March, 1935.

J. K. showed lesions of Herpes Zoster which had been present three days. Pain had kept her awake for four nights. Treatment was given at noon July 23rd and was followed by relief. She slept well that night and the pain never returned. The red base upon which the blisters rested had given place to normal color when seen twenty hours after the treatment was administered. With the exception of two small superficial scabs and the loss of the suntan over the affected part, all physical signs had disappeared in another week.

B. B., suffering from chills, high temperature, frequent urination, general pains and pyuria indicating pyelitis, was given treatment July 20th. He was able to return to business July 23rd and urine passed on July 25th was free from pus.

Mr. G. C. Aged 68. Always some urticaria lesions present. Excitement or slight exercise brings on burning of abdomen, with rapid spread of urticaria all over the body, with swelling of lips. So commanding that will fall unconscious. Treated Sept. 12, 1933. Relieved completely in one week. Slight recurrences decided a repeat treatment March, 1935. May 30th reported no bothersome reaction and able to work till he perspired without producing hives or any other disagreeable symptom. First time in six years felt free to do this.

Miss B. W. Aged 71. Severe urticaria for two months during which time daily enema and strict dieting was observed together with what medication might be considered helpful. No relief when Koch treatment given September, 1931. Symptoms all relieved in two days, and have never returned.

Mrs. A. D. Conjunctivitis more or less continuous for five years. Focal infections eliminated. Vaccines used and all treatments advised by eye specialists. Pain continual with extension through the eye to the back of the head. Eyes red, and discharging tears and pus. Unable to read or sew. Treated Nov. 8th, 1935, got relief in a few days. At three week intervals slight reactions occur-

red two or three times. Now quite well, and able to use the eyes without discomfort and to a normal extent. Great recovery in spirits, as she seems better all over.

Wm. M. Aged 69. Complained of breathlessness, precordial pain on slowly walking on the street. Obliged to stop till pain passed. This would be three times during the distance of one block as the breathlessness was accompanied by precordial pain radiating all over the chest. For two weeks had been awakened early in the morning with the same pain while resting. All symptoms getting more severe when seen Nov. 21st, 1935. The Koch treatment given and subsequent history showed the pain gone in one week. Able to walk without pain in one week and this has not returned at time of writing. Dizziness and breathlessness disappeared in a month.

It appears clear that there are good grounds to hope for the cure of patients suffering from severe forms of cancer, which surgery, x-ray or radium cannot treat successfully, and that this result may be obtained by care given by the general practitioner using the Koch treatment in the homes of his patients.

Present day conceptions as to the nature of cancer, non-malignant tumors, tuberculosis and other severe infections are ripe for revision, as is our outlook on pain and its treatment in infectious conditions.

REPORTS TAKEN FROM CANCER RECORDS SUBMITTED BY
W. WALLACE FRITZ, M.D.
Philadelphia

Cancer of Stomach

Patient: Mr. D. Y.—Age 29 (Scotch American) salesman.

History—First visit March 10, 1926. Weight 123 pounds. 1924 had ulcer of stomach with bleeding.

Treated for same and seemed well until February, 1926, when all symptoms came back with bleeding and pain and sick stomach. Vomiting blood and "coffee grounds," diarrhoea and frequently black tarry stools.

Examination—Mass in wall of stomach with severe pain. Hemorrhoids protruding from anus, which bled easily.

Diagnosis—Cancer of stomach.

Prognosis—Good.

Treatment—Two (2) doses Koch Synthetic Antitoxin. First,—March 22, 1926, second—July 14, 1926. Discharged well May 3, 1927. Duration of treatment, 1 year and 3 months. Eight years cured.

Recurrent Cancer of Breast

Patient: Mrs. M. E. W.—Age 58. (English).

History—First visit July 18, 1927. Weight 103 pounds. Typhoid fever at 16. Influenza at 42. Constipated, spots in sight. Dr. A. operated on rectum in 1916. Dr. R. operated on left breast September 16, 1925.

Examination—The scar on left breast was a large tumor with enlarged, indurated lymphatic glands of the axilla.

Diagnosis—Recurrent cancer of breast, well metastasized.

Prognosis—Good.

Treatment—Two (2) doses Koch Synthetic Antitoxin. First—August 1, 1927, second—December 12, 1927. Discharged well July 26, 1928. Duration of treatment one year. Seven years cured.

Recurrent Cancer of Jaw

Patient: Miss M. A. W.—Age 56 (American) Teacher.

History—First visit August 13, 1929. Weight 114 pounds. Mother, niece and sister died of cancer. Had typhoid fever in 1913. Duodenal ulcer 1918, influenza

1926. Had a cancer growth removed from left side of lower jaw in July, 1928. At present has bleeding from bowels.

Examination—Swelling of jaw, and no tendency to heal. Rectum full of spongy tissue and bleeds easily.

Diagnosis—Recurrent carcinoma of jaw and rectum.

Prognosis—Good.

Treatment—One (1) dose Koch Synthetic Antitoxin. Duration of treatment five months. Discharged as well January 28, 1928. Seven years cured.

Recurrent Cancer of Breast

Patient: Mrs. P. P. W.—Age 51 (American).

History—First visit November 8, 1928. Weight 204 pounds. Husband had cancer of hand. Suffered rheumatism and sciatica for years. Left breast was removed by Dr. P. in 1918 for cancer.

Examination—Scar on left breast swollen and tender on pressure. Lymph nodes enlarged and indurated, running up and including the axilla.

Diagnosis—Recurrent cancer of breast.

Prognosis—Good.

Treatment—One (1) dose Koch Synthetic Antitoxin. Duration of treatment six months. Discharged as well March 18, 1929. Six years cured.

Recurrent Cancer of Breast

Patient: Mrs. A. E. D.—Age 62 (American).

History—First visit December 10, 1928. Weight 124 pounds. Never sick until 1925. Dr. A. B. removed left breast for carcinoma. Since then arm has been swollen. Had four X-ray treatments after operation. Suffering with indigestion and dizziness. Neck is swollen on left side and very severe pain shooting into the arm.

Examination—A mass on left side of neck involving the lymphatics, tumefaction of operation area of left breast.

Diagnosis—Recurrent metastasized cancer.

Prognosis—Good.

Treatment—Two (2) doses of Koch Synthetic Antitoxin. First—December 10, 1928, second—January 21, 1929. Discharged as well October 21, 1929. Duration of treatment eleven months. Cured six years.

Recurrent Sarcoma

Patient: Mr. J. C.—Age 17 (American). Student.

History—First visit March 21, 1929. Weight 126 $\frac{1}{4}$ pounds. Aunt died of cancer of stomach. Had flu several times. Never very strong, always contracting colds. Dr. P. operated in 1928 removing the lesser trochanter of the left thigh. Laboratory report shows sarcoma. Had fracture in January, 1929, of first phalanx. The left hip joint swollen and sore difficulty in walking and very painful.

Examination—Mass in front of right temporo-maxillary articulation, very tender and sore. Fracture of first phalanx shows no tendency to heal, and is swollen and spongy growth. Biopsy shows sarcoma.

Diagnosis—Recurrent and metastatic sarcoma.

Prognosis—Good.

Treatment—Two (2) Koch Synthetic Antitoxin doses. First—March 25, 1929, second—September 11, 1929. Discharged as well March 6, 1930. Duration of treatment one year. Cured five years. In perfect health today.

CASES OF CANCER REPORTED BY

J. W. KANNEL

Fort Wayne, Indiana

Mrs. Fred S.—Had carcinoma of the cervix, so diagnosed by B. W. Rhamy, of the Fort Wayne Medical and Pathological Laboratory, and by myself clinically.

First dose of Koch antitoxin given January 29, 1929. At that time the tumor on the cervix was as large

as a hen egg. It had all absorbed in three months after the first treatment. She was given a second dose of antitoxin July 18, 1931, because of some bleeding from the angiomatic tissue. Mrs. S. is now 58 years old, weighs 180 pounds and is in perfect health at this time.

Mr. G. K.—Carcinoma of the stomach, so diagnosed at the St. Joseph Hospital by x-ray and clinically by three of the leading physicians and surgeons of this city in September, 1928. He was sent home with instructions to his wife to feed him a milk diet and give him morphine to relieve his pain. She was told that he would starve to death in eight months. I gave him his first dose of Koch antitoxin January 3, 1929, and he gained a pound a week for eighteen weeks. Afterward, on account of overwork at his trade as a carpenter, he had two or three severe hemorrhages and a rather stormy time because he persisted in going back to the use of tobacco, but now, after having five doses, the last December 27, 1933, he has made a perfect recovery, is past 74 years of age and still works at his trade.

Mrs. M.—72 years old. When I was called to see her she was confined to her upstairs room and in a sitting position in a rocker—not able to lie down. A large tumor mass bulged from the right hypochondriac region, which apparently involved the liver and gall bladder—the size of a one gallon crock.

She was dropsical, her limbs swollen and bursted until part of the flesh, fat and skin sloughed off from both of them below the knees. She was so short of breath, heart rate 130 per minute and at times uncountable—past 180. I prescribed the best of recommended remedies for such a condition with no results, and then decided, with her consent, to give a dose of the Koch antitoxin.

The antitoxin was administered on June 16, 1928. In three months the tumor was gone, and after sixteen weeks she was sufficiently recovered to go downstairs. Yet she had frequent relapses of the dropsical condition

for four years, possibly because she refused to live on a prescribed diet. After such a stormy time, she eventually made a recovery. She spent the last year, her legs both perfectly healed, visiting at her daughter's summer home. She was able to go out fishing and sit in a boat. However, late in the year she contracted a severe cold and developed pneumonia and died in three days, at the age of 78.

Miss M. S.—14 years old. Weight 102 pounds. Father died at age 31 of cancer of stomach. Her case had been diagnosed by x-ray and clinically as cancer of the stomach. She was so weak that she had to leave school.

On March 14, 1931, I gave her her first and only dose of Koch's antitoxin. September 4th of that year I examined her. She weighed 116½ pounds and felt fine. She went back to school. Has since married and is the mother of two fine children. Mother and babies all doing well when last heard from three months ago.

Mrs. D. C.—I removed a section of a tumor growth from the cervix, and the laboratory diagnosis at a local hospital from the specimen was carcinoma of the cervix. I gave her one dose of Koch antitoxin April 14, 1933. She had some attacks of petit mal preceding and following her operation which gradually dwindled out.

Last reports indicate that she is well at this writing and I believe that she would not be alive today if she had not had the antitoxin.

In more than ten years experience with the Koch treatment, I have had under observation and treatment 48 cases of cancer and 2 cases of tuberculosis to whom I have given the treatment. Two of the cancer cases had syphilis which improved without other treatment. Fourteen cases of cancer are still alive and 1 case of tuberculosis. Of the cases that died, 2 died from other causes after making complete recoveries from the cancerous condition, one living six years after recovery and the other three years.

The rest of the cases came in extremis and all succumbed in from four weeks to eight months after treatment, evidence that the toxins of the disease had so sapped their vitality before they applied for treatment that they did not have sufficient reserve to make repair.

I am proud to record that I have saved—cured, if you please—nearly 33% of my cases.

REPORT OF CASE TREATED
BY DR. J. M. JONES
Dallas, Texas

In 1926 I operated Miss J. H. at the City Hospital in Dallas and biopsy from the endometrium revealed rapidly developing carcinoma. The report was from the Parkland Laboratory. The depth of the uterus was fully seven inches. It was not removed.

She was given the Koch antitoxin and made a good recovery. She is able to work to support herself. At the time of treatment in 1926 she was 41 years old. This was the first case I treated with the Koch antitoxin.

Mr. J. N.—Age 66. Rectal cancer. Biopsy at St. Paul's Hospital, report—"low grade malignancy." Surgeon wanted to do a colostomy in August, 1934, but this was refused by the patient.

The antitoxin was administered in September, 1934, and last examination on October 26, 1935, reveals a normal rectum and complete recovery.

REPORT OF CASE TREATED
BY DR. A. I. BERNINGER
Indianapolis, Indiana

Mrs. I. C.—Age 61.

In 1925 I diagnosed her condition as sarcoma of the breast. Tumor very large. In my mind there was no question about the diagnosis and I advised the Koch

treatment. However, her family wished her to be operated, so the breast was amputated. Biopsy proved that the condition was sarcoma.

One and a half years later she came back to me with a recurrence throughout the operation area with red lines shooting out from the scar and pain in that region. Examination revealed that the disease had spread to the glandular system.

She was given the Koch treatment and in six months was free from any involvement. This was in 1927 and she is still in good health. Now 69 years old.

REPORT OF CASE TREATED

BY DR. RALPH ROBINSON

Cleveland, Ohio

Patient: Mr. W. A.—Age 55. Occupation, machinist.

Family History—A sister died of cancer of breast in 1911. A brother was operated in 1914 for ulcer of stomach.

Contact—Patient's first wife died in 1916 of cancer of bowel.

Present illness—In January, 1926, while at work he received a severe contusion of the left shin, which resulted in a large hematoma over the middle third of the lower leg. This was followed two weeks later by a thrombo-phlebitis of the left internal saphenous vein. The thrombus appeared to extend to practically all the superficial veins of the lower leg.

Pregrowth symptoms—Repeated attacks of dizziness for four or five years. Partial loss of control of muscles of legs. Eye symptoms were dimness of vision and occasional attacks of temporary blindness. Skin of the affected leg often felt as though it had been knocked

off. There was also a sensation as of drilling or boring into the leg, also a sensation as of an electric flash.

History of growth—The leg did not return to normal following the acute symptoms of thrombo-phlebitis, but remained greatly swollen, possibly two and a half times its normal size, making it necessary to wear an elastic bandage. In August, 1926, a small ulcer developed at the inner side of the ankle just posterior to the malleolus. This ulcer resisted all treatment. No X-ray or radium was used.

Examination—Examination February 21, 1927, revealed a man six feet, one inch, in height, weight 179 pounds, with good muscular development. He was somewhat anemic and his skin presented a very sallow appearance. The heart, lungs and abdominal organs were negative. The lymphatic system was normal except that the left inguinal glands were moderately enlarged. The skin of the lower left leg and foot was somewhat darker than normal and presented numerous pigmented areas. There was a small ulcer about three-quarters of an inch in diameter just posterior to the internal malleolus. Hemo-globin 80%.

Biopsy was done at this time and specimen report from Dr. H. G., Department of Pathology at Western Reserve University, was: "Diagnosis: Epithelioma. Chronic ulceration of skin."

Treatment—On March 8, 1927, the patient was given a dose of Dr. Koch's synthetic antitoxin for cancer.

Results—At the time of treatment, the ulceration area had taken on a very angry appearance (following biopsy). It then measured one and a quarter inches by two and a half inches, and was discharging rather profusely a very foul smelling seropurulent exudate.

Within twenty-four hours after the Koch treatment was given there was a marked lessening of the

discharge and a very decided improvement in the odor. Healing took place very rapidly, so that at the end of about two weeks the ulcerated area was not more than a fourth its original size. Reactions following treatment were never severe. They usually consisted of blurred vision, mild headache, a feeling as though he had taken cold, loss of appetite and an occasional slight drilling pain in the affected area. These reactions occurred following the first dose on the third, sixth, ninth, twelfth, eighteenth and twenty-fourth weeks.

Healing of the ulcer was complete on the 24th week following the first dose of antitoxin. Also the swelling of his leg, which was the result of the thrombo-phlebitis, had entirely cleared up and those veins were again patent.

Repetition of treatment—Doses of antitoxin were given this patient on the following dates: March 8, 1927; November 8, 1927; June 20, 1929; July 7, 1931 and July 7, 1934.

Following the administration of each dose of treatment there has been a marked improvement in the general condition of the patient as well as of the affected area. Hemoglobin increased to 95% within a period of four months following the first treatment. His weight gradually increased to 198 pounds, where it has remained. The sallowness of the skin disappeared and his color is very good. This man is now 63 years of age and in perfect health. He works regularly at his trade. He puts in from eight to ten hours every day and is on his feet constantly. He says that his health is better than it had been for the previous twenty-five years.

There have apparently been recurrences of the ulceration on dates that correspond with the repetition of treatment. In my opinion, they were not recurrences of the epithelioma, but simply varicose ulcers resulting from many varicose veins which he had previous to his

injury in 1926. The last ulceration occurred in June and July, 1934, and as the treatment given at that time did not bring about complete healing, an elastic bandage was applied, and healing made rapid progress.

This patient is in the best of health, eight and a half years since his first Koch treatment. He has during this time had no other treatment. There is still some pigmentation of the skin on his left lower leg, but there is no ulceration and no epithelioma. He presents no appearance whatever of malignancy.

REPORT OF CASE TREATED
BY DR. G. A. LEACH
Morris, Illinois

Mrs. C. M. came to me in January, 1927, with history of left breast removed a few months previous in a Chicago hospital, where malignancy was established by microscopic examination. Recurrent nodules were plainly manifest when I examined her.

I gave her the Koch treatment and she made a complete recovery, with complete absorption of all cancer involvement. She is now, and has been since the spring of 1927, a perfectly healthy woman.

REPORT OF CASE TREATED
BY DR. C. V. TEMPLETON
Great Falls, Montana

Mr. E. J.—Age. 28. Farmer.

Patient consulted me December 30, 1932, suffering from cancer of the face.

He gave the following history. In 1918, when 14 years of age, he was handling a dynamite cap that ex-

ploded in his hand, blowing off his thumb, front and middle finger at the first joint. Particles of the cap struck him in the face, cutting his face badly. The wounds on the face soon healed over and remained healed for five years. His face then began to break out and small particles of the brass cap worked out, but the places would not heal. It began to spread as an eczema-like eruption.

Two different physicians took sections from his face for microscopic examination and both reported the case to be malignant and said there was no cure.

January 10, 1933, he was given one cc. of the Koch antitoxin for cancer, and on June 2, 1933, a second dose was administered. At the present time his face has cleared up completely and I believe we have a cure in this case.

REPORT OF CASES TREATED
BY DR. J. B. CHAPMAN
Seattle, Washington

Mrs. M. B. W.—Age 57.

In 1927 developed a large lump in the right breast. Had had a blow on the breast several years before. A major operation was performed, as there was also axillary involvement. In November, 1931, the malignancy returned with a good sized lump in the scar tissue. This was also removed. A very small cancerous lump developed soon after the second operation.

The Koch cancer treatment was given on January 27, 1932. The usual reactions were noted, and the last small lump that appeared, gradually flattened and disappeared altogether. The patient has been under constant observation, but she has remained in the best of health.

Mrs. F. F. A.—Age 54.

Very nervous type. Had operation fourteen years ago for large uterine fibroid, pronounced non-malignant. Health has been fair since. Mother died of intestinal cancer.

About four years ago began complaining of peculiar feelings and distress in abdomen. I advised an x-ray examination. This request was complied with and the following report was rendered by one of the best x-ray men in the city: "Early malignancy in region of splenic flexure (of the colon). Filling defect in spleen flexures is evident with tenderness and a mass. Occult blood in the stools." Physical examination corroborated these findings.

A dose of Koch antitoxin was given April 19, 1932. Examination made June 17, 1932, revealed no traces of cancerous involvement. She made an uneventful recovery and has remained well ever since. The last examination, made October 25, 1935, revealed no evidences of malignancy.

REPORT OF CASE TREATED BY
DR. H. P. HESS
Pine Grove, Pennsylvania

Mrs. A. E. E.—Age 73.

Removed growth attached to helix of left ear April 27, 1934. Growth was a bleeding, granulating mass, size of a walnut.

Laboratory report: "Hyperplasia of lining epithelium, ulceration, sero-cellular exudate polynuclear infiltration, fibrosis, hyperplasia of basal cell type of cells infiltrating surrounding tissue. Basal cell carcinoma."

This woman had no treatment in any form before she came to me. Growth started December, 1933. Gave

treatment June 7, 1934. Pedicle to which growth was attached absorbed in two months. The ear was perfectly healed, with covering of smooth skin, slightly redder than the skin. She also had a growth in the sigmoid and rectum, nearly occluding the lumen of the intestine. Some bleeding on examination, also blood passing with stools. Growth was entirely absorbed at the end of one year. This patient is apparently in perfect health.

REPORT OF CASES TREATED BY
DR. H. E. MANTOR
Broadwater, Nebraska

Patient: Mrs. G. S.—Age 43.

Past History—January, 1917, had hemorrhage from uterus. Excessive bleeding followed until June, 1917, when uterus was removed for fibroid. Patient remained in poor health and unable to do her own work for two years.

Present illness—November 5, 1923, developed an acute cystitis. Examination revealed right kidney palpable and tender, pain in back. Red blood cells and granular casts in urine. In 1925 several severe attacks of pain in right kidney, much worse in winter of 1926.

Examination—Examination October 13, 1926, revealed right kidney greatly enlarged, reaching crest of ileum. Liver enlarged. X-ray examination showed no calculi. However, a mass of considerable density and about the size of a hen egg showed in the mediastinum about the level of the aortic arch. Weight 108 pounds. A diagnosis of malignancy with metastasis was made from clinical and x-ray findings.

Treatment—On December 21, 1926, Koch synthetic antitoxin was given. On December 29th patient was free from pain but had lost five pounds in weight. January

5, 1927, the weight was only 99 pounds. Right kidney had returned to its normal size and position and the liver enlargement had entirely disappeared. Patient felt much improved.

May 28, 1927, X-ray showed the growth in mediastinum reduced to about one-half its original size. Kidney and liver normal in size. Examination of urine revealed no abnormalities. Patient feeling well, weight 120 pounds.

No further x-ray examinations have been made. The patient has enjoyed good health up to date.

Patient: Mr. G. S.—Age 40.

Previous illness—Influenza 1919.

Pregrowth symptoms—Dizzy spells several years past, disappearing when present illness began.

Present illness—Had a tooth extracted April 1, 1930, following which left leg and foot became swollen, tender and painful, lasting three weeks. Also the right leg and foot became similarly affected for two weeks. May 3rd, 14th and 21st had balance of teeth extracted. At this time tenderness and distress developed in stomach. June 10th vomiting (bloody) began, also melena. Unable to retain much food. Patient had been treated during this time by two local doctors, but a definite diagnosis was not given.

Examination—First seen by me June 23, 1930. Patient had lost from 184 pounds to 124 pounds. Very weak and had six hemorrhages from stomach that day. Very pale and emaciated. Pain and tenderness over epigastrium. Definite induration felt in same locality. Patient able to walk but a few steps.

Condition and history suggested cancer. X-ray taken June 27th confirmed the diagnosis of cancer.

Treatment—Koch antitoxin given July 5, 1930. Severe reactions on July 8th, very weak, nausea and

vomiting. July 9th felt better. No further reactions occurred and improvement set in at once. Appetite returned, food enjoyed, no pain or nausea. In the first nine days after treatment the patient gained seven pounds. Four weeks later was able to be up all day and take moderate walks. Gained in weight to 186 pounds. This patient made a good recovery and has remained in perfect health for the past five years. He is feeling fine and driving an oil truck every day.

REPORT OF CASES TREATED
BY DR. S. EDGAR BOND
Richmond, Indiana

Squamous Cell Cancer of Skin

Patient: Miss N.—Age. 34. Telephone operator. Referred by Dr. D.

History—Mole removed from back between spine and inferior tip of scapula. Recurred as an invading growth, which was removed by an escharotic after taking a biopsy. The microscopic diagnosis was squamous cell cancer. It recurred more virulently and soon involved the spine, becoming a deep widely infiltrating growth. The surgeon advised against any interference, surgical or radiological, and sent her to me for treatment.

Examination—A hard mass, deeply infiltrating and exposing the bone structures forming a crater more than an inch deep and about three inches in diameter.

Diagnosis—By recurrences after removal and biopsy, and physical characteristics—squamous cell cancer involving spine structure.

Treatment—One dose Koch treatment given in 1926.

Result—Within six months there was no trace remaining except the scar, while the typical cachectic skin

became as soft as that of a baby, after peeling visibly. During the menopause she became alarmed of symptoms which were traceable to this period, and the following year I gave her another treatment. At this time there were no traces other than the old scar of her former malignancy in any part of her body. The result of this treatment was almost a complete rejuvenation of this period into a normal condition and its completion deferred until much later than usual.

In October, 1935, she was seen by me and there was no sign of malignancy. On the contrary, she had the appearance of a woman ten or fifteen years younger than she is. There is no doubt that as a rejuvenator of the entire endocrine and glandular system, the Koch treatment becomes a rejuvenator of the first magnitude.

Cancer of Mouth

Patient: Mr. L. O. M.—Age 55. Tailor.

History—During winter of 1929 a lump appeared in region of the first molar. Extraction of teeth failed to relieve condition. Section of the growth revealed cancer.

Examination—April 10, 1930, I found almost the entire roof of the mouth involved with a deep seated growth of typical carcinoma. Breath foul, skin dry and appearance cachectic. Lost 40 pounds in weight.

Treatment—Koch antitoxin given April 18, 1930.

Results—Continued to lose weight until May 17, 1930, when healing began and continued until August when the entire lesion was healed and normal weight was acquired.

This patient had developed considerable kidney disturbance with sclerosed arteries for several years. Some myocarditis had developed with high blood pressure. Under the recuperative power of the antitoxin, these conditions improved during the year that he was under my direct care, but were never eliminated entirely. This

condition was evidently the penalty of his sedentary life. I observed this patient at intervals during the next four years and there was no noticeable return of any former trouble.

Recurrent Cancer of Breast

Patient: Miss S.—Age 39. Schoolteacher.

History—A cripple for many years, yet an active schoolteacher. Case referred by Dr. D. for treatment with antitoxin due to return of cancer of breast which had been removed several months previously. The mass was diagnosed as cancer, microscopically.

Treatment—Antitoxin given during the spring of 1927.

Present Illness—Skin the color of light oak. All glands to the elbow involved and enlarged. Breast running sore, nodular. Liver involved, enlarged and nodular. Tumor of uterus and abdominal area. Patient very ill, dull and melancholic. Typical odor from open breast sore, abdomen very tender.

Results—By August the skin discoloration had disappeared and the lumps were almost gone. Healing took place and the patient attended summer school. Two years later her crippled limbs forced her to discontinue teaching and remain at home, but no evidence of return of malignancy has shown up yet.

REPORT OF CASES TREATED BY DR. ROBERT JAENICHEN Saginaw, Michigan

Mr. J. M.—Age 41.

May 11, 1931, came in with a pint jar of blood, which he said he vomited. He had been having extreme epigastric pain for many months and was able to eat only

a small quantity of food at a time and this was followed by considerable distress. He had been losing considerably in weight and getting weaker. Has had slight hoarse cough with slight discomfort in his chest. Weight 132 pounds.

The followng x-ray report of the gastro-intestinal tract and chest was given by a full time roentgenologist:

"Gastro-intestinal studies fluoroscopically and radiographically. Fluoroscopically we observed presence of an opacity in the left base of the lung. Oesophagus was clear. Stomach showed a constant large filling defect on the posterior wall of the stomach in the region of the media. Duodenal bulb was normal. It was difficult to demonstrate this defect in any of the routine positions. We would consider it as indicating a gastric lesion. Radiographically we would not make statement as to the nature of the lesion whether ulceration or neoplasm. There was a small gastric retention at six hours. Colon was negative.

"Stereoscopic film studies were made of the chest. Left lung field shows almost complete radiopacity of the base. Some shadows are observed radiating from the hilus, which we would not consider by any means typical of tuberculous lesion. General appearance of the chest is more suggestive of a neoplastic infiltration."

One ampule of antitoxin was given May 18, 1931. His improvement was spectacular. His appetite became tremendous and his gain in weight was rapid, so that by June 9th (22 days) his weight was 157 pounds, a gain of twenty-five pounds. His epigastric pain and distress after eating also subsided rapidly. He has been watched rather closely to date and when it was found he was losing a few pounds in weight or having any epigastric distress extending over more than a few weeks time, he was given further treatment. He was given an additional half ampule of antitoxin on the following dates: September 17, 1932; March 25, 1933; February 2, 1934 and July 13, 1934.

He remains in good health four and a half years after his first treatment and is able to do heavy manual labor.

X-ray of the chest taken February 1, 1934, about two and a half years after treatment, shows the dense shadow in the lung considerably smaller and being replaced by air containing lung tissue.

SOME CASES SUBMITTED BY DR. C. DOVE,

WEST PALM BEACH, FLORIDA

Hypertrophic Arthritis Deformans

Miss R. A. H.—Age 39 yrs.

Trouble started at age of three with soreness and stiffness in joints and constipation and steadily became worse. At age eight she entered both the Johns Hopkins and Mayo clinics where the condition was diagnosticated and a hopeless prognosis given. In spite of all medical aid the deformity spread to every joint in the body and she became nearly motionless. The pains persisted while hypertrophy gave way to atrophy as in other structural allergies. During this entire period persistant headache was endured.

Treatment—One cc. of the Koch fluid was given in January, 1932, and again in the following year. Soon after the first treatment the headaches stopped and the joint pains disappeared and the latest joints affected became more movable. The improvement continued throughout the body, with absorption of the hyperplastic tissue and some regeneration of atrophied areas and restoration of fair motion. She is able to walk about and do her work comfortably. The improvement is still going on at a steady rate. She estimates that eighty per cent of normal motion is now restored. Her health is otherwise excellent.

*Cancer of Pyloris with Complete Obstruction
For One Month*

Mr. H.—Age 63 years.

Had been complaining with stomach attacks of pain and vomiting for three years before he became bedfast. Finally complete obstruction of the pyloris was established, no food whatever could be taken for a month. He lost from 275 to 184 pounds in the last few months. A large mass could be palpated in the epigastric region. There was one nearly fatal hemorrhage from stomach and one from the bowel, which indicates the wide distribution of the lesions. There was agreement in all diagnostications made at various hospitals previous to my examination, that it was a case of hopeless cancer of the stomach.

Treatment—The Koch fluid was given in June, 1934, and recovery was very prompt in following. Severe reactions occurred only once. He was able to take a little food in seven days, had some bleeding on the tenth day, and steadily improved thereafter. He now weighs 276 pounds and is in perfect health with good stomach function. He probably appears a little younger. Physical examination reveals no trace of the tumefactions.

Squamous Cell Cancer of the Hand

Dr. P. C. B.—Age 71.

Small cancer between thumb and first finger size of quarter, was treated vigorously with radium unsuccessfully and later with escarotics unsuccessfully. Was spreading steadily for the following six months when he came to me.

Treatment—One cc. of Koch Fluid was given March 26, 1934, and recovery steadily followed to completeness within eight months. He is in perfect health. The hand shows no abnormality whatever.

Exophthalmic Goitre

Mr. N.—Age 56, weight 165.

Classical severe toxic goitre with tremor, loss of weight, perspiration exophthalmus, extreme nervousness, goitre, high plus metabolism. Recovered completely after two treatments of Koch Fluid given July 17, 1934, and June 19, 1935. Gained 40 pounds. Recovery is complete from all symptoms.

CHAPTER IX

REACTIONS, FREQUENCY OF TREATMENT, DOSAGE, DIET,
HYGIENE

It was indicated in several of the histories presented, that recovery is a rhythmical process in which positive and negative phases, or improvement and reaction alternating at regular intervals is the rule. The negative phases are called reactions, and they come at three and one-half day intervals and at three week intervals or periods of time that are multiples of three weeks. Thus 24 hours after the injection was given, or three and one-half, seven or ten days later, or during the third, sixth, ninth, or twelfth week or any multiple of three weeks, especially either at 12, 24, 36 and 60 weeks later, aggravation of the usual symptoms of the particular case, with fever, chills, and general achiness and swelling of the growth area, with increased tenderness or painfulness for a number of hours, is expected in any sufficiently treated case.

Generally only one or two such reaction periods is noticed by the patient but careful observation will reveal some evidence of the reaction every three weeks. 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 it is completed and another injection must be given. At times one injection does not really establish a recovery process and it must be repeated.

Inward time measured by intervals associated with physiological events, to which Carrell has called our attention, is revealed here in a new unit of three and one-half days which can be grouped in larger periods, in the manner described above. The phenomenon is a function of colloidal behavior belonging to the most fundamental processes of life, including the immunity mechanism.

Its practical significance relates to the repetition of the dose which should never be done during the positive or improvement phase of the cycle.

Sometimes reactions reflect hereditary injuries remote from cancer. Thus delirium tremens has been observed to take place during recovery in a man who never drank liquor, but whose father and grandfather and perhaps great-grandfather drank themselves to death. It is during these reactions that the pathology is lifted and normalcy takes its place. The intervening intervals are periods of improvement and greater and greater well-being. The decision as to whether reaction or true advancement of the disease is at hand requires some acquaintance with the process, but as a rule the differentiation is simple, after a little experience has been gained.

The dosage must be estimated from photo-chemic considerations and not from a gravimetric standpoint. There is something more in the chemistry of dilute solutions than one is concerned with when working with concentrated materials. The more a solution of a fluorescent substance is diluted, the greater the fluorescent efficiency beyond as well as within the range of visual perception. Thus increasing the dilution of the substance increases its electronic activity. The fact that the critical temperature of a reaction can be lowered by dilution indicates how the colloids by adsorbing the reactants may remove them from solution until they exist in sufficiently high dilution for optimum reaction rate at the temperature of the body. This possible function of the colloids must not be overlooked, and in the observation of the recovery process in a cancer patient under treatment we must check up on the restoration of a correct adsorption power of the colloids. Thus in cancer or where the progress of the disease is not correctly checked by treatment, a one per cent solution of sodium chloride will not cause crenation of the erythrocytes. Instead they imbibe the water and swell up. In health or when a correct progress has been established, the

erythrocytes crenate rapidly in a one per cent salt solution. Therefore we must conclude that in disease a splitting of the colloid molecule into a number of molecules has taken place which increases the osmotic pressure above that of the one per cent salt solution. Tissue colloids that have thus become lysed have lost true adsorption power so important in mediating the normal chemical reactions, and for best action it is necessary to dilute the agent we use optimumly to compensate for the inability of the colloids to accomplish this function. Repetition of the dose to attain correction of the adsorption deficiency must be made at a time favorably placed in the reaction cycle.

One should never repeat during improvement, but only when the blood cells do not crenate properly and when there is definite evidence that the disease is progressing. The problem of correct dilution comprises even more than the preparation of a solution of proper percentage. It aims at a dispersion of the substance which is most favorable to its electronic activity, and the absence of anything that might interfere with this activity. Therefore, the problem of even the slightest contamination in the preparation of the treatment takes first importance and this holds true also in the usage of the treatment material clinically, thus we find that metallic content is highly disastrous. A short large bore hypodermic needle is employed and the material is passed through the needle as rapidly as possible in making the injection to minimize its contact with metal.

The procedure of choice then is to give one dose ($1\frac{1}{2}$ C.C. of the solution) or if there is any reason for particular anxiety to give three doses at the outset at 84-hour intervals and not repeat again, allowing recovery to become completely established without further treatment if possible. Usually recovery is established or the treatment effect has become exhausted at the 24th or 36th week and accordingly the dose should or should not be repeated.

Whether or not the dose should be repeated after recovery is fully established is a matter of debate. Our very first cases that recovered from far advanced cancer have remained well for as long as eighteen years. Some of these older patients have come in for a repetition of the dose even though they were in perfect health simply because they feared the disease may start again unless they were protected. Such repetition though harmless need not be oftener than at intervals of several years, for the pre-cancer toxic state generally lasts from three to fifteen years before it excites a neoplastic response. The heredity of the patient will help decide, for the longer the hereditary responsive exposure to the toxin, the greater the sensitivity of the individual, and the shorter is his pregrowth toxic period. One frequently observes that the growth becomes manifest in the offspring from five to fifteen years earlier in life than it became evident in the parent; and this interval has been observed to repeat itself in as many as four generations. However if any of the pregrowth toxic changes are observed to return and stay longer than transiently, the dose should be repeated. A routine repetition is an advantage to maintaining a very high level of health even when cancer is not considered, and seventy-two weeks should be the shortest period I believe. Perhaps every three years would serve well. However some have recovered and remained well many years without thought of further treatment.

DIET AND HYGIENE

A vegetarian diet avoiding eggs, fish, meat, and supplying fresh vegetables and fruits, and whole grain cereals will be found in harmony with the chemistry of recovery. If fresh vegetables and fruits can not be obtained the dried variety will work well, but tinned fruits and vegetables are not to be used. It is a great advantage to eat raw foods when possible because of the vitamin content. Tea, coffee, chocolate, spices, alcohol and tobacco are absolutely forbidden and likewise the coal tar medical preparations and aspirin, the salicyl-

ates barbital and luminal must be avoided. Aluminum cooking utensils must not be used. The ordinary granite or iron or stainless steel and nickel steel are preferable.

The bowels must move well each day, the enema made with pure warm water and table salt should be used if needed and as often as needed, but sometimes "perinkret" or milk of magnesia will be preferred. A big drink of warm water before breakfast sometimes works well. At any rate the maintenance of a pure food and good elimination regime will go a long way towards the success of the treatment.

SUMMARY

We have grouped in this paper a few instances of recovery from incurable disease by a synthetic attempt to provide natural immunity. The nature of the recovery process is also briefly described, with the theory of the clinical procedure. Corrections of basal metabolism changes and blood pressure abnormalities have been reported with Professor Maisin in the proceedings of The Societe General de Biology, June, 1935. With the examples given here they demonstrate that natural immunity is a general affair belonging to good physiology, correct uninterrupted oxidation and consequent normal function. Allergy in the anaplastic cell expressable only as catalyzed cell division constitutes malignancy. This like allergy in the functioning cell which can secrete or contract excessively expresses the negative phase of immunity. The activity of the unsaturated diketones restores the normal oxydation chain, thus instituting the positive or immune phase. Thus pathology is the result of interrupted physiology, whether the difficulty be neoplasia, acute and chronic infection, protein or bacterial allergy, abnormal endocrine function or interrupted development as infantilism and idiocy; it can be corrected by restoring the normal physiological oxydation mechanism. It should be emphasized that for successful results, expertness and the most scrupulous care and cleanliness are required in the preparation and clinical use of the treatment materials and good clinical judgment is needed in the conduct of each case.

(FOOTNOTE TO PAGE 18)

The electronic migrations between oxygen and carbon atoms institute an oxidation chain reaction destructive to the offending negative oxidation catalyst, and thus accomplish its removal. Moreover, by virtue of the radiation absorption ranges of the unsaturated bonds between its carbon atoms and between its carbon and oxygen atoms photochemic extinction of the negative catalyst by "resonance induction" of Perrin also results. Thus the offender is at first immediately inactivated and thereafter destroyed by either the Glyoxylide or the Malonide through the two photochemic processes. Interference with the process through other oxidation mechanisms could scarcely be feared, but the presence of other bodies capable of "resonance induction" in the same spectral ranges may quench the reaction when once started. The worst offender is a repeated dose of either molecule should this be done during the phase of their ascendant activity, unless the repeated dose is exceedingly more highly diluted and hence more highly photoactivated.

Appreciable detoxication through a large crude dose or repeated small doses of the offending toxin, especially when the molecules are not so highly photoactivated, may be had since they absorb the energy of the activated toxic molecules by collision. This is what I believe takes place during anaphylactic desensitization by one or more following doses of the same foreign protein. Vaccines may also act in this way.

A common detoxication result observed from the use of neutral salts like sodium iodide should be attributed to the action of the displacement electrons in the peripheral shell of the atoms of the negative ion. Their efficiency follows their ease of deformability in the following order: $I^- > CNS > Br^- > Cl^- > Ox^-$ etc. It is in this way that iodides neutralize the toxic cause of the gumma.

Toxic materials increase the blood and tissue viscosity and thus protection from quenching collisions is had so that an agent like oxygen, which lowers the viscosity, aids in their extinction through collisions with molecules of the solvent. Thus it is that a high grade of dispersion of the tissue colloids prevents and destroys toxic action and contributes to the natural resistance to disease.

Whatever else may be said of the effects of X-rays upon living tissues, one fundamental consideration cannot be omitted for all of its other effects depend upon it. Radiation causes losses of electrons from the nuclear shells of the atom and these are replaced by withdrawing valency electrons from the peripheral shell. Thus the electrons that normally engage in chemical reaction are no longer at hand for such purposes and the atom is more or less abnormal. Such an atom may attract an electron from another atom in which displacement is easy and cause still further disturbance and interference with an otherwise normal chemistry. Consequently, a toxic action more or less serious takes place. Inactivation of atoms in this way may suppress the chemistry of a malignancy for a gratifying time and put an end to a normal tissue or function. Thus the cumulating toxic effects that necessarily result may reasonably be anything, even fatal, either early or very late after the X-ray exposures.

Further discussion of the photochemistry of common therapies could be given but enough is said to contrast these behaviors with that of the Glyoxylide and Malonide molecules, for these actually destroy the toxin in the oxidation chain which they restore. These substances also serve a continuous immunity through their photochemic "after effect." Since the offending negative catalyst extinguishes the oxidation chain and thus throws the pendulum,

as it were, far to one extreme so the positive oxidation catalysts swing it to the other extreme, and after a series of undulations equilibrium is established in the positive oxidation direction as a continuous after effect reaction. Thus the normal or immune oxidation chain phase is reached through a series of cycles in which the negative phases are called "reactions" and in which the positive phase is finally perpetuated as the normal dominant oxidation chain reaction. The reaction fevers observed are not due to loss of electric charges from the tissue colloid particles in the form of heat as occurs in disease, but result from the burning of accumulated unoxidized materials that have encumbered the chemistry of the tissues during the period of activity of the etiologic toxin.

RULES FOR REPEATING DOSE

Generally only one dose is given, but in the urgent case such as where an urgent obstruction is present or a rapid downward course is found, the dose is sometimes repeated at the start; otherwise the repetition is made as a rule just after the twenty-fourth or thirty-sixth week or later, but only if required.

If the dose is to be repeated at the beginning of treatment three doses are given at three and a half day intervals.

If definite subjective or objective improvement or a reaction takes place before eighty-four hours elapse after the injection, do not repeat.

Generally no repetition is required but under certain conditions the dose may be repeated during the fourth or the tenth weeks or after the twenty-fourth week has passed. Many very severe cases recover on but one dose.

The characteristics of the reaction are achiness, chills, fever, increased focal pain, swelling of the growth area, or definite aggravation of the existing symptoms such as does not ordinarily take place. Thus, reaction may start twelve, eighteen, twenty-four, or thirty-six hours or later after the treatment.

Never repeat the dose seven days after the first treatment if two doses are given. If such repetition is made another dose is required in seven days. Never repeat during the seventh, fourteenth, twenty-first, or twenty-seventh weeks. Keep this in mind in contemplating repetition of the dose so this period may be escaped and the dose given at a favorable period when the patient is giving signs that the previous dose is insufficient. Never repeat while improvement is in progress, even if slow.

(FOOTNOTE TO PAGE 25)

A more detailed statement as to the mechanism of allergy in general and its means of correction as I view the subject is here given for those who care to study it. This is a working hypothesis based upon the established experience of photochemistry which answers all of the clinical and biological facts so far observed.

Allergy or the hyperactivity of any cell function such as secretion, contraction, or cell division not under physiological control is the result of the sensitizing action of a fluorescent substance adsorbed into the colloidal surfaces of the functional mechanism concerned, whereby the fluorescent substance directs the energy liberated by the usual exothermic reactions going on in the cell, into the functional mechanism adsorbing it, and here this energy activates or accelerates the chemical reactions of this function. Thus the hypersecretion of hay fever, the spasms of asthma, or the increased cell divisions of neoplasia are instituted and maintained and in the same manner other allergic activities are brought about. Most of this energy is evolved in the hydrolysis of glucose to lactic acid amounting to 370 calories per gram of lactic acid produced. Yet very little energy is required to maintain an allergy of the nervous system. One cell group, continuously generating impulses that traverse a train of neurones associated in one concept, establishes a fixed idea, a second personality, a neurosis, or some other functional error of insanity.

Fluorescent substances are able to absorb energy either of radiation of certain wave lengths or the energy liberated by exothermic chemical reactions in progress in the medium where they exist. In so doing they become a second system which owing to their limited storage capacity reverts to their original state immediately giving up this energy, either as radiation of lower frequency or as chemical energy without degradation, if the fluorescent substance happens to be held intimately adsorbed into the surfaces of a reactive substance capable of serving as an acceptor of this energy. In this case the energy received activates or accelerates the chemical processes of the acceptor. A fluorescent substance behaving in this way is called a photosensitizing catalyst. In order to serve in such capacity, both it and the acceptor must be able to absorb energy in the same spectrum ranges at a different range from that at which sensitization takes place, at which later range only the sensitizer can absorb energy. Thus the specificity of absorption of both sensitizer and acceptor, exists at a different energy level from that at which the sensitizer absorbs the activating energy it passes on to the acceptor. Thus the latter becomes activated by energy which otherwise would not affect it. The fluorescent agent also is affected by this energy and as will be seen the chemical resistance of the system it involves is removed so that it, itself mediates a chain reaction using lactic acid as a reactant and evolving energy which also contributes to the allergy. So in two ways energy for activation of the "hot" molecules of the carrier of the normal oxidation chain is removed from the reaction field and the carrier is not formed to continue the oxidation process beyond lactic acid. When the fluorescent substance behaves in this way it serves as a negative catalyst to the oxidation mechanism since it is taking up energy ordinarily absorbable by the carrier of the normal oxidation chain, and hence it must contain the same structural groups as the normal carrier. They are both subject to the same chemical reactions, therefore, and absorb energy in the same ranges competitively. This point is employed in building the chemical substances used to destroy

the fluorescent sensitizer of allergy which is also the negative catalyst that prevents the production of the carrier of the normal oxidation chain in the pathogenesis of cancer.

Since fluorescence depends upon the unsaturated valences between carbon atoms, between carbon and nitrogen, and between carbon and oxygen atoms, and since all forms of allergy depend upon this fluorescence, only one substance so constructed that it can destroy the fluorescent property is required to overcome all forms of allergy even including the allergy of the plastic system, neoplasia. Inasmuch as catalysts are active in low concentration it is important that the reaction by which the fluorescence is removed should bring about a complete removal of every trace of the fluorescent structure. This cannot be accomplished in a reversible reaction. Only a reaction chain in which the fluorescent substance serves as one of the reactants and the treatment measure is the carrier of the reaction could be expected to succeed completely. A brief statement on the nature of chain reactions will explain this point. Their characteristic features are that the reaction is mediated by a "carrier," an activated molecule or atom. This carrier renders the fresh reactant molecules active. The carrier once formed establishes a cycle of consecutive reactions which reproduce the carrier and produce the resultants as by-products of the cycle. High quantum yield results. The chain can only be ended by complete conversion of the reactants or by a destruction of the carrier, and the latter can only be done by processes other than those that maintain the chain. Hence the last survivor of the chain is normally the carrier which in the case at hand may remain adsorbed in the colloids any length of time to reestablish the chain if fresh reactants ever enter the field again. The process then ends in immunity which, I have clinical observations that indicate, may be passed on to the next generation.

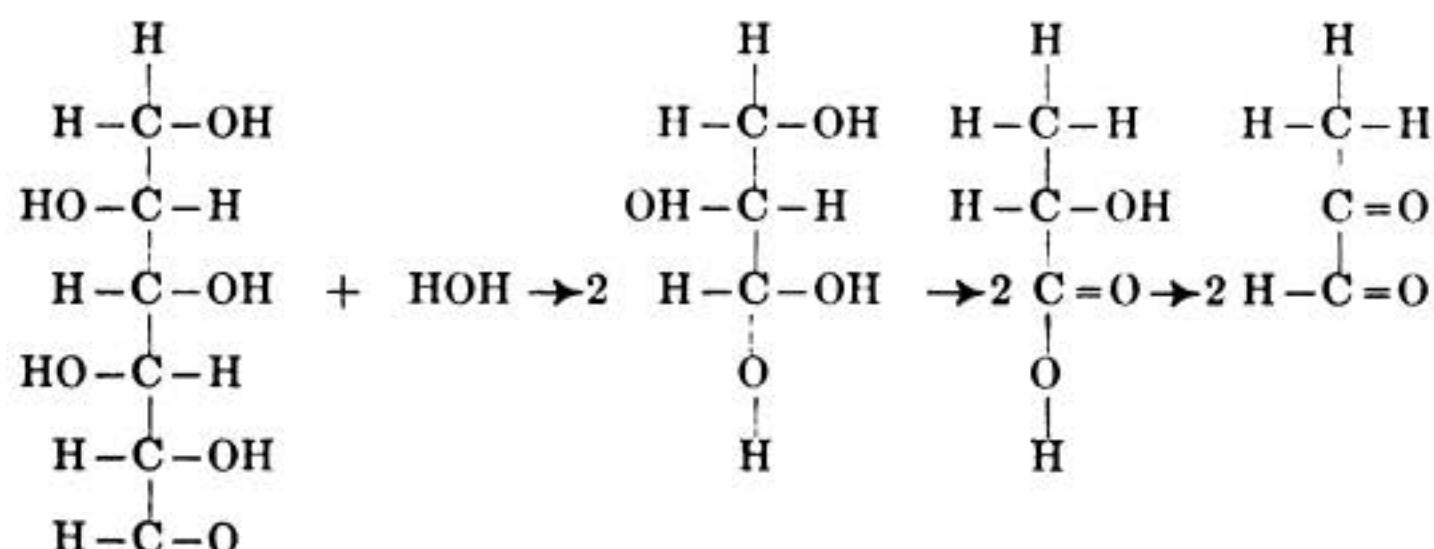
Since the normal oxidation chain is interrupted in the pathogenesis of malignancy and must be restored, the corrective measure to be preferred is that substance which both reestablishes the normal oxidation of lactic acid and engages the fluorescent groups in a vigorous oxidation chain reaction. Hence the unsaturated groups exhibiting the fluorescence and peroxide oxygen available in the body are employed as the reactants. The carrier chosen is the structure $O=C=C=O$ or less advantageously $O=C=C=C=O$ which it seems to me serves as the carrier of the normal oxidation chain. These substances are supplied therapeutically in loose combination with protective molecules or as precursors from which they are liberated in active form in the body. The determination of this "carrier" structure depends upon an original interpretation of sugar oxidation.

Our present knowledge of the normal oxidation process is quite rudimentary in spite of the enormous amount of careful work this subject has commanded. We know that sugar is first converted to pyruvic aldehyde and to lactic acid in part at least before it is converted to carbon dioxide and water. But the intervening steps are not known for certain and the intermediary products so far proposed do not fully answer the conditions at hand so a different system must be adopted. We know that in the oxidation of fatty acids oxidation takes place at the beta carbon atom so that two carbons are removed at a time, but the intermediary substances that precede the production of carbon dioxide and water are not known here with certainty either. It is proven too that for the oxidation of fats sugar is needed, thus to burn lower degradation products such as aceto-acetic acid and beta

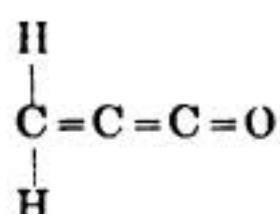
oxybutric acid a molecule of sugar is required. So far at least the normal oxidation process has not been interpreted as a chain reaction mediated by a carrier, except as I have found it necessary to do so in the pursuit of this research. Indeed without this interpretation of the normal oxidation mechanism, it would not have been possible to devise this means of correcting allergy. Though theoretical, it has served a practical purpose and very probably is the correct interpretation. It may be described thus: For each two molecules of glucose hydrolyzed to lactic acid, one molecule of glucose is dehydrated between the second and third and between the fourth and the fifth carbon atoms. Thus the first steps in the breaking down of glucose are hydration dehydration affairs, energy evolved by the hydration being employed in the dehydration process.

Lactic acid and pyruvic aldehyde differ only in the shift of water moieties, hydroxyl and hydrogen and the change back and forth goes on easily in the body. Pyruvic aldehyde and lactic acid each by dehydration yield $H_2=C=C=C=O$. One molecule of glucose, by dehydration between the second and third and between the fourth and fifth carbon atoms gains two unsaturated unions at these positions which can take up peroxide oxygen and split to form three molecules, one of glycollic aldehyde and two of glyoxylic acid. The former by further internal dehydration yields one molecule of ketene and the latter yield two molecules of the diketone glyoxylic anhydride which we call glyoxylide for short. The glyoxylide serves as the carrier of the oxidation chain and is regenerated from the reactants with each cycle as is pictured below. The oxidation of aceto-acetic acid and of beta-oxybutyric acid cannot in a similar way produce a molecule of glyoxylide to mediate the oxidation of fatty acids so they remain unburned until a molecule of glyoxylide is supplied by the normal burning of sugar. As here pictured one molecule of glyoxylide can mediate the complete combustion of aceto-acetic acid or of beta-oxybutyric acid. Thus the glyoxylide molecule serves as the missing link both in the oxidation of sugars and of fatty acids. Here it appears to be the important immunity substance which is missing where allergy takes root, and when supplied it burns up the allergenic agent in a new chain reaction in which it also serves as carrier. Since in chain reactions the carrier is the last survivor of the reaction chain, after the reactants are used up then the glyoxylide remains to hold immunity.

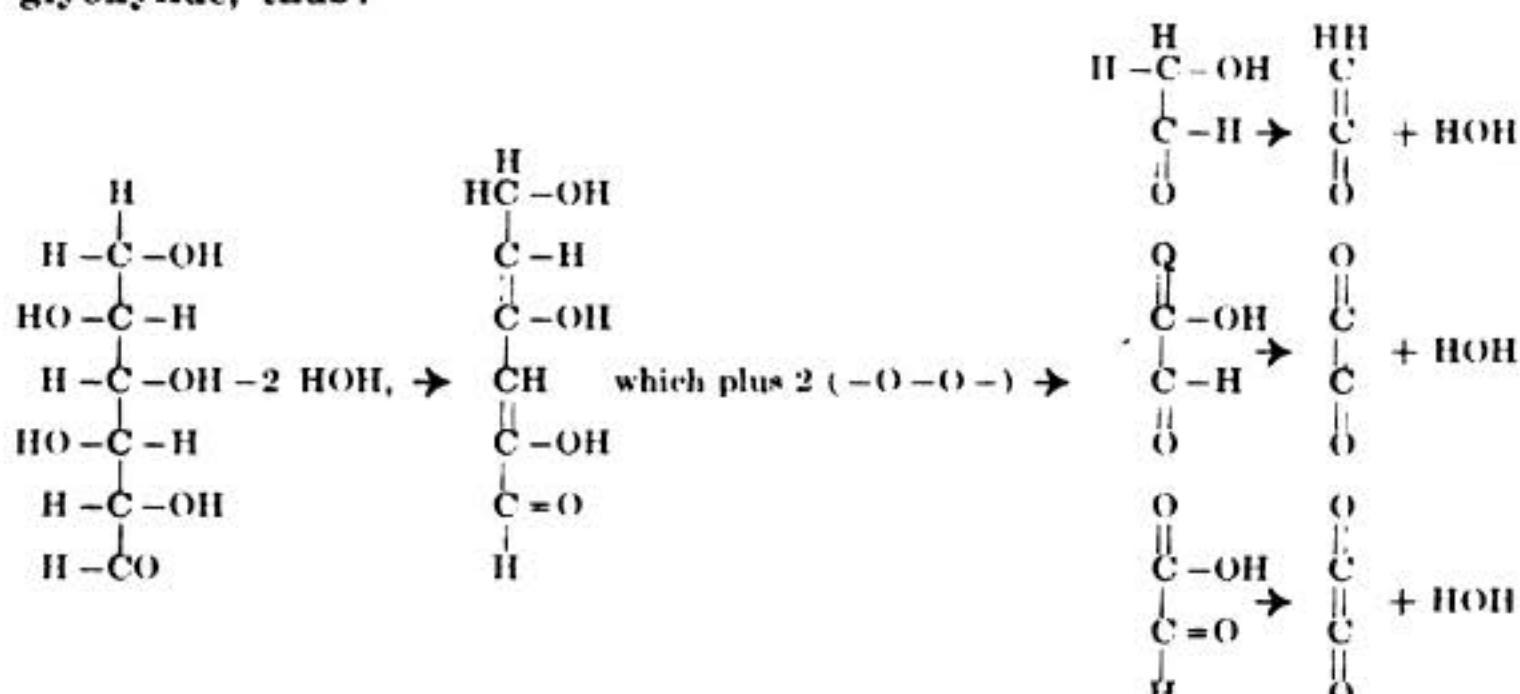
Glucose adds water undergoing hydrolysis to lactic acid or pyruvic aldehyde, thus:



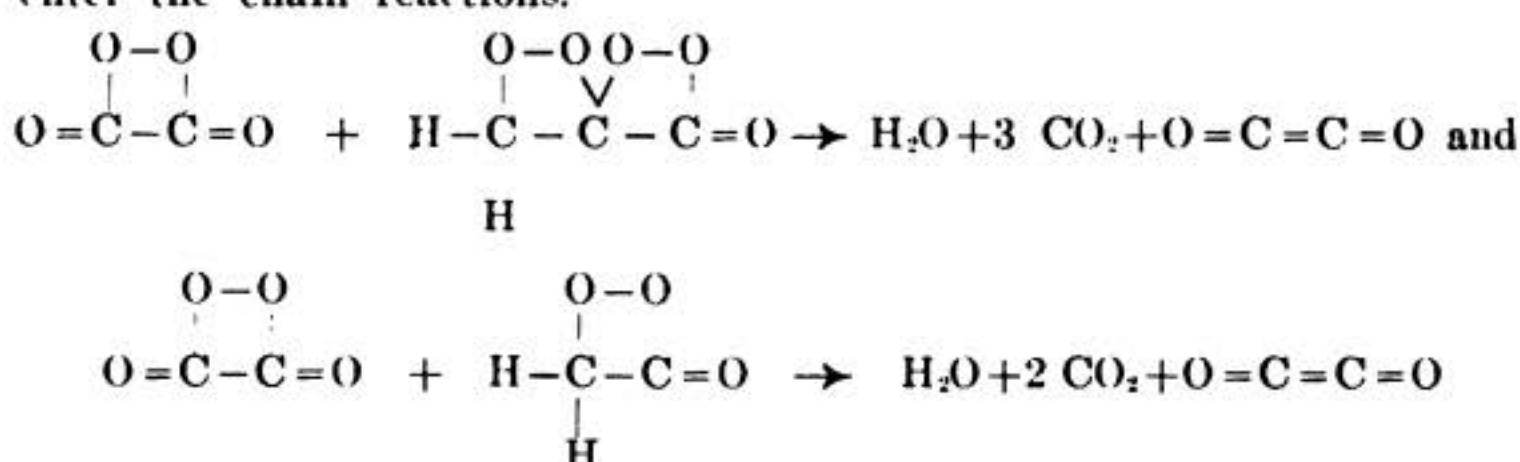
By internal dehydration lactic acid or pyruvic aldehyde loses two molecules of water to become the ketene of malonic acid which we call malonene for short, thus:



For every two molecules of glucose so changed to lactic acid and malonene at least one molecule of glucose by dehydration at the second and third and at the fourth and fifth carbon atoms yield unsaturated unions which take up peroxide oxygen and split into one molecule of glycollic aldehyde and two molecules of glyoxylic acid. These by internal dehydration yield one molecule of ketene and two of glyoxylide, thus:

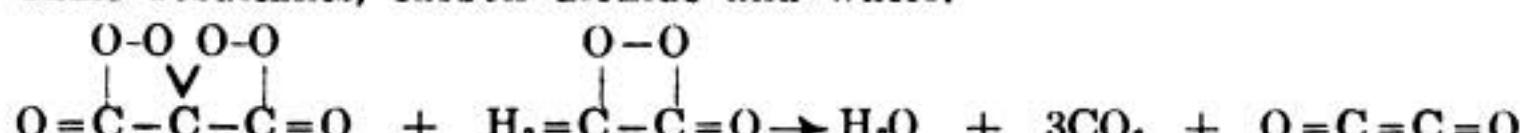


These substances add peroxide oxygen and are thus activated to enter the chain reactions.



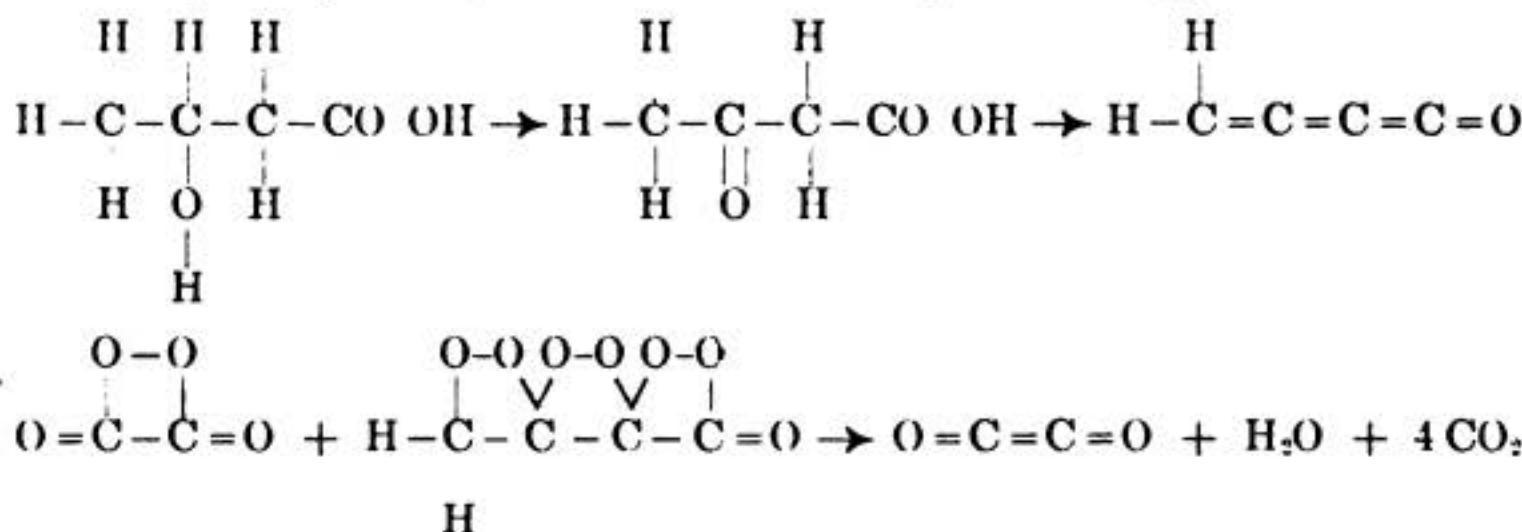
Thus the carrier $\text{O}=\text{C}=\text{C}=\text{O}$ is regenerated with each cycle and the products are water and carbon dioxide, the reactants being fully burned.

In like manner the internal anhydride of malonic acid $\text{O}=\text{C}=\text{C}=\text{O}$ mediates the same combustions forming the carrier glyoxylide and the same resultants, carbon dioxide and water.



Glyoxylide also serves as carrier of the oxidation chain which

burns aceto-acetic acid and beta oxybutyric acid after the latter are internally dehydrated, and have combined peroxide oxygen thus:



In this case the carrier is regenerated and a true chain reaction is conducted. Not only does the glyoxylide liberate the oxygen of peroxide but it catalyzes the oxidations of tissues in the Warburg chamber, increasing the oxidation rate about thirty per cent in two hours. As we have seen potassium glyoxylate or an alkaline solution of glyoxylic acid or of formic acid produce a certain amount of glyoxylide. But in the diseased animal body the matter is not so simple as in the Warburg chamber and the substances just mentioned rarely release the glyoxylide actively enough to correct the pathogenesis where the toxic agent has for a long time absorbed deeply into the tissue colloids, especially where malignancy is established. In such instances a superior very active production of the glyoxylide is required. Whereas the alkaline solution or salts of glyoxylic and formic acids have yielded much benefit and sometimes full recoveries in some cases of cancer, tuberculosis, leprosy and syphilis showing marked allergic symptoms, the far advanced cases and such difficult disease situations as coronary thrombosis with killing pain, require the glyoxylide as produced from the peroxide of formaldehyde and from the sulphonic acid derivatives of ethyl ether, for the most satisfactory progress and recovery.

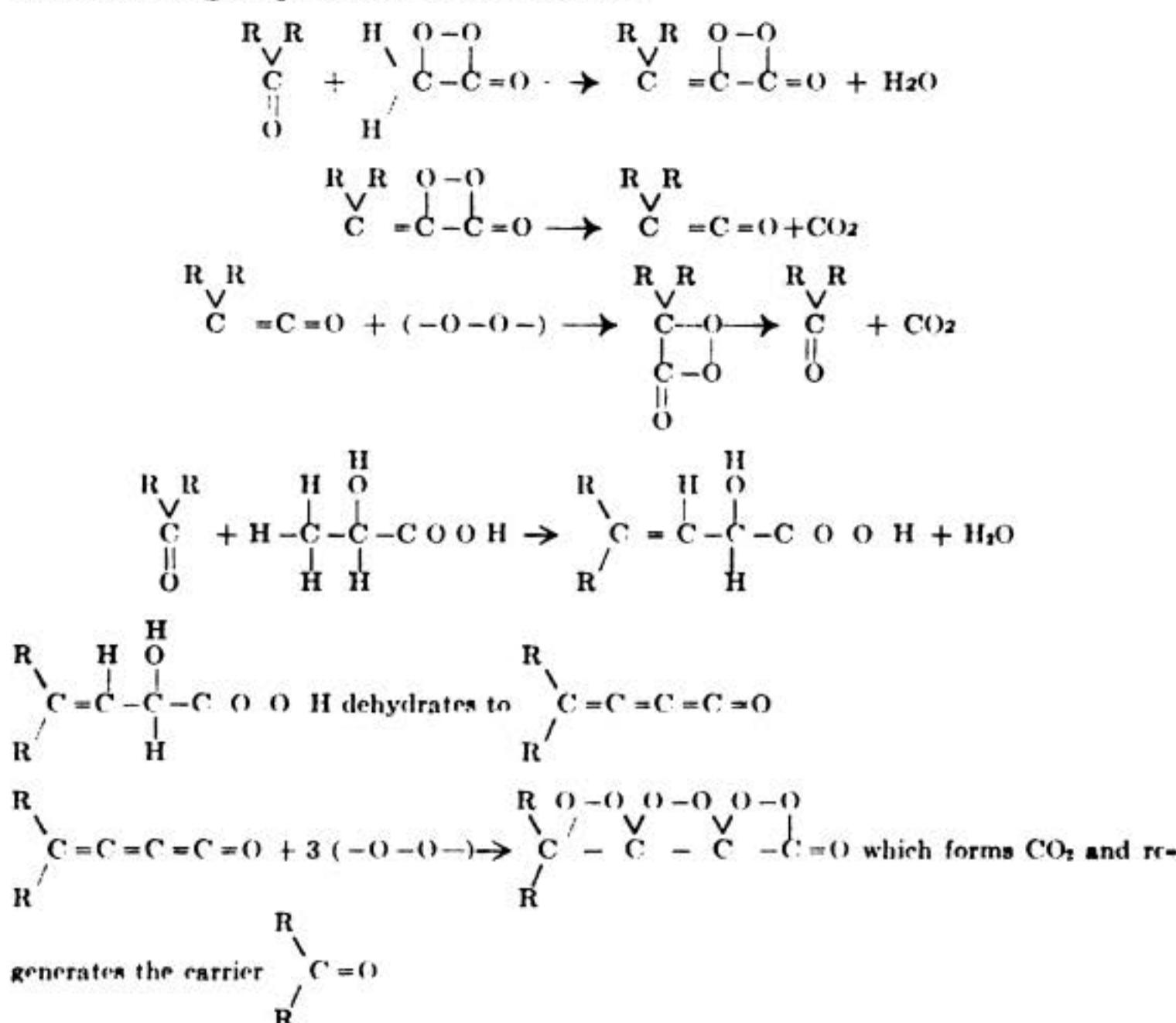
In the anaplastic cell the only allergic response possible takes place in its reproductive mechanism so the result must be a continuous hyperplasia, so long as the fluorescent agent is present adsorbed in the colloids of the reproductive mechanism, and so long as exothermic reactions are going on in the cell. In malignancy sugar is converted to lactic acid only. The energy liberated up to this point is diverted by the fluorescent agent into the reproductive mechanism where it activates cell divisions. Known carcinogenic substances, the anthracene derivatives, in concentrations of one to a thousand destroy the differentiated functional mechanisms of the cell and produce anaplasia. The surviving more primitive mitotic mechanism responds to very much weaker concentrations to exhibit neoplasia. All known carcinogenic agents are fluorescent. The more stable of them absorb only in the ultraviolet and produce malignancy only after very long exposure, but the more reactive and virulent absorb also in the visible ranges and produce malignancy after only a few weeks exposure. The concentrations to which this allergic response is had are quite minute in keeping with highest efficiency of fluorescent materials. The groups concerned in the fluorescent behavior are the double bonds between carbon atoms and also since the anthracene fraction becomes oxidized readily in the body to anthraquinone, the double union between

carbon and oxygen of the keto-group thus produced plays its part in the fluorescence. Both sets of double bonds must be considered in the building of a competitor for the energy diverted by the fluorescent allergenic agent. Since the malignant cell only carries the oxidation of sugar to the lactic acid stage and here the oxidation chain is broken, the factor that is lacking must be the carrier of the chain, and since the energy that should normally have gone into the activation of the "hot" molecules of the carrier, is absorbed by the fluorescent agent and diverted into the mitotic mechanism where it activates cell division, there is no energy available to produce the carrier and the oxidation process had to stop at lactic acid. Likewise the other fatty acids are not burned, characteristic fatty changes resulting. The correction of the triple fault in the cancer cell then is to be made by supplying the normal oxidation carrier in a highly active form. The structure of this carrier as presented above serves best of all in every respect, for it is the most active molecule possible possessing the two types of unsaturated groups needed to competitively absorb the exothermic energy liberated in the cell in the production of lactic acid, and thus divert energy from the fluorescent agent to its normal direction in sugar and fat oxidation. Secondly it behaves as an activator of peroxide oxygen through which the unsaturated groups of the fluorescent agent are destroyed and its allergenic structure is lost. The one corrective agent therefore destroys the allergenic offender, and restores a normal chemistry in the malignant cell. The total etiology is therefore removed, and normal function restored.

The energy secured through fluorescence from lactic acid production not only activates the reactions of the colloids that serve as acceptors, but in case the fluorescent substance is an anthracene derivative it also activates the "nine and ten position" carbon atoms toward their oxidation to keto groups thus producing anthraquinones and these groups are thereby activated to react with the hydrogen atoms of the end carbon of lactic acid producing a side chain. The energy of oxidation evolved in these steps is at hand to activate the dehydration of the thus combined lactic acid moiety whereby the anthracene group becomes possessor at the "nine" or at the "ten position" carbon atoms or at both, of a side chain of three carbon atoms the last united with oxygen, and all unions made with double bonds. Such a group in the presence of the peroxide oxygen in the body must become immediately saturated therewith and burn to carbon dioxide restoring the anthraquinone keto group which becomes reactivated through the energy evolved to reestablish the chain as originally to again combine lactic acid and proceed through the chain reaction again and again. Thus the fluorescent substance serves as the carrier of a chain reaction where deeply adsorbed into the colloids of the functional or reproductive mechanism it causes an evolution of energy that further forces the acceleration of the function of the system affected.

With (R R) representing the radicles comprising the rest of the substituted anthracene moiety, the keto group is here represented as reacting with ketene and with lactic acid to carry the chain reactions described. The difference between this type of chain reaction and that of the normal oxidation of sugar lies with the sequences whereby the keto groups are activated to form unsaturated addition compounds. In the case of the normal oxidation process the energy evolved in the addition of peroxide oxygen to the unsaturated groups of the ketenes and of glyoxylide and of malonene serve to activate the keto groups so

that water is formed and the carrier glyoxylide is regenerated. Here the energy of activation is first provided through fluorescence, and then in addition through oxidation producing the anthraquinone keto groups and the oxidation of hydrogen of lactic acid to water by this keto oxygen. Thereby the energy for a dehydration is provided and finally a great evolution of energy is produced in the addition of peroxide oxygen at the unsaturated unions and in the production of CO₂. This energy is available for direct allergy production and for the progress of the reactions producing it. Again the entrance of the normal oxidation chain carrier into the field removes the whole pathogenesis and provides the normal oxidation of sugar and the destruction of the fluorescent agent through oxidation of its unsaturated fluorescent groups as described above.



The allergenic fate of lactic acid in the way here described need not be a major factor in carcinogenesis, but since feeding lactic acid to cancer patients has in my observations definitely increased the rate of development of cancer, it must be active to some degree.

The reestablishing of the normal oxidation chain presents an additional means of destroying the unsaturated groups of the fluorescent agent. This is through the nascent hydrogen atoms liberated when the carrier glyoxylide or malonide and the ketenes add peroxide oxygen. The hydrogen atoms thus set free from hydrogen peroxide or its equivalent may under suitable conditions saturate the double bonds of the fluorescent agent and produce a non-fluorescent structure like that present in cholesterol and thus end the pathogenesis.

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