Clinical Demonstration of the Laws of Chemical Structure that Determine Immunity to Disease, and Their Application in the Treatment of Patients.

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FOREWORD

CLINICAL DEMONSTRATION OF THE LAWS OF CHEMICAL STRUCTURE THAT DETERMINE IMMUNITY TO DISEASE

The reproduction of the Natural Immunity Mechanism by synthetic procedures, and its successful application in the true cure of the various forms of disease known to man, is presented in this volume. It is the result of over a quarter of a century of extremely interesting work, and introduces a new era in medicine.

CLINICAL DEMONSTRATION OF THE LAWS OF CHEMICAL STRUCTURE THAT DETERMINE IMMUNITY TO DISEASE*

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GENERAL SURVEY

The investigations covered by these lectures were started in 1910 as a study of the parathyroid glands, in which the attempt was made to identify the poisons that cause the convulsions following parathyroidectomy. It was found that several of the guanidines, histamine, and some other bases containing the imide group were responsible. It seemed evident that these substances were tissue elements liberated by the rapid and extreme tissue disintegration that follows the loss of the parathyroid function. One might expect that if these bases were burned to urea, they could not be present to act toxically.

A study of the oxidation mechanism was, therefore, attempted for the purpose of finding some conveyor of tissue oxidation that could burn the imide group. It was hoped that when this was accomplished, the toxic elements following parathyroidectomy having been removed, it would then be possible to study the intricacies of the parathyroid function without interruption by the factors involved in the convulsions and the early death of the animals.

However, at that time nothing helpful was known about the physiological aspects of the oxidation mechanism. Furthermore, the science of photochemistry, which deals with the mathematics of catalytic matters, was not developed to the point where it could be of much service. And yet, it was evident that all catalytic activities were dependent upon the free valencies in the reaction field, and so several procedures of glucose and fructose oxidation were outlined so as to provide free valences in all of the intermediaries throughout the process until full oxidation to carbon dioxide took place. Thus several very labile unsaturated molecules offering catalytic properties were devised.

The hexoses provide perfect opportunity for this procedure because the hydrogen and hydroxyl groups are correctly placed to produce the free valencies desired through dehydrations. Thus we were led to synthesize a number of oxidation activators of immense physiological interest. It was not long before it became evident also that they possessed the greatest therapeutic value, and occupy a basic position in the chemistry of immunity.

*** Given before the College of Physicians and Surgeons of Quebec, June 29, 1939, enlarged with clinical data.**

Naturally, our interest was immediately directed to eclampsia, and the first cases treated with the unsaturated molecules became detoxicated so rapidly and recovered so completely that we felt obliged to ascertain the total scope of their beneficial action. Cancer was investigated next because it is the deepest disease known to man; and besides it offers opportunities for microscopic check-up. In due time, every other disease available was studied, and it was found that the pathogenic trend was reversed as soon as a good oxidation catalysis was established. The methemoglobin is soon changed to useful oxyhemoglobin, and the respiratory agents in the tissues and blood function better, so that hemolysis, cyanosis, and dyspnoea disappear and muscle and tissue function becomes more efficient. The reticuloendothelial system recovers its ability to perform its functions again; the patient feels better; pain disappears and the invading organisms die and are eliminated. Benign and malignant growths undergo coagulation, become organized like blood clots and involute. And the invaded areas are healed by replacement with normal tissue elements, so they can function again. In short, the normal physiology is restored.

Oxygen want is expressed by the tissues in more than one way. Obliterative endarteritis takes part in the lesions of many diseases and appears to be an indication that active oxygen is wanted by the tissues. The endothelial cells become hyperplastic, no doubt to supply a greater surface for transfer of oxygen from blood to tissues. But the effort defeats its own purposes. It is not under physiological control and is, therefore, to be classified as allergic. How quickly this condition reverts to normal in all diseases in which it is encountered following restoration of the normal oxidation catalysis shows how fundamental the loss of efficient oxidations is to disease in general. In the purely functional allergies the same truth prevails.

Molecular structures that catalytically quench the normal oxidation catalysis possess rather heavy molecular weight, which contributes inertia. At the same time they possess an ethylene, quinone, imide, or amino group, the free valencies of which actively absorb the energy of the positive oxidation catalyst and thus remove its activity from the reaction field. The toxins of

pathogenic germs and allergenic substances are all built up along this plan. They, therefore, possess a common mechanism of action, which offers a single means of attack whereby they can be completely destroyed so far as their toxic action is concerned. One agent, therefore, can serve specifically destructive to all of them and this agent is a vigorous oxidation catalysis.

One of the most effective therapies of our day depends upon this activity, but it is not understood to be so because the activation of oxygen is brought about very indirectly. I refer to the sulfonamide family of drugs. Their mode of action is confessedly not understood, and their development is conducted on the hit-and-miss system. If the laws of chemical structure that control immunity were generally known, these drugs would not be presented to the profession in their present dangerous and badly handicapped forms, but instead one harmless, extremely efficient substance would be the only one in use. It is the active principle of all of them. I will describe it, for it is formed in small amounts wherever the sulfonamides give definite benefit. It is one of the substances we have used for many years under the name of the Koch Synthetic Antitoxins. It is 1:4 Benzoquinone.

Every member of the sulfonamide group is toxic to the healthy body, but it is much more toxic to sick persons. If the patient retains sufficient oxidation capacity to burn off the amino group and the sulphonic acid and other characterizing groups and oxidize the benzene ring to 1:4 Benzoquinone, he is able to prepare a protective substance out of the sulfonamide. If his vitality is too low to accomplish this change, the toxic effects of the drug may prove fatal. Probably only small quantities of the drug undergo favorable change and the presence of inflamed vital tissues contraindicates its presence in the system. Therefore, nephritis, meningitis, anemia, etc., forbid their use. Whereas 1:4 Benzoquinone being harmless in catalytic dilutions in which it should be used is curative to these complications, it has no contraindications. It, therefore, serves as the ideal therapeutic agent.

1:4 Benzoquinone, however, in fairly concentrated solution is an allergenic substance and can produce cancer when repeatedly applied in solutions of one to five or ten thousand. It resembles caffeic acid, which is also a quinone or dihydroxy aromatic structure that we have found to be able to produce a sensory allergy. This is particularly true if its unsaturated side chain is saturated with a halogen. The allergenic behavior of the quinone group is one of the first observations we have made in the beginning of this study. It appeared that the quinone group, since it offers an inertly bound Carbonyl group, may serve as a negative oxidation catalyst. Thus it is able to absorb and quench the electronic activity of the Carbonyl group present in the more active aliphatic molecules that catalyze the oxidations.

In high catalytic dilutions, however, 1:4 Benzoquinone no longer behaves as a quinone, but as a Carbonyl compound of the aliphatic type and it activates oxygen so as to become a peroxide itself, which splits into two of the most active oxidation catalysts that can be constructed, namely, Glyoxylide and Malonide, the two catalysts we have relied upon for many years for the successful Treatment of the most resistant diseases known. These two substances are the master catalysts of aerobic glycolysis, as we understand the problem. Therefore, in an uncontrolled way, traces of these substances may be formed when proper conditions prevail, after the administration of the sulfonamides. But their activity is handicapped by the large mass of drug that remains unchanged. Still, sufficient may be present to initiate oxidations vigorous enough to

burn the invading toxins.

On the other hand, 1:4 Benzoquinone in catalytic dilutions dehydrates, activates oxygen and is changed to Glyoxylide and Malonide, restoring the oxidations within the tissues to such a vigorous normal that no disease toxins whatever can resist being burned. Probably the most important characteristic of these three oxidation catalysts is their ability to depolymerize the toxic bodies elaborated within the dense cicatrices of chronic focal infections. Under the anaerobic conditions that prevail in such foci, the toxic agents liberated by the imprisoned germs are not burned, as they would be where the normal tissue oxidations progress vigorously. The free valences, therefore, have opportunity to polymerize and thus the molecule increases in size progressively through many phases, some of which possess photochemic properties with pathogenic qualities, until finally a heavy enough molecule is produced that can adsorb deeply into the colloids of the reproductive mechanism of tissue cells and exert the specific grade of fluorescence that causes malignancy. The original toxic agent produced by a pathogenic germ to serve its nutritional purposes is a readily diffusible substance with fairly small molecular weight and is readily burnable by truly healthy tissue oxidations. The polymerized toxins are not readily burned and are able to cause the various allergies, degenerative diseases, and functional inhibitions that constitute chronic disease and play a part in the long pre-growth period of malignancy to be discussed later.

Our subject matter deals with disease in its totality, therefore, and describes the behavior of the agency, which disposes of all phases of pathogenic action by a normal physiological procedure-oxidation. The Therapy described is a reproduction of the normal process and should interest every physician because of its harmlessness and because it fits every physiological situation that has become perverted by the action of a foreign agent. It deals with one physiological measure that cures every infection known to man, bacterial, protozoan, or virus, and also cures the sequelae to these infections, arthritis, insanity, diabetes, multiple sclerosis, cancer, and others. It places the Treatment of disease upon the most fundamental basis possible, the chemistry of the vital principle, the oxidation mechanism. A few comparisons will emphasize its advantages.

We give daily doses of insulin to assist the function of the pancreas in the treatment of diabetes, a palliative procedure, but we cure diabetes by giving one or two doses of Glyoxylide or 1:4 Benzoquinone. Thus we destroy the focal infection whose poisons have paralyzed the pancreas function. The blood sugar may then return to normal by about twenty mmgs. percent per week on a rich carbohydrate diet without the use of insulin.

The whimsically curative mechanism of irradiation is confessedly not understood. The process is not controllable by dosage alone or by any other known factor. Irradiation causes cancer and is far more reliable in this effect than in bringing about cures. In fact, our experience makes us doubt that it ever cured true cancer, except very rarely. However, the mechanism by which it causes and cures cancer is explainable by our Thesis and is simply this: By dehydrating the inosite of the tissues, 1:4 Benzoquinone and Hexylene, discussed further on, are produced and they yield Glyoxylide and Malonide. If the 1:4 Benzoquinone is produced in carcinogenic dosage (1:5000-1:15000) over a period of time, the results are malignancy. Whereas, if a lucky catalytic dilution of 1:4 Benzoquinone or Hexylene are formed and the situation not spoiled by further interference, a good result may be had.

All of the vitamins depend directly or indirectly upon carbonyl activity to functionate. Their specificity and intensity of activating the oxidations is determined by the total molecular structure. Para-amino-benzoic acid can form a quinone carcinogenic in large dosage; Vitamin B, especially, and A, C, D, and K have proven useful to us for years in cancer therapy.

Like the sulfa drugs, the arsphenamines are not bactericidal in therapeutic solutions. The latter must first be oxidized to arsenous oxide and the arsenous oxide must be burned to arsenic anhydride and arsenic acid in the tissues to be useful. While undergoing oxidation the free arsenic valences activate oxygen to the extent that syphilitic and some other poisons are burned. But the toxicity of the arsenic limits its usefulness.

The nontoxic carbon compounds we have introduced are much more efficient oxidation catalysts. Since they are de-polymerization agents, also, they are curative in such allergic syphilitic changes as diabetes, the gumma, and the specific infiltration of the nervous system. Thus the superior efficacy of the Natural Immunity agents stands out beautifully.

Since the range of chemical structures considered here is small in comparison to the variety of disease conditions they influence, we must conclude that they concern factors of primary causation of disease, and that the great variety of common disease characteristics are matters of dependent secondary causes, that cease to exist after the primary cause is removed.

CHEMICAL BASIS

Firstly, it should be stated that carbonyl groups activate the oxidations of other Carbonyl groups, and do so by increasing the tendency to produce peroxides, thus benzaldehyde tends to become and produce the peroxide of benzaldehyde much quicker than the latter changes to benzoic acid. Moreover, the ethylene group activates oxygen and tends to become a peroxide spontaneously, so to speak. Thus it serves the peroxidation of the terpenes.

OXIDATION INHIBITANTS

The catalytic effect in the activation of oxygen for autooxidation and the oxidation of like structures I find to be inhibited by the amino group and, in some instances, by the imido group. Thus it is easy to see that the protein structure, which is made up of carbon chains possessing Carbonyl groups, is protected from oxidation because each Carbonyl group is flanked by an amino group. Moreover, the loss of the Carbonyl groups in an amino acid gives it pathogenic anti-oxidation properties as in histamine, methyl guanidine, etc., and thus, too, the amine bases and like products of bacterial action serve toxically as oxidation inhibitors. On the other hand, removal of the amino group is a necessary preparatory step for the oxidation of amino acids. The amino group thus plays an important role in the preservation of the exact structure of the protein of the individual and of the type and species. Thus, when immunity must be acquired against some infection, immunity does not emerge until a certain amount of proteolysis and desamidation of amino acids has taken place producing carbon chains possessing carbonyl groups unhampered by the presence of amino groups. Therefore, fever and tissue waste with excretion of increased non-protein nitrogen is the unpleasant and dangerous companion to

acquired immunity. The efficiency of the resulting Carbonyl compounds, in the production of immunity, depends upon the proportions of structures we describe below as the most efficient oxygen activators.

There are other inhibitants of Carbonyl and ethylene activity, namely, the quinone and dihydroxy-aromatic molecules. These are used commercially to prevent peroxide formation and thus to protect unsaturated compounds from polymerization inducible by the peroxides of such bodies. It is my opinion that the quinones and peroxides of quite stable aromatic compounds serve as the immediate carcinogenic substances through their anti-oxidation catalytic effects. Also, that this very anti-peroxidation effect prevents the burning of unsaturated bodies of stable structure, and thus permits them to exert their fluorescence in a way which produces the allergies as I interpret their production here. Stable peroxides of ethylene linkages in inert molecules tend to induce polymerization in like structures thus diminishing their combustibility and favoring allergenic activity.

It might be well to give a photochemic description of fluorescence. This phenomenon depends upon the free valencies a substance possesses between its carbon atoms, or carbon and oxygen atoms, or carbon and nitrogen atoms. When these free valences are able to absorb energy, they become a new system which is only maintained momentarily before the energy is given off again in a degraded way, either as light emission or, as we are concerned at this time, by transfer to a suitable acceptor. When the fluorescent substance happens to be adsorbed intimately into a chemical body undergoing activity, the energy of the fluorescent substance can be passed on directly to the chemical processes of the adsorbing substance and accelerate its activity. In so doing, the fluorescent substance returns to its previous state, but the acceptor of the energy is activated and its chemical processes are accelerated by the energy received. A substance cannot serve as an acceptor of energy in this way unless, in addition to the intimate adsorption union between it and the fluorescent substance, there is also an identity in the spectrum emission ranges of the fluorescent substance and the absorption range of the acceptor.

THE PRODUCTION OF ALLERGY

Allergy has generally been considered to be a hypersensitivity to some substance, yet one may look upon the process as a hyperactivity of a tissue structure outside of physiological control. The physical-chemical basis of the mechanism of its production depends upon two different properties of unsaturated bodies. One is the transfer of energy through fluorescence from exothermic reactions going on in the cells of a tissue to the chemical processes of some special functional mechanism in these cells. The other is the evolution of energy in a functional mechanism by carrier action of the quinone group.

In the first instance, the allergenic agent must be adsorbed intimately into the colloids of the functional mechanism, be it the contractile, conductive, secretory, or reproductive elements of the cell. In fact, the agent is adsorbed into all of them, yet the energy it has absorbed can only be transferred to the chemical processes going on in that functional unit which possesses spectrum ranges of energy absorption that are identical with the ranges of emission it possesses itself. Thus the specificity of allergy is explainable on a purely chemical basis.

If the secretory elements of the cell are of proper spectrum quality, hypersecretion (as in hay fever) results; if the conductive elements as of nerve cells are concerned, allergic neuritis, epilepsy, fixed ideas, inhibitions, contractures, etc., result. If the reproductive mechanism is concerned, uncontrolled cell division of neoplasia results; if the contractile elements are affected, then muscle spasms (as in asthma) are the answer. In short, the type of allergy depends upon the similarity in the specific spectral characteristics of agent and functional units, while the basic disease process depends simply upon the presence of the difficulty oxidizable unsaturated valencies responsible for the fluorescence in the molecules comprising the allergenic agent. Therefore, the removal of the pathogenic agent is merely a matter of the saturation of its free valences with peroxide oxygen, which destroys its fluorescence or carrier properties. The completion of the combustion by first splitting the peroxide (isorrhopesis) destroys the pathogenic properties fully.

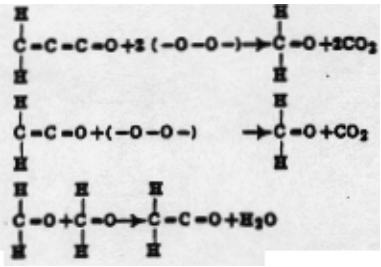
Now the only absolutely safe and the most efficient materials able to fully accomplish this result are the catalysts of oxidation that Nature provides in her own oxidation mechanism, the structures that we believe to be the intermediaries that catalyze the oxidation of sugars for normal function and activate oxygen in maintaining natural immunity, and, to a lesser degree, the substances liberated by the proteolysis and desamidation of amino acids in acquired immunity.

THE THERAPEUTIC AGENTS

I stated previously that the Carbonyl group and the ethylene group tend to favor per-oxidations of similar groups: in other words, that their free valencies exhibit oxygen activating effects. It was also stated that this tendency appears, to be inhibited by amino groups. It appears, also, that this activating property is accelerated by the presence of ethylene groups, and by the presence of hydroxyl or of another Carbonyl group (di-hydroxyl) in the molecule. However, for the most energetic oxygen activation and immunogenic power the hydroxyl present should be positioned so as to yield to dehydration and the production of an ethylene linkage shared by the Carbonyl group. The chemical basis of immunity may be stated as three rules. First, that amino groups are not present in the carbon chains possessing the Carbonyl group. Second, that the Carbonyl group forms a part of an ethylene linkage. Third, that it be joined to a carbon atom united with hydroxyl, which can be removed to yield an ethylene linkage shared by the Carbonyl group. Fourth, that it be conjugated with an ethylene linkage in a molecule that is able to yield to change whereby the carbon of the Carbonyl group shares the ethylene linkage. Usual dilutions range from 1 x 10–(6) to 1 x 10–(30). Normal cytochrome concentrations are 1 x 10-(10). (The Carbonyl group may be united to nitrogen by double bonds as in cyanic acid and demonstrate minor immunogenic power only.)

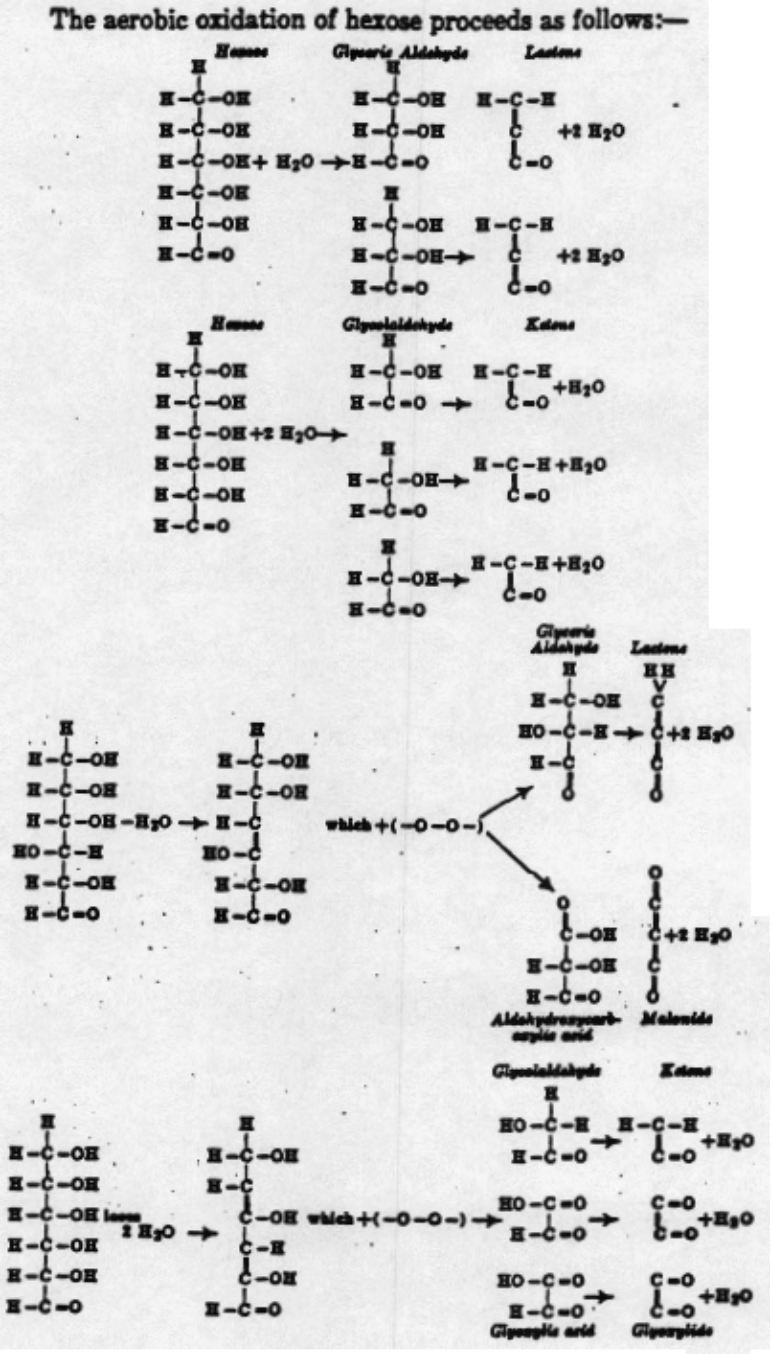
Such substances are those that I have proposed to be the intermediaries and auto-catalysts of aerobic glycolysis, a process that has not yet been worked out, because under the conditions prevailing the intermediaries are too unstable to be isolated for identification. The systems outlined have served me well experimentally and clinically during the past 19 years, and are of two types, as follows: Glucose undergoes hydrolysis into two molecules of glyceric aldehyde or into three molecules of glycol-aldehyde, each molecule of which undergoes dehydration to ketene followed by peroxidation, yielding carbon dioxide and water, with formaldehyde as an intermediary. The other system is the dehydration of glucose and fructose at the union between

the carbon atoms in alpha and beta position to the Carbonyl group. This reaction is catalyzed by iodine and thus iodine of thyroid function finds its place in the oxidation mechanism and can accelerate it by its excess or by deficiency depress it. Both situations are well known clinically. From fructose two molecules of three carbons each are formed by peroxidation and cleavage at the point of dehydration. Glucose by similar dehydrations between alpha and beta carbon atoms to the Carbonyl group, with subsequent peroxidation and cleavage, produces three molecules of two carbons each. Thus from both glucose and fructose, glyceric aldehyde, the aldehyde of glyceric acid, glycol-aldehyde and glyoxylic acid are formed; and these bodies dehydrate to form ketenes and oxyketenes with two and three carbon atoms each which are peroxidized, yielding carbon dioxide and formaldehyde. The latter then serves as a carrier of a chain reaction, by condensing to form ketene and water and by being peroxidized to yield carbon dioxide and formaldehyde again, which may repeat the performance. But when conditions so determine, it may take up peroxide and become formic acid, which on being peroxidized, burns to carbon dioxide and water. The reactions of the ketenes with which we are concerned and of formaldehyde follow thus: —



This latter reaction is catalyzed by calcium I find, and so the place of calcium in aerobic glycolysis is evident. Here the parathyroid function carries an importance equal to that of thyroid iodine, as described above, in another phase of the process.

The free valencies of the Carbonyl and ethylene groups are themselves catalysts because they possess photochemic values, and all catalytic actions are photochemic in nature. Similar groups resonate each others activity, and depending upon the inertia imposed by the rest of the containing molecule, the specific energy received from a group undergoing reaction will either be able to induce a like reactivity or be quenched in merely subliminal disturbance. The reactive groups serve as positive catalysts in that they propagate the process, while the quenching molecules are negative catalysts to the degree that they absorb and deplete the field of this particular energy. Such carcinogenic molecules as Benzopyrene and the quinones of molecules of this class behave as negative catalysts to the oxidations in this way. Pourbaix in Maisin's laboratory has demonstrated in animals and in surviving tissues that carcinogenic compounds actually inhibit the oxidations.



All of the intermediaries mentioned above represent substances possessing active Carbonyl groups further activated by ethylene or hydroxyl nicely placed, and, therefore, are proper activators of oxygen for the burning of sugar and fats and for the saturation of free valencies and burning of pathogenic substances. They conform to the rules of structure we have established for immunogenises and are therefore able to catalyze the oxidations of living tissues in vitro as well as in the animal body. In vitro the increase in the oxidations is 30 percent or more, but in the animal body it may be phenomenal. For instance, a girl riddled with military tuberculosis and barely able to step up on to the scale for weighing, within an hour after Treatment with a solution of all of these catalysts was able to walk upstairs in comparative ease. The restoration of cardiac

function as depicted in the histories given below is another example of their efficiency. But more than any other change, the restoration of muscle tissue and function and the quick disappearance of pain in the muscular dystrophies and the return to normal in such conditions as multiple sclerosis indicate the great depth of action they exert. The destruction of germ and allergy poisons of various origins, by the restored oxidation process following their use, demonstrates that they remove the primary cause of disease, and that matters of secondary causation have no support thereafter and the way for correction and repair is open.

Though each of the intermediaries of aerobic glycolysis mentioned above and demonstrated in the case reports have individually in certain cases proved their ability to restore a sufficient oxidation for the cure of disease, and thus to serve as examples of the rules of chemical structure we outline as necessary for immunity production, yet for the best action and reliable clinical service, the whole group in balanced solution properly diluted is definitely required to restore the oxidations fully. Dilutions from 10 x 10-(7) to 10 x 10-(18) work well. We call our solution Glyoxylide solution because in it we expect the presence of the most active, as well as the more sluggish, members of the group. We sometimes reinforce it with propargylic aldehyde, glyoxylcarboxylic acid, hydroxyketo carboxylic acid, and glyoxal as well as monovalent and divalent cations in conformity to our developing experience. The success in preparing an efficient product depends upon the training and skill invested, since the technique is rather unusual and requires special training. Otherwise unnecessary trial and error is inevitable.

RECOVERY PROCESS

The recovery process is fundamentally cyclic in nature; and the periodicity expressed is of the same order no matter what disease manifestation is undergoing correction. The shortest unit definitely observable is 12 hours, and this unit may be multiplied a number of times to form the more prolonged phases of the periodicity. The usual periods observed are 3 1/2-day and 3-week intervals which may be multiplied to form longer periods even up to 72 weeks after the Treatment has been given.

The negative phases are termed reactions and they express the symptoms of the disease in a modified or temporarily accentuated form.

Following the negative phase: the positive phase expresses an improvement in the condition, and so improvement follows until recovery is complete.

Among the reaction periods, most important are the 3rd, 6th 9th, 12th, 24th, 36th, 60th and 72nd weeks.

Generally, only one or two of these periods express sufficient reaction to be easily noticeable, and the particular time varies with different patients, but most often it is the 12th, 24th or 36th weeks that are critical, beyond which recovery is expected to be completed.

When a general reaction of chills and fever and general achiness comes early as during the period between the twelfth and thirty-sixth hour after the Treatment, generally only one or two more febrile reactions are found to follow, and they take place at the third, sixth, ninth, twelfth or

twenty-fourth week as a rule. Recovery may soon afterwards be complete. The periodicity is expansive, the first reaction phases being twelve hours or a multiple of twelve hours. When seven twelve-hour periods, that is three and a half days have been traversed, the periods are multiples of three and a half days, such as seven or ten and a half or fourteen days, which leads one into the third week. After the third week is passed the reactions come at three-week periods, that is the sixth, ninth, or twelfth week. This leads one through the three months, which, thereafter, is multiplied into six-month, and nine-month periods, etc.

These general reactions are accompanied by focal inflammation of the neoplasm, tubercle, or leproma. Thus the chronic progressive affair is converted into an acute or inflammatory recovering lesion. In acute infections, the lesion undergoes recovery forthwith and may be well in hours or days.

As recovery proceeds, the last features of the development of the disease are first to leave, and the affair unfolds itself in the reverse order to its development, and in so doing early disease manifestations may again exhibit themselves as flashes of symptoms, skin lesions or rashes, or even vascular disturbances with clear cut classification, and in an orderly manner, but of very brief duration. Thus, the hangovers of old disease in the system are brought to light and disposed of; one does not, however, give an indicated remedy, but permits the symptom to wear out, and give way to greatly improved progress toward recovery. The more acute the disease, the quicker the recovery. Thus, a measles or streptococcus sore throat of a devastating type and high fever may clear up in hours or a day or two, and an apparently fatal pneumonia with severe nephritis may clear up in a week, the severe symptoms yielding in hours and days. However, in chronic disease, the longer the disease has been established in the individual, or in case it is hereditary, the longer it has been established in the progenitors, the longer the time required for recovery.

In the recovery from a functional allergy, nothing more is required than the destruction of the fluorescence of the causative agent, but in structural allergies, excessive tissue must be removed before the affected parts can be reconstructed. Usually anatomical deficiencies are provided for through scar tissue, but after this Treatment, the deficiency is repaired by normal tissue elements so that normal function is again possible. The reason for this is the absence of infection which is accountable to the high resistance to infection of the vigorous oxidation mechanism restored by the Treatment. However while the neoplasms are being absorbed the deficiencies are replaced by vascular and angioblastic in-growth, which moreover, serves as the framework for repair and as the medium of absorption of the neoplastic material as it undergoes autolysis;

The microscopic picture of neoplasms, undergoing recovery, demonstrates the same changes as the organization of a blood clot. Here as in the clotting of milk, calcium plays its initial role in the digestive process. The cell bodies swell and become clear, and take on haematoxylon stain rather strongly, while the nucleus fragments and dissolves. In the changes that follow, the in-growth of angioblastic tissue, forming capillary loops ahead of which, zones of liquifaction are apparent and which proceeds until the whole tumor is replaced by vascular trees. These latter are comprised of afferent arterioles that break up into capillaries, which unite to form veins. The afferent arterioles have good muscular coats subject to contraction and relaxation. Thus, when the whole growth is replaced by the vascular structure, contraction of the arterioles permits emptying and shrinking of the structure, while relaxation permits its engorgement with blood and

swelling. Hence at the time when recovery is about completed, there will be wide variations in the size of the tumor even within short periods of time. This vascular tumor undergoes complete involution only after tissue reconstruction is completed. And since the neoplasm was quite excessive, its vascular substitute may appear to fade away very rapidly when a final vasoconstriction has set in to determine its involution. This change may therefore be quite sudden or be quite gradual. The amount of vascular in-growth is determined by the size of the neoplasm, and also by the factors that stimulate its production, such as physical manipulations during examinations, too many injections of the treatment material, and sometimes a deficiency in healing elements. Since its nutrition is taken from material supplied by the autolysis of the neoplasm as well as from the general nutrition, growth-stimulating principles at hand partially determine its rate and extent of development. Thus, in slowly developing tumors, the vascular organ is not excessive, and the neoplasm may appear to fade away gradually with recovery; but in rapidly developing tumors, there is generally a vascular substitute of equal size or larger. Since the neoplasm has developed from nutrient elements taken from the blood, its autolysis returns valuable elements of nutrition, and especially blood-forming material to the circulation, so that one of the earliest changes during recovery is an improvement in color, and a better blood picture.

The capillary loops are supported by sufficient connective tissue stroma to give some strength to the structure, so that it may serve as a wall to a viscus until repair is completed. To aid repair the associated viscera are splinted reflexly by impulses originating in the rich supply of fine nerve filaments accompanying, the vascular tissue. Thus a hyperaesthesia, and a hyperreflexia relax the walls and contract the sphincters and give hypersensitivity to associated cutaneous areas. When an abdominal organ is involved, there may be an interference with peristalsis that can be met quite well with careful enemata. But where nature desires quiet for healing, this provision should be respected as much as is feasible. These changes are valuable as aids in the estimation of the position of the recovery process. As healing is established these changes disappear.

It was stated that, since infection is not present, scar tissue is scarcely formed even in large areas of repair. This is true, even though local and severe systemic infections are present. For instance, in a virulent septicemia, where blood smears show many streptococci and staphylococci in each field, five days after Treatment not a germ is present and cultures are negative. It is also a common experience to find old scars, remaining from past serious infections, disappear after the Treatment. We attribute this to the destruction of retained germs by the newly acquired immunity, which makes the scar capsule no longer necessary as a protective organ. Likewise too, recovery from tuberculosis, or other infections, is not followed by a scar to mark the lesions, but rather by the restoration of normal tissue, therefore the danger of recurrence is banished. It should be repeated that the whole matter is nonspecific so far, as germs are concerned, so it makes no difference if the infective agent is, a spirochete, a virus or any pathogenic germ on the list from the lepra bacillus of ancient times to the most recent mischief-maker identified.

MANAGEMENT OF THE CASE

The management of each case is a more or less special matter, based upon the principles mentioned as factors of the recovery mechanism. However, in a general way, there is very little difference in the conduct of different cases. Firstly, we try to get a recovery on one injection, and

whenever possible, we prepare the patient first so he will be an ideal medium for its action, and so too, we attempt to keep him in that state. Therefore, careful control is attempted in matters of diet, colon hygiene, rest, exercise, warmth, etc. The difficulty, if it exists at all, lies in the interpretation of recovery features for it is not always easy to distinguish between recovery reactions and the progress of the disease. Yet there are definite criteria, which enable one to make a correct decision. They are the periodicity, which times the reaction phases, the general or constitutional changes, and the particular or local changes. There is the general trend, and the phasic variations expressed constitutionally and locally.

If it is determined that the progress of recovery has come to a stop before being completed, evidently another treatment injection is required; but if possible, it should be determined first why the process did not go on without interruption, and we must attempt to correct the fault. One must also distinguish between a true halt and a prolonged negative phase or a temporary period of suspended progress. After it is decided that recovery has ceased before its completion; the best time for repetition is to be determined, and for that the periodicity expressed by the particular patient, in line with, the general scheme of periodicity, will help. The hit and miss system may work out fairly well provided a long interval such as twenty-four or thirty-six weeks can be allowed between treatments, but where the patient is in desperate shape, experience and deep study may be needed for the correct decision.

GENERAL TRENDS

When a patient is becoming his “old self” more and more in mentality, sensory perceptions, such as taste and smell, and in his appearance, actions, muscular balance, etc., and there is increase in strength, improvement in appetite; and sleep, he is recovering no matter what the local lesion appears to present. In fact the changes going on locally must be improvement though they may show aggravation in size, soreness, etc.

SPECIAL FEATURES OF GENERAL IMPROVEMENT

The blood and urine, the skin texture and color, the metabolism rate, the blood pressure and quality of the heartbeat and texture of the blood vessels are helpful guides. The sedimentation rate and the crenation of the red cells in one percent salt solution, the replacement of methemoglobin by oxyhemoglobin, and the cell counts indicate the trend, but it must be remembered that while the growth is being absorbed at the high rate of the negative phases, sufficient toxic material is circulating to increase the sedimentation rate and diminish the crenation rate. However, at the end of a positive phase, the crenation rate may be normal while the sedimentation rate may not have improved very greatly unless the absorption and elimination of the diseased material is completed. It must be remembered too that when several disease poisons such as those of tuberculosis and cancer, and perhaps also syphilis are present in the same patient, the recovery from any one of them before the others are eliminated, and therefore the removal of one of the toxic factors, may be accompanied by an increase in the sedimentation rate while the crenation rate improves. This is because each of the poisons mentioned tends to absorb each others energy, and thus detoxicate each other, just like one fluorescent substance may quench another of appropriate spectrum qualities, or one homeopathic medicine may annul another medicine or poison. We find that we may add a few drops of very dilute tuberculin

solution to the blood and depress the sedimentation rate so long as cancer is present, but after recovery this addition will increase the sedimentation rate just as the disease would. One can thus test for the completion of recovery. Luetin and agar have similar properties in a measure, but tuberculin is more practical.

Professor Brose's phosphatase test, and the Ph and oxidation-reduction potential of the blood may prove very serviceable too. But no test can gauge recovery without being interpreted in the light of the rest of the findings. It is the totality of changes only that should be the guide.

Normally the red cells all-crenate in a one percent salt solution. But toxic material carried by the blood tends to increase the osmotic pressure of the erythrocyte contents so they fail to crenate in proportionate percentage to the toxic state. The injured cells may swell instead of shrinking. The explanation is not so simple an affair as one might think. Poisons absorbed from the intestines play a part but with a cleansed bowel, the failure to crenate should be attributed to the internal toxic state produced by the disease. The crenation follows both the general trend and its periodic variations. The pH. and mv. may be about 8 and 5 respectively and like the crenation test improve with each positive phase, but fall back somewhat with each negative phase, in keeping with the general appearance and feeling of the patient, the general trend being towards normal. To a good observer the totality of change is evident in the clinical features alone.

The quality of the heartbeat during recovery as compared to its quality before treatment may be a definite aid in estimating progress. The electrocardiograph is a great help, but the heart sounds and the character of the beat tell in a similar way to the characteristics of the nervous system, what the sum total of the response is at the time. Here too the presence of a negative phase must be taken into account and one must estimate the quality in both positive and negative phases. At times, the advance of recovery may traverse a reaction to a hereditary or past disease, and the heart may be the chief organ to reveal the symptoms. Hence, a suddenly developing aortic blow or stenosis that lets up fairly abruptly, may signify the recovery from an old syphilis while the patient is getting well from cancer. In fact, because of the fundamental position of the Treatment, the recovery from cancer is not taking place at all unless the diseases of less depth are also lifted and removed in due course, and in reverse order to their acquirement or destructive position in the case at hand.

The urine tells quite a story, albumen disappears as fast as the blood and renal structure is corrected. This may be quite rapid. In acute infections like pneumonia urine that boils solid because of albumen may be free in a few days. But in chronic Bright's disease time is required, perhaps weeks or months. The quantity and partition of solids excreted by day and night, the improvement in specific gravity, etc., should follow in correct order, but during the earlier negative phases, there may be a surprising excretion of non-protein nitrogen referable to the elimination of the autolyzing growth material. When the products of digestion of the growth are absorbed by the blood faster than they can be eliminated by the kidneys, the dependant tissues absorb them from the blood and as a consequence develop a higher osmotic pressure, take up water, and swell. Thus oedema of the feet and legs may be present during the period of greatest rate of autolysis and absorption of the growth. When the kidneys have caught up on their job of elimination the oedema disappears. It serves as a safety valve.

As the recovery gains ground, the spleen and liver improve in function; this may be noted from the bile elimination, the destruction and removal of effete but still circulating red cells, and the improvement in the peristalsis of the intestine. Where modern therapies have annihilated the reticulo-endothelial system, including the spleen, the improvements just mentioned, plus the disappearance of germs from the blood smears, may be the first indication that there may be a recovery, for, unless the defense mechanism is restored, recovery is out of the question. Good medical judgment will tend rather to delay, than to repeat Treatment; for, if the Treatment is effective, like a key in a lock, one does not repeat the dose any more than one would stick another key in the hole while turning the key already there. Recovery may take months or years, and one dose has demonstrated its ability to act equally long. The dose is practically never repeated before the twenty-fourth week. Yet patients that have been heavily radiated may require a second dose on the fifteenth day, but only if they have given no response by way of reaction or improvement after the first dose.

DIET

The preparation of the patient comprises the cleansing of the bowel and sometimes a fast for a few days while subsisting on freshly prepared apple juice and the bone soup we have described.

The cleansing of the bowel is accomplished by the use of a solution of common salt, one tablespoonful to a quart of water. It should be warm enough to counteract spasms and given in the most favorable position obtainable for its acceptance. It should not be forced too much beyond the ability of the intestine to accept it but the attempt should be repeated until two quarts have been taken. It is then allowed to empty. The enemas should be taken several times a day for several days until the bowel is quite well cleansed. If there is very stubborn intestinal inertia, milk of magnesia or citrate of magnesia may be required by mouth.

In the meantime all medication and the use of tobacco, alcohol, tea, coffee, and so forth should be discontinued.

The diet is preeminently vegetarian, one should avoid such decalcifying acids as oxalic, tartaric, and even citric, unless the latter is neutralized somewhat by precipitated chalk. This is because; in cases suffering from deficient oxidation, the burning of citric acid may be difficult, and it may take away the valuable cations from the living colloids and carry them off into the urine. This so-called alkalizing action is evidently a catastrophe. On the other hand we may feed chalk, or give a low dilution of it, for a time at the beginning of Treatment, also, where bowel function must require a cathartic, milk of magnesia is preferred on a similar basis. The necessary vitamins should be provided in their natural form from raw fruits, cereals and vegetables. Yeast is a great help and can be used in amounts of an ounce or two several times a day, as far from meals as possible. Meat should not be given while a growth is undergoing absorption, because the liver has enough to do with that job, but, if after the growth is absorbed, and asthenia and anemia is stubborn, nearly raw beef, from the inside of a roast, free from burned parts and overheated fats, can be given. Animal products should be avoided as a rule, and milk feeding should be properly supervised. A soup made by boiling clean chopped beef bones four or five hours, will supply glycine and various salts advantageously. Still the major part of the diet should be raw ripe vegetables and fruits. These should be grown with natural fertilizers that are matured by the

earthworm. They should be washed carefully to remove all traces of insecticides. Most important is the position of the whole grain cereals finely ground, and especially rye and wheat are protective against disease because of the products of sun activity aside from vitamins that they contain. Rye excels in this respect and it should be eaten every day plentifully. Unadulterated, correctly, ground flour should be used directly in the home. Cooked a few minutes as porridge, or baked as bread, etc. Pepper, alcohol, tobacco, tea, coffee, chocolate, cocoa, narcotics, etc., are forbidden where possible. Terpenes of all sorts, even in fruit skins, perfumes, paints, etc. must be avoided.

Bowel elimination should be thorough each day if possible, yeast may help, and large drinks of warm water with yeast half an hour before breakfast is often very helpful. Plenty of water must be taken each day. Fresh, homemade apple juice is always a great help, and those who find apples hard to take before treatment soon find they can take them afterwards. Ripe pears, melons, berries and peaches serve well. Plenty of whole grain cereals finely ground, and the cereal residues, after the starchy parts have been removed, are preferable. We use butter and cream, and fresh olive oil, but preferably avoid milk and eggs. The animal proteins produce sulfides and amines that interfere with the oxidations. They should not be used, therefore, unless where absolutely needed, a situation which is rare indeed.

C0MPLICATIONS

In the care of malignant cases, fractures of involved bones, hemorrhages, pain, ascites and rarely embolism are possible complications. More commonly a tooth becomes painful and extraction is required. This is always unfortunate because an anesthetic may interrupt the recovery process. A general anesthetic should never be used, and even a local injection of the smallest amount required may prove a setback. It is best to have all teeth attended to at the start before Treatment is given. Where the physical examination suggests the likelihood of much bleeding, it is good policy to give precipitated chalk in half teaspoonful doses once or twice a day, and, if a hemorrhage is severe at a negative phase period, such as the third, sixth, ninth or twelfth week, the dose of the oxidation catalysts should be repeated immediately. Fractures and their prevention are a matter of splinting, and prevention, and thus the avoidance of an anesthetic is most important. Paracentesis is done with a fine trochar so that no anesthetic whatever will be needed, for anesthetics may completely extinguish the recovery process.

For pain the smallest amount of morphine required is given by mouth without atropine. No other painkiller, and no sleeping medicine whatever are allowed. Pain should be controlled as much as possible by good nursing, hot packs, general warmth, etc.

Soft emboli composed of cancer plugs undergoing autolysis are sometimes set free and cause a temporary intermittent circulatory block, and as the embolus is ultimately digested the symptoms are transitory as a rule, but occasionally a true vascular occlusion takes place, which may prove quite harmless, or fatal depending upon the importance of the vessel affected.

Injuries from irradiation may prove a true defeat, either because of a general poisoning, bone marrow or reticuloendothelial-destruction**.** Sometimes a terrific X-ray or radium neuritis is a defeating complication because of the immense amount of narcotic used to partially subdue the

pain. Tissue necrosis and poisoning of the nervous system are at times a direct fatal effect both of the X-rays and of radium. Toxic effects of the X-rays on the heart and suprarenal glands when the rays have been sent through these organs generally terminate fatally. Fortunately, the oxidation catalysts annul these effects somewhat, and even cure X-ray cancer, but one never knows what the outcome may be in advance.

Constipation, often of long standing, may depend upon spleen and liver insufficiency. Plain desiccated bile or milk of magnesia may be used with reason, but the daily enema containing one to two percent common salt, comfortably warm and used dexterously should be depended upon until the general recovery corrects the bowel inertia. Soap, molasses, turpentines, etc. should never be used in the enema.

PERCENTAGES OF RESULTS

In the functional allergies, like hay fever and asthma, recoveries on one dose are reported in eighty percent of the cases treated. Recovery may require a few hours or weeks or months. The other twenty percent require more than one dose, considerable time and study and may prove extremely non-responsive.

In a case of serious acute infection, where the resistance was so completely destroyed by sulfanilamide and other factors that blood smears showed as many streptococci and staphylococci as red cells, and the white count was as low as 6500, liver function was too low to produce bile and the bowel paralysis permitted a movement only once in eight days, all bacteria disappeared from the blood before the fifth day after one dose. In another case that was expected to die on the way to the hospital in the ambulance, because of heart failure resulting from the severe septicemia, one dose brought back consciousness and fair heart function is twelve hours, and recovery in less than a week. Therefore it is not surprising that we may claim a high percentage of recoveries in cases of sepsis where deep general anesthesia or other interference was not sustained soon after the Glyoxylide solution was used.

In cancer some physicians report, from twenty percent, to eighty percent recoveries. Much depends upon the advantage the patients start out with and much depends upon the expertness used by physician and attendants.

CASE HISTORIES

The following case histories are given to illustrate the principles of chemical structure involved in the development of immunity. Recoveries in proven cancer cases are used as examples, simply because they demonstrate that the deepest possible pathology is correctable by the method, and simpler diseases though otherwise incurable, ordinarily present much less difficulty.

Before detailing with any case histories, a word about return of function to tissues hitherto seriously impeded should be made. Vision may serve as an example; thus, an infant of one and a half years, convulsive mildly, without papillary reflexes or any vision whatsoever was given one dose. Two weeks after the injection, the eye reflexes were good and she could see a hand placed within reach. The convulsive tendency had reduced in a major degree. A boy of seven, treated

two years ago when truly blind has regained peripheral vision in both eyes so that he is able to ride his bike about London traffic now. A boy of twelve, fifteen years ago could see the windows well at noon, but not well after 4 p.m. in winter. He exhibited constant writhing motions, and was scheduled for admittance to the state insane asylum. Within twelve weeks after one dose he was able to see well enough to attend the movies, read ordinary print, and attended school profitably. A practicing physician of 83 years, blind in the right eye for eighty years, and in the left eye almost entirely for several years past, was given a dose about a year ago. He reports he was able to see a string at a distance of ten feet with either eye within three months after the injection of the Glyoxylide solution, and has again resumed the practice of medicine. Cases of partial and complete blindness associated with various diseases have likewise been reported, as greatly benefited after this Treatment was given, by other physicians.

The following case history demonstrates structural repair of tissue deficiency produced by malignant invasion, and also of the correction of structure imperfection in a glandular tissue, and the return of normal functions in consequence.

GOITRE AND CANCER 0F THE RECTUM

Patient, Mrs. S.N. Age 35, normal weight 152 pounds.

Family History: Father had sarcoma of right knee.

Past History: Tonsillitis periodically for years.

Pre-Growth Symptoms and Status of Patient: An enlarged thyroid gland for past six years, that increased in size with onset of rectal trouble, some dizziness throughout this period, with short blind spells, which let up during the last year. She had suffered with piles for years, was operated for them nine years ago and again three years ago. Later treated by Dr. M.N. for a time but, as the trouble got much worse, he referred her to a surgeon, Dr. T., who made a diagnosis of cancer and refused to operate. This was in November 1922. She applied to us for Treatment, December 15, 1922. She had suffered severely for several months, with pain in the back and down the legs, bleeding from rectum and vagina, great difficulty of bowel movement, and finally the passage of all fecal matter through the vagina, plus a discharge of blood and pus. Weight on admission 125 pounds, anemic and weak.

On examination, December 15, 1922, it was impossible to explore the bowel through the anus as this was blocked by a mass of cancer. Vaginal examination revealed a hard nodular posterior wall, large enough to admit two fingers. The cancer mass extended to and involved the uterus, which likewise was nodular, greatly enlarged, hard and immovable, biopsy confirmed diagnosis, Adenocarcinoma of rectum.

A solution of ketene and glycol-aldehyde was given. Recovery was complete in five months, nearly all feces passing through the rectum without pain. Within nine months, the recto-vaginal fistula was completely healed by replacement with normal tissue, all signs and symptoms of cancer and the thyroid enlargement had completely disappeared. Her weight returned to normal and perfect health remains re-established.

MALIGNANT GLIOMA OF THE EYE

Patient, Baby, R. L. age three years and six months.
First observed by me November 21st, 1935. Right eye was removed May 1935, for rapidly developing Glioma.

Pathological Report:

Gross Pathology: Eyeball having a normal external appearance. On section the posterior chamber is practically filled with a grayish friable tumor mass, which seems to be attached to the region of the nerve head.

Microscopic Pathology: Sections of tumors show rounded dark staining nuclei of cells practically devoid of cytoplasm set in a thin connective tissue stroma having no characteristic arrangement. Marked necrosis is present in some areas and round cell infiltration may be seen in some areas. Section of nerve head shows no tumor tissue.

Pathological Diagnosis: Glioma of retina. In November 1935, the other eye was found to be similarly affected. Surgeon advised that its removal would be useless and patient was referred for a dose of Glyoxylide. At this time, pains were a prominent feature, the eye was red, the pupil dilated and apparently paralyzed. Visual field was diminished by one-quarter of its area, and the neoplasm was visible as a mass about the size of a bean.

Ophthalmoscopic examination revealed, “A flattened white mass penetrated by blood vessels, six or seven times disc diameter in upper right nasal quadrant.” Two c.c. of Malonide solution were given November 25, 1935, and August 18th, 1936. Recovery was completed within a year. During the reactions mild muscle twitching in the legs took place at the 12th to 24th week period. This we interpret as evidence of reaction in multiple gliomata distributed in parts of the central nervous system. The results are a return to normalcy of the eye in every respect, and a very good condition of her health in general.

CANCER OF UTERUS WITH THYROID SUPPRESSION

Patient, Mrs. K., age 44 in April 1931, when history was taken.

Past History: Pneumonia at 18 and influenza during 1918 epidemic. Sudden rapid gain in weight six years ago with myxoedema, dizziness and susceptibility to pus infections and peculiar nervousness.

Present Illness: In March 1929, she noticed slight bulging and hardness of right lower abdomen. A small growth was removed from the labium that proved microscopically to be squamous cell carcinoma. My examination April 1931, found uterus and adnexia involved in a large mass of cancer. There was typical bloody, odorous drainage. She was weak, anemic and myxoedematous in spite of daily doses of thyroid extract.

Treatment: Two c.c. Ketene solution was given intramuscularly April 1931, and recovery developed gradually, being completed in May 1933. The thyroid impairment and myxoedema gradually cleared up. **She remained well.**

MASSIVE CANCER OF UTERUS

Patient, Mrs. E. R., age 57 at time of treatment, November 6th, 1923.

Present Illness: started as pain in lower back and abdomen in Spring of 1923, when examination by family doctor resulted in a diagnosis of inoperable cancer of the uterus. She was examined at the Mayo Clinic in June 1923, where the diagnosis of inoperable and hopeless cancer was confirmed and some irradiations were given for palliation. However, the disease seemed to become more malignant and on November 6th, 1923, when she applied to me for examination, she was practically bedfast, having lost weight from 170 to 115 pounds.

Physical Examination: revealed general cachexia, a nard lumpy, fixed, bulging mass filled the abdomen below the umbilicus and extending above the umbilicus on the left side about one and 1/4 inches. The vaginal vault was expanded to a diameter of four to six inches and the cervix obliterated by the neoplasm that filled the vagina and compressed the bladder and bowel. There was copious bloody mucopurulent odorous discharge from the vagina.

Treatment: One dose of 1 c.c. of glyoxal solution was given and repeated on the 12th week. Reactions appeared at three-week intervals until the 24th week, after which recovery was considered complete. No more tumor masses could be found. The uterus was defective in structure and presented some soft vascular areas where healing was in progress. Subsequent examination showed complete healing with a minimal amount of scar tissue only. She remains well today, 16 years after treatment.

FAR ADVANCED CANCER OF THE STOMACH

Patient, Mr. B., age 46 at time of treatment April 6, 1924.

Pre-growth: toxic state was expressed by some ten years of gastric ulcer with hemorrhage and vomiting at times. Periodicity was definite.

Present Illness: started as a quite constant pain in the epigastrium in 1921, later it radiated to lower dorsal spine; worse by riding. Vomiting and hemorrhages increased in frequency and intensity. He lost from 220 to 120 pounds during 1922 and 1923. Various hospitals served experts in the diagnosis of cancer of the stomach by X-ray, laparotomy, and biopsy. Exploration revealed the stomach involvement to extend from the cardia to the pylorus and involving both spreading mostly along the lesser curvature and anterior wall. The surgeon's prognosis was only a few weeks to live at best. My examination made April 6th, 1924, revealed an emaciated bedfast sufferer vomiting putrid material and old blood, unable to hold food. The left supraclavicular space revealed a metastasis, the abdomen about the umbilicus bulged enormously to accommodate the massive neoplasm. In the lower abdomen several small masses were palpable, probably gland metastases; the lower dorsal vertebrae appeared involved.

Treatment of 1 c.c. of Glycol-aldehyde solution was given intramuscularly and recovery was soon in evidence and was completed within one year. In this time he gained up to 200 pounds. His health remains perfect except for a hernia produced with heavy lifting.

CHRONIC MYOCARDITIS WITH CANCER OF THE STOMACH

Mr. H., age 51 at the time of treatment, April 23rd, 1925.

Past History: of recent mumps and influenza. For the past 14 years he had peculiar dizzy spells on retiring, feeling as if he were turning summersaults, the muscles seeming to give way with loss of control. Gastric ulcer for 20 years with hemorrhages of late. Pain in stomach relieved by soda. Dropsy quite generalized for last three years. Slimy dysentery for past six months, with constant pain over epigastrium. Lost weight from 178 to 155 pounds in last four months, stools generally tarry, difficulty in swallowing, and constant slight cough during this period. Radiographs of stomach and chest revealed, besides the dilated heart, an enormous carcinomatous involvement of both the prepyloric and cardiac portions of the greater curvature. The report reads as follows: "Lesser curvature of stomach presents a smooth appearance, but there is a ragged shallow filling defect on the greater curvature that extends from the prepyloric region upwards to the cardiac region. This filling defect is constant in all films. The cap is not seen on any of the films. Slight iliac residue at five hours and normal colon."

My examination revealed a cyanotic dyspnoeic oedematous individual with eyes showing jaundice, ankles swollen badly. Perpetually arrhythmic pulse over 100 in rate when at rest. The left supraclavicular space showed metastasis. The upper abdomen was filled by a hard mass that extended to two inches below the umbilicus. The anterior shelf of sigmoid revealed some tumefaction. Mediastinal dullness increased to the right, apex shifted to left.

Treatment a. 2 c.c. of Glyoxylide was injected inter-muscularly and recovery set in within a few minutes, as was evidenced by the steadying of the heart and improved respiration. This improvement increased as time went on so that at the end of the fourth week the dropsy, hoarseness, cough, and dyspnoea had cleared up, except after considerable exertion. The growths were all absorbed and good health was established by the seventh month. Radiographs taken at the end of a year revealed no pathology. Seen last in spring of 1937 good health still maintained 12 years after Treatment.

The presence of catalase in the tissues combats the peroxide state, and therefore the activation of oxygen through the free valencies of the Carbonyl group have this natural inhibitant to contend with, its purpose being obviously the destruction of left over peroxides. In order to demonstrate an all-around inhibition of catalase and thus the activation of oxygen by the Carbonyl group and at the same time the carrying of activated oxygen to the tissues, a very dilute solution of formaldehyde with the peroxide of formaldehyde used therapeutically in a well-established case of cancer, will serve. The results are reported in the following history. As the peroxide of formaldehyde undergoes hydrolysis and gives rise to an activated Carbonyl group in a very simple molecule, and also gives rise to peroxide oxygen, it offers the factors needed to test the hypothesis stated here. It indicates that there is competition between the activating effects of the

Carbonyl group and the inactivating effects of catalase, but it does not prove that cancer is caused by excess catalase in the tissues. This solution is not a good therapeutic agent generally even though it worked well in this instance reported here, and in some others.

CANCER OF LARYNX

Mr. M., age 58.

Treated once, November 1928. Diagnosis confirmed microscopically by two different pathologists. "Squamous cell carcinoma of larynx showing many epithelial pearls." Involvement: vocal cords and cervical glands extensively. Voice and breathing impaired. After one injection intramuscularly, recovery was completed within six months with complete reconstruction of vocal cords and restoration of voice. Remains well. A very dilute solution of formaldehyde and of the peroxide of formaldehyde was used in this case.

LYMPHOSARCOMA

Mrs. A. G., aged 40.

Family History: Mother died of cancer of the uterus at age of 62.

Past History: Appendectomy at 35. Had small lump back of neck, size of pea, from childhood.

Present Illness: Eight weeks ago lump began to increase very rapidly to hickory nut size and, after five weeks, had it removed surgically. Microscopic study revealed it to be "lymphoblastoma of lymphosarcoma type" as reported by pathologist of good standing.

Microscopic Examination: "The normal lymphnode architecture is largely replaced by diffuse hyperplasia, including localized areas containing large pale lymphoblasts. The microscopic appearances are those of early lymphoblastoma of the lymphosarcoma type. (Does the peripheral blood show evidence of an excessive number of abnormal immature white cells? Such histologic findings in the lymph nodes may or may not be associated with leukemia.) Rapid recurrence took place, so that in three weeks the operated area became a tumefaction somewhat reddened and occupying the middle third of the sterno-C-mastoid muscle about an inch in diameter. Area below contained several masses the size of a pea, and hard. There was rapidly developing toxicity and failure in general health. Loss of weight from 108 to 101 pounds in last few weeks.

Treatment: One dose of Glyoxylide solution was given intramuscularly on May 19th 1937, and recovery took place rapidly. In three weeks, all tumors were completely absorbed and the weight gained to 102 1/2 pounds. Inspection, on June 21st, 1939, confirmed the recovery. Rapid recoveries take place very uniformly in cases where the growth develops rapidly and where the patient is not overwhelmed with the disease, as this case illustrates.

CANCER OF BREAST

Patient—Mrs. C. N., age 43. Housewife.

History taken September 1926, when Glyoxylide was administered.

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 both right pectoral muscles, carrying the dissection to the midline over the sternum, upward to the clavicle and outward to the latissimus dorsi muscle, and downward to include the upper part of the rectus abdominis fascia.

The Microscopic Examination made 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. Other areas some distance from the tumor show 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 a '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 mid-axilla only.

Diagnosis: "Adenocarcinoma of the breast". She left the hospital February 12th, 1925. The hospital reports their examination made June 2nd, 1925, after a series of radiation from February 9th, 1925 to May 3rd, 1925, to show no evidence of recurrence. Likewise, in July 1925 no recurrence was noted. However, patient returned to the hospital in September with pains in the right subcotal region, nausea and vomiting. Examinations were reported also in November and December 1925, and no recurrence mentioned except the possibility of liver involvement. In late 1926, the right arm began to swell, which her surgeons account for as due to lymphatic obstruction.

Examination: On applying to us in September 1926, examination revealed a mass above the right clavicle a little larger than a walnut. In the right axilla two tumors were found, one the size of an almond 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 c.c. Glyoxylide solution was given intramuscularly September 21st, 1926. There was some definite reaction of grippiness, slight chills and fever several days later and during the third week. The metastases absorbed completely before the end of the fifth 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 involvement was no longer detectable after the

sixth week. Her health improved steadily and her weight increased from about 87 to 103 pounds. **Examination made in February 1939 (ten years after Treatment), shows no involvement by cancer whatever and general good health.**

CANCER OF STOMACH

Patient, Mr. R., age 69.
Treated once, August 1926. Medullary carcinoma of stomach. After gastroenterostomy, to relieve pyloric obstruction, the neoplasms spread extensively, completely closing the new opening. Diagnosis confirmed by biopsy.

Biopsy Reports:
*Microscopic Examination: "*Small alveoli, combined with a diffuse growth of atypical proliferating epithelium, form the structural picture of this neoplasm. The epithetical 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 in the circumscribed types of carcinoma simplex. "This type is always infiltrating and early invades the lymphnodes with widespread metastases."

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

Physical Examination: revealed a fixed bulging mass, fist size, filling the epigastrium when 1 c.c. Glyoxylide solution was injected intramuscularly in August 1926. Recovery became complete in six months. Natural opening at pylorus now functioning, but gastroenterostomy healed shut. Remains well and vigorous.

ADENOCARCINOMA OF BOTH OVARIES

Patient, Mrs. L. B., age 63. Abdominal section done by Dr. W.W.S., March 20th, 1935. Both ovaries found neoplastic and peritoneum studded throughout with many tumors. A biopsy was made with a liberal piece of tissue.

Pathological Report as follows:

Gross Pathology: The specimen consists of two very irregular nodular masses of tissue, one measuring 17 by 12 by 9 cm., the other 14 by 9 by 6 cm., which were removed from ovarian region. Scattered fibrous adhesions are present about each mass. On section the smaller mass consists almost entirely of very cellular and very friable neoplasmatic tissue. Cystic structure which have been formed by the necrosis of tumor tissue occur throughout this mass on section. The larger mass is firmer than the smaller one. On section tumor tissue similar to that described above, but less friable and generally firmer is demonstrable. Patchy cystic degenerative changes, some of the cysts containing a clear straw-colored fluid are demonstrable in this tumor on section.

Microscopic Examination: Section through each ovarian tumor shows a malignant neoplasm growing invasively into the capsule of each structure. The tumor cells are tall and of columnar type. They produce gland-like structures as they grow, and occasionally they engage in papillary formation. This tumor histologically appears to be well advanced. It is given Grade 2 malignancy and is considered to be radio resistant. It is quite likely to metastasize.

Diagnosis: Bilateral Adenocarcinoma of ovaries, Grade II malignancy, radio resistant type.

Treatment: One c.c. of Glyoxylide solution was given April 21st, 1935.

Results: Recovery was completed within one year. Patient remains well.

CANCER OF UTERUS

Patient, Mrs. T, age 31: Squamous cell carcinoma of cervix uteri. Biopsy confirmed by three different pathologists. Report reads: "Sections show an atypical proliferation of squamous epithelial cells which have markedly infiltrated for underlying tissues."

"Diagnosis: Squamous cell carcinoma (epithelioma.)" Surgically inoperable, invading body of uterus and adnexa. Severe hemorrhages and pain, cachexia; no children, one miscarriage. Treated with two doses Glyoxylide solution, 1 c.c. each, two weeks apart, August, 1923. Recovery followed with complete restoration of uterus in one year. Four healthy children born since. Perfect health remains.

ADVANCED CANCER OF BREAST

Patient, Mrs. H. age 59. Had operation for cancer of the left breast February 8th, 1935, and the pathological report reveals cancer with metastases in lymph nodes. Pathological report appended. Breast condition, as of July 1937, showed advanced metastasis with consolidation of entire right side of chest. Patient apparently dying, so ill that one would not expect her to live more than six or seven weeks.

Treatment: First injection of Glyoxylide solution was given July 11th, 1937, and repeated April 2nd, 1939.

Subsequent History: The chest entirely cleared up and patient well when last examined on June 6th, 1939. Appears entirely well with a pulse of 72, weight of 128 pounds, and blood pressure of 124/80.

Pathological Report:
Gross Examination—Specimen, breast. The specimen consists of a large left breast, which is covered on one surface by a diamond-shaped piece of skin, which measures 21 by 6.5 cm. On its surface is present a protruding nipple. No areola is present. Just above and to the right of the nipple can be palpated a firm nodule, just above which the skin has been cut away. On section, this area measures 2 cm. in diameter. It is composed of pale gray, firm, dense tissue, which forms

a retracted scar. It cuts with firm resistance. The under surface is covered by a fairly large amount of pectoral muscle. The remainder of the gland is corn-posed of yellow fat in which is a present pinkish-gray strand of the usual glandular tissue.

Section of a large lymph node reveals it to be, on the cut surface, composed of yellowish-red soft tissue. The external surface is firm.

Impression: Carcinoma of breast.

Histological Examination: The tumor of the breast is very scirrhous in the central portion and over large areas acellular. At the periphery the tumor is in places scirrhous and in places medullary, and although in general it is sharply circumscribed, it is nowhere encapsulated. In some situations the neoplastic epithelial cells are arranged in the form of small solid masses, and in other situations there is well-expressed alveolar differentiation. The cells are medium size, tend to be distinctly outlined and have relatively large chromatic nuclei with fairly frequent mitoses in some areas. The metastases vary greatly. From three lymph node sections, one contains no tumor, one is occupied by a very scirrhous tumor tissue, which in places, resembles the tumor in the breast and in other places there are large tubular solid muses of epithelium resembling ducts. The third lymph node is occupied chiefly by a cyst from which papilliferous masses of epithelium project and part of the cyst a filled with what apparently was mucinous material and throughout this small solid epithelial buds can be recognized.

Diagnosis: Moderately well differentiated Adenocarcinoma of breast with metastases to axillary lymph nodes."

INFECTIONS

A few cases of infection are given here to exemplify recovery responses obtained.

ANTERIOR POLIOMYELITIS

A boy of 16, well nourished, while having the usual prodrominal symptoms of anterior poliomyelitis, was caught in a storm sailing his boat and subjected to extreme exhaustion and cold. Paralysis of the whole right leg followed in about 12 hours, and the paralysis spread in four days to involve the legs and arms, the abdomen, and respiratory muscles, the bladder, the speech organs. Cyanosis was extreme, the right eye was turned outwards, and he was unconscious when he received his first dose of Glyoxylide. The bladder had not been emptied for two days. The belly muscles were paralyzed and bloated and was expected that he would not live many minutes. Respiratory motions imperceptible. Pulse was slow and steady. Treatment was given and in ten minutes there was some contraction of abdominal muscles and definite improvement in breathing and in the cyanosis. The eye straightened out and he could talk rationally in a few hours. Improvement was steady. Recovery was seriously retarded because he was submitted to an exhausting ride of 150 miles before he was able to travel, that is, two weeks after his treatment. However, by his 12th week he was able to stand and to take some steps and the arms were normal. The right quadriceps extensor muscles, the transversalis and oblique, abdominal muscles are 60 percent below normal. The rest of the muscles of the torso have returned to

normal. He gets around like any other boy except when climbing stairs.

STREPTOCOCCAL SORE THROAT

Mr. J. P., 18 years old, fairly well all his life, seen evening of December 28, 1938 with typical streptococcus sore throat, cervical glands seriously involved, fever 105', in somewhat of a stupor, pulse rapid and weak, but could be aroused to answer questions. One dose of Glyoxylide solution given at midnight yielded considerable relief in eight hours. Throat and neck greatly improved, temperature 101', pulse 100 and of good quality. After 16 more hours temperature 99', pulse 82. Next morning the temperature was normal and the throat and glands practically normal. He felt well and was up and about.

TOXIC MYOCARDITIS FOLLOWING STREPTOCOCCAL PNEUMONIA

Mr. S., age 17. Had influenzal pneumonia severely in February 1938. Three months later the pulse rate in bed was 120 irregular and weak. There was cyanosis: respiration rate 24 to 30. Electrocardiogram showed serious myocardial impairment May 16th 1939, 2 c.c. of Glyoxylide solution was given intramuscularly and in less than 10 minutes the pulse rate was 65, regular and strong. The whole situation changed, cyanosis had disappeared and respirations dropped to 20. Eighty-four hours later a slight negative phase developed. The pulse increased to 90 for about an hour, after which it settled back to 70-76, as a continuing habit, with good function.

TOXIC MYCOARDITIS

Dr. M., age 35. Heart rate had been increasing over the last few months until it reached its present irate of 115-120 when at rest. The quality was not good and there was considerable irregularity, slight exertion brought dyspnoea, and increase in heart rate. There was epigastric and precordial pain of severe degree at times. At the time of the injection of the Glyoxylide solution the rate was 115 and of poor quality. Within five minutes it dropped to 88 and in 12 hours to 82 with good quality. At present the rate varies around 75 to 80 and ordinary exertion does not bring dyspnoea. General health greatly improved.

INFECTIVE ENDOCARDITIS AND MYOCARDITIS

Mr. W., age 71. Low blood pressure for several years and during last seven months the systolic pressure dropped from 110 to 90 mm. Hg. in spite of careful medical attention. Patient was seen in April 1939, bedfast, irregular fever reaching 103 at times. He could not raise his head from pillow without extreme dizziness, had no appetite and vomited somewhat. Pain was epigastric and precordial and generally severe in left shoulder and at times in the right shoulder. Cyanosis and dyspnoea were marked with a moderate general oedema. The liver was somewhat enlarged and tender. Heart showed considerable dilatation with the apex shifted to the left. Pulse 120/130, very irregular and weak. Heart muscle sounds were faint and there were both systolic and diastolic murmurs. Urine showed considerable albumin. Diagnosis of infective endocarditis and myocarditis was made without the aid of blood cultures and 2 c.c. of Glyoxylide solution were given intramuscularly. Immediately, there was definite steadying and improvement in the pulse

within 12 hours, the rate dropping to 102. By the fourth day the apex had shifted close to the nipple line and the blood pressure rose to 110/70. Dizziness and pain had disappeared and the temperature was normal. The liver enlargement bad also subsided but there was still some slight oedema about the eyes. Three weeks later he was up and about all day and could do a little light work without the pulse going above 90. Blood pressure 115/75. Urine negative. Seems to be in normal health at present.

CORONARY OCCULUSION

Patient, Dr. H. G. A., aged 64.

Present Illness: Had been bothered for a couple of years with pain and stiffness in his shoulder joints: but one did not recognize the essential rheumatic nature of his disability. While walking, December 2nd 1936, he was suddenly disturbed with a severe pain in the center of his chest. After resting a short while this passed away. However, it returned with terrible severity two days later, while he was quiet in his own home. Heavy, hypodermically administered, doses of morphine relieved him only while the narcotic action rendered him unconscious. Glyoxylide was used on December 8th and this gave him considerable relief in a few hours. Three and a half days later a second dose was given, following which all pain subsided and has not recurred. Five weeks after the pain had left him, an electrocardiogram still showed evidences of severe coronary damage. Nine weeks later, a second tracing disclosed a practically normal condition. The injury to his vitality has been most far-reaching, and the first ten weeks of convalescence were spent in bed, for the most part. But, long before he was able to be around, he was surprised and pleased to find himself free from his stiff, sore shoulder symptoms. For a time I had observed his lips were pale or cyanosed when he had become fatigued, but soon after the Glyoxylide was used this gave place to a normal healthy appearance. Now, 32 months since his seizure, he leads a normal, fairly active life, free from any sign of his old coronary symptoms.

CORONARY OCCLUSION

Dr. B., age 68. January 1926, time of Treatment with Glyoxylide solution. In this case the coronary thrombosis was complicated with marked arterial and coronary sclerosis. He had been a busy country practitioner until 1917 when angina pectoris pains shut down his work. They came on exertion or after eating. Finally, pains were unbearable and he had to stop practice. He would walk a hundred feet very slowly before pains put a halt to the effort. Often at last, pain was severe without exertion. Electrocardiogram confirmed the condition of occlusion, and the sclerosis was verified. In January of 1926, I gave him one injection. Recovery was rather steady and I think rapid, for in three months he was again at his practice and in a year was as vigorous as ever, pretty close to normal if not entirely normal, and remains so. The systemic blood vessels show no more sclerosis. Up to the present time, in spite of heavy work, he does not seem to have aged noticeably.

EPILEPSY

Miss B., age 17, schoolgirl. Epileptic fits for over three years occurring at night after retiring. Most often, when observed, the aura centered in the epigastric region. There were not more than

three fits a day and sometimes only one a week. One dose of the Glyoxylide solution was given August 12, 1929. The disease gradually receded, so that at the twelfth week no major fits occurred, but only an occasional petit mal. These completely disappeared before the eighteenth week. She has remained well since.

Areas that do not want to heal are allergic in causation. The gumma, leproma, tubercle, and psoriasis are the most common seen. Recovery can here be obtained with return to normal structure and function as well, as exemplified here.

PSORIASIS

Patient, Miss N. —Age 82. Brother has psoriasis. Patient had tonsillitis one and one-half years ago. Tachycardia on changing posture soon followed, and one month later, psoriasis started on the thigh and spread rapidly in spite of expert concentrated attention. At the time of Glyoxylide injection body was generally covered, hairs and nails affected. Ears almost separated from scalp. Recovery was completed and heart returned to normal fourteen weeks after one injection of Glyoxylide given, April 2, 1926. Recovery is permanent to date.

TUBERCULOSIS

Miss A. Age 16. Advanced tuberculosis of both lungs. Spontaneous pneumothorax, left chest. Heart shifted to the right aide. Massive tuberculosis left kidney. Evident tubercular meningitis. Projectile vomiting every few minutes for three weeks, cyanotic. Fever 105'. Pulse very weak and rapid. Bedfast. Treated one c.c. of Glyoxylide, July, 1922. Recovery took two years. Whole left lung regenerated. No more pathology traceable. Heart restored to left side. Married, has healthy twins who are very resistant to colds. Health is still perfect.

EXTENSIVE PULMONARY TUBERCULOSIS WITH CAVITATION

Patient, Mr. B. Age, 36 at time of admission March 2, 1934. One sister had died of tuberculosis at age of 22.

Past Illnesses: Rheumatic with high blood pressure about 10 years ago.

Present Illness: Started in 1929, as a progressive enlargement of the cervical glands on the left side of neck. Upon hospitalization in a public institution in 1934, both lungs were found extensively involved showing cavitation. Irradiation failed to help the tuberculomas in the neck. He progressively grew worse and was finally sent home with a hopeless prognosis

Physical Findings: Radiologically and by physical signs, bilateral cavitation and wide distribution of lesions were demonstrated. Largest cavity about two inches in diameter. Cervical glands on left side of neck amount to the size of a large fist. There are gastric and cardiac disturbances. Tissues waxy.

Treatment: 2 cc. Ketene solution were given on March 3, 1934, September 24, 1935, and February 1937. Recovery set in promptly after the first dose. He was able to go to work in January 1937. There is no cough. Numerous sputum examinations made to date are always negative, physical and radiographic studies demonstrate recovery. He is in perfect health.

TUBERCULAR ARTHRITIS AND OSTEOMYELITIS

Patient, Miss S. Age 20. Tuberculosis of left knee joint for fourteen years. Three operations between ages of six and twelve to relieve acute flare-up of Osteomyelitis in lower half of femur shaft. Distortion of bone progressive with increasing ankylosis and deformity. Motion angle ten degrees. The fourth flare-up took place in July 1934, with swelling and intense pain of the knee joint. Rapidly progressive. Could not walk. Radiographic study revealed irregular structure and contour of lower third of shaft of femur with defective calcification and bone absorption, clouding of articular surfaces narrowing of joint space, extensive proliferation around periostial border. One dose of Glyoxylide given July 23, 1934, was followed by rapid decrease in the pain and a steady restoration of joint and bone to normal, functionally and structurally, with perfect use of leg and full motion within nine months. General health has become excellent.

GASTRIC ULCER

Patient, Mr. C. P. Age 46.

Past History: Periodic gastric upsets for years necessitating a gastroenterostomy fifteen years ago when extensive ulceration was observed. Relief lasted only three years, after which symptoms recurred causing very much suffering. He was operated on again two years later and relief followed for one year, whereupon greater misery set in. In November 1938, he suffered a severe gastric hemorrhage. Was hospitalized for a number of weeks and on a strict diet. *Ketene solution* was given June 5, 1939. Recovery was rapid in spite of non-restriction of diet; drinking, etc. **Present health, perfect.**

GASTRIC ULCER

Patient, Dr. H. age 50, suffered with gastric ulcer ever since childhood. Finally two perforations took place one at the greater and one at the lesser curvature. Peritonitis developed but was controlled by incision and drainage. At the time of treatment with ketene solution, a third perforation was threatening.

Physical Examination: Revealed a large induration in the epigastrium. There was much pain, and suffering from eating. The heart skipped beats frequently. Two cc. of Ketene solution were given intramuscularly in September 1927. There was some fever and chills on the fourth day, and improvement was rapid indeed. Within four weeks, he ate and drank as he pleased. Recovery was completed in six months, and he remains perfectly well today.

GASTRIC ULCER

Patient, Mr. W. F. Age 38.

Family History: Negative to cancer.

Past History: Measles and chicken pox in Childhood. Pneumonia at 20 and again 4 years ago.

Pre-growth Symptoms and Status of Patient: Stomach trouble started as indigestion when 16 years of age, always taking soda. Operated on in 1913 for appendicitis, the appendix found normal; operated on in 1914 by the same surgeon for gastric ulcer; he resected two small ulcers and one large ulcer and made a gastroenterostomy; no relief. The patient kept taking soda continually; the stools were black, had pain and gas, was unable to straighten up for years, the pain extended through the epigastrium to the back. He was careful about diet to date of admission, was very nervous all the time. In the year 1920, his weight dropped from the normal of 155 to 135.

On January 8, 1920, he had two severe gastric hemorrhages that left him nearly bloodless and cold. His physician bad him well packed in ice but that did not atop the bleeding. Tarry stools were passed for several succeeding days. Our examination on January 12, 1920 revealed a cancer mass in the epigastrium the size of a fist. The ulcer was still bleeding. Ketenes were given and recovery was complete in four months with disappearance of all stomach trouble and the mass in the abdomen. Chills, a light fever and achiness for the first six weeks following Treatment constituted the reactions in this case. He now weighs 197 pounds and is in the best health he ever experienced; stomach functions perfectly on any diet.

ACUTE PROGRESSIVE MUSCULAR ATROPHY

Patient, Miss D. C. Age 46.

Present Illness: started one and one-half years ago as a progressive neuritis with atrophy of the muscles of the shoulders, arms, forearms, and hands worse on the right side. Leading internists and neurologists throughout the country could only prescribe increased doses of narcotics to combat the increasing pain. My examination made May 15, 1939, revealed a tumor to the left of and below the umbilicus two inches in diameter. Menses had stopped for several years. The muscles of the shoulder girdle and right arm, forearm and hand were atrophied to perhaps 10 percent of normal. The same muscles on the left side atrophied to 30 percent of normal. There was beginning atrophy in the muscles of both legs. Pain was constant, tremor definite and paralysis marked. All narcotics were withdrawn and on the following day 2 cc. of Ketene solution was given. The first night following Treatment was marked by a great diminution of pain so that no narcotics were required. The second night practically no pain was suffered and from then on recovery advanced steadily in every respect. In six months, she was able to write with the former paralyzed hand and the restitution now appears to be about 80 percent normal in every respect. Her health is splendid.

OBLITERATIVE ENDARTERITIS

Patient, 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. Wa1king caused pain in the feet, and rests became necessary at shorter and shorter intervals. Diagnosis of Obliterative endarteritis was made by a number of experts and the blood sugar of 380 was found. 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 destruction, but no tumor mass could be found. Although both feet and the right leg were severely involved with the endarteritis no gangrenous decomposition had yet taken place. The toenails, however, appeared dead. There was great pain on motion, but he could get about some.

Treatment: One c.c. 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 cave 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 akin the blood came back with normal rapidity, and by the fifteenth week he could walk all day without pain or inconvenience. The toenails 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.

CONCLUSION

We have here only partly demonstrated the law of chemical structure that controls tissue function and immunity through the oxidation mechanism—the most basic process of life. More has been written about the common allergies and infections and about some conditions of obscure aetiology that respond to the treatment based upon this law. The treatment is preeminently within the province of the general practitioner, and can be conducted successfully and inexpensively in the home.

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