The Basis for Immunity, Natural or Acquired

Natural Immunity Osteopathically Developed or Safeguarded

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The human body is intended by Nature to be immune from infection and disease.
If natural immunity is lacking, it may be acquired.
If it be lost, it may be restored.
If it be present, it may be safeguarded and reinforced.

All of these objects may be provided by osteopathic treatment. McConnell recently said: "At this late date many seem to forget that a basic discovery of Dr. Still was the fact of immunity."

The term natural immunity properly implies that the possession of this quality is normal to the human body. However, some allopathic physicians have fallen into the error of implying that natural immunity is very limited, or that a person in a state of health is immune only to some things. The osteopathic thesis is that natural immunity belongs to the natural body.

There are many people who "never get anything."

There are others who "get everything." We all know people who at certain periods in their lives "never got anything," but who now "get everything." Many adults who were immune to the ordinary diseases of childhood, having later lost this immunity, acquired, as it were out of turn, diseases of childhood such as measles, diphtheria, whooping cough, and so forth.

But the natural immunity that protected them at one period of their lives may be preserved to safeguard them all of their lives. Often there is pointed out the example of a healthy child fallen victim to infection, which perhaps is epidemic. This is no proof that the child under ordinary circumstances would be susceptible to this disease. Apparently healthy children are extremely apt to be in a state of relative acidosis due to faulty diet, or they may be otherwise toxic, or be suffering from lowered vitality due to rapid growth or to other depletions of vital forces. In this status they readily become victims of infectious diseases.

It has been supposed that many young persons contract throat infections through bathing in pools. This is not just because the germ is present in the pool, but because the system of the person has become chemically unbalanced and therefore susceptible. It is a well-known fact that streptococci and staphylococci are found in most throats. But these do not become harmful until the status of the system becomes abnormally changed and natural immunity is depleted.

The skin is the natural first line of defense. It is a mechanical barrier against infection. Likewise it protects by reason of its function of elimination. By dilating the capillaries of the skin and thus increasing its action, the nervous system contributes to this function. General metabolism, oxygen supply, body temperature, and exercise all contribute to the first line of defense. Chilling of the body surface favors infection. Insufficient oxygen or food supply lowers the vitality of the tissues and likewise favors infection, as witness the well-known fact that one readily "catches cold" or contracts influenza if these essentials are depleted.

From the Boston Herald I clipped the following account of a paper given before the 1936 meeting of the American Association for the Advancement of Science:

"Two new groups of chemicals, called precipitins and antigens, were described by Prof. Robert L. Kahn of the University of Michigan, as the 'anchor system' which tends to wall up and concentrate troublesome germs and so to localize infection."

"This anchor system, according to Dr. Kahn, is the body's first line of defense against disease and is found in the skin. Dr. Kahn showed that the skin is ten times better able to combine with these immunizing substances than other parts of the body."

"The skin, he said, goes to work long before there is any sign of defensive activity in the blood."

From the osteopathic viewpoint and in the light of what is later to be said in my article concerning the bactericidal power of the blood, it is reasonable to suppose that healthy blood can, at all times, keep the skin fortified.

It should be stated in all fairness, however, that Professor Kahn appeared to be speaking of precipitins and antigens developed in the laboratory and used in artificial immunization.

The liver, the kidneys, the skin, the lungs, all assist in straining out poisons from the system and
maintaining the purity of the blood and its correct hydrogen-ion concentration.

The last named must also be included in the first line of defense. It has been called Nature's first defense against disease. It is known that a status of relative acidosis compromises the capillaries in their function. It renders their walls more permeable to poisons and the tissues become toxic as a result.

It is hardly necessary to point out that the use of osteopathic therapeutics is a most valuable means of maintaining normal alkaline reserve to combat acidosis. In this connection, too, one should think of the relation of proper diet to health. Incidentally, it is believed that foods grown from soils that are deficient in iron, copper, and iodine, lack vitamins. If this be true, a fruit or a vegetable that looks fine may be deficient; its value to the human system greatly lessened, and the body's powers of resistance handicapped by the lack of proper vitamins and minerals.

In this first line category, also, we must place the mucous membranes of the body which mechanically protect the underlying surfaces. McDowall® points out the fact that the upper part of the alimentary canal is protected by digestive secretions, which afford it comparative immunity. He states that it has been shown experimentally (Cornwall) that injection of bacteria into animals produced no marked effects after they had been introduced into the stomach, but brought about severe infections after they had been introduced into the ileum.

When an inflammation is set up by the invasion of bacteria, leucocytes flock to the affected area to destroy the microorganisms.

In this connection Starling® brings out an interesting point. He says:

Prior to the work of Metchnikoff, the changes in the blood vessels fostered the attention of physiologists, and the accumulation of leucocytes was regarded as secondary to these changes. Though the alteration of the capillary wall, by permitting the adhesion of the leucocytes, must no doubt favor their migration and their passage from all parts of the body into the inflamed part, we know that the same accumulation of leucocytes occurs in the entire absence of a vascular system. The movement of the corpuscles towards dead or injured tissue must therefore have some other explanation. We have abundant evidence to show that the essential factor in this aggregation of leucocytes is their chemical sensibility, and that the phenomenon is simply one of chemotaxis. A capillary glass tube containing a suspension of dead micrococci, or peptone, or both extracted from dead tissue, if introduced into the anterior chamber of the eye or into the subcutaneous tissue, is found after a short time to be full of leucocytes. It is worthy of note that the positive chemotactic influence exerted by any given species of pathogenic bacterium is roughly inversely proportional to its virulence.

Next in line of defense there are the lymph glands, which perform a somewhat similar service. In addition to these, there is lymphoid tissue, such as is found in the nasopharynx, in the tonsils, and therabouts. Likewise there are aggregations of lymphoid tissue in the form of Peyre's patches, which, as McDowall® states, according to Barclay Smith, may be looked upon as protecting the small intestine from the invasion of bacteria from the large colon. In this connection he mentions the reticulo-endothelial system, the Kupffer cells of which, especially in the liver, have the power of ingesting bacteria and excereating them in the bile.

Osteopathic manipulative treatment of the spleen and its important effect upon the blood has been emphasized by our profession. Incidentally, the relation of the spleen osteopathically to both the liver and kidneys should be emphasized, for this trio stands in a very important relation in osteopathic work in the treatment of disease.

The Journal for January, 1936, reviewed a book entitled "The Spleen and Resistance" by David Perla, M.D.® The following quotation is taken from that review:

The role of the spleen in antibody formation is discussed in one chapter, while others give the effects on natural resistance of splenectomy in animals; the relation of the spleen to acquired resistance in latent infections; compensatory changes following splenectomy and other subjects.

As Macleod® points out, "Hemopoiesis occurs actively in the embryonic spleen, but in adult life, becomes restricted mainly if not entirely, to the formation of certain leucocytes." He further shows that anemia is a result of splenectomy.

The spleen performs rhythmical alterations in volume. There are two types of these. A slower form, concomitant with digestion, and also rhythmical contractions occurring about once a minute. The latter are so marked in certain lower animals that the spleen has been regarded as a second heart. Macleod states that "Barrcroft and his co-workers...have found that the volume of the blood and the total amount of hemoglobin in circulation are related to them." He further points out that in the cat as an experimental animal, "the total hemoglobin content of the blood could be increased by one-third through contraction of the organ, such as occurs in conditions of strenuous exercise." Therefore, from an osteopathic point of view, we would feel that treatment of the spleen would augment the protective power of blood. The liver and the kidneys also help.

McDowall® states:

Once bacteria have gained access to the blood stream, there is good evidence, such as that of Kidd and Chalmers® concerning the use of penicillin, that they may be gradually eliminated by the body. There can be little doubt that if proper culture media are used, the occurrence of a sterile urine is much less common than has been usually supposed. It is considered that should the kidney become overstrained in this respect, the organ itself may become attacked and become the seat of disease, which will vary with the bacteria concerned. The existence of such a mechanism is supported by the fact that the kidney may become the seat of blood-borne disease that does not necessarily exist in any other part of the body.

In The Journal for May, 1934, there was an interesting editorial by S. H. Herztfeld, M.S., professor of chemistry at the Chicago College of Osteopathy, upon the therapeutic value of the ketogenic diet, i.e., a diet rich in fat and low in protein and carbohydrates. This whole article is recommended to your attention. For our present purpose, however, I quote part of it here as being germane to our thesis:

The ability of the body to elaborate chemicals for its own protection and repair has been stressed by the osteopathic school of practice since its beginning. The formation of the ketone bodies as bactericidal agents in urinary infections is another illustration of the many similar reactions of which the body is capable. The therapy in these cases consists of utilizing the inherent resources of the body to their fullest extent and in relying on the protective mechanisms of the organism itself.
The liver assists us in the fight for immunity since it is a detoxifying organ. It further assists us by its hemepoietic powers. The bile is Nature's aperient. It possesses slight laxative properties and assists in expelling intestinal contents before bacteria have had a chance to grow to any great extent in them. Therefore, it fortifies against infection.

It must not be overlooked, however, that bile is itself a favorable culture medium. The fact that certain bacteria grow in such a medium leads us to consider the value of keeping liver action free. Emphasis should be placed upon this point since a sluggish gall-bladder, on account of this property of bile, may become a seat of infection as a result of bacteria creeping into it from the colon.

Being called to a case of extreme toxic headache of years' standing, which had eluded the best efforts of physicians of all schools, and having made a careful physical examination of the patient, I finally decided that I suspected the presence of chronic disease in the appendix and gall-bladder. The patient protested that he had never had symptoms of either. X-ray, however, revealed that he had both. Bacteriological examination of the stool revealed an extensive pathogenic flora. The infection had crept from the colon into both the appendix and the gall-bladder. Manipulative treatment, diet, and the institution of measures to correct the flora with the use of lacto-dextrin, relieved the patient. No operation was needed. We know that cases of diphtheria, so proved by the taking of cultures, are successfully overcome by osteopathic measures without the use of antitoxin or other drugs. The success of osteopathy in preventing and in bringing about recovery from both pneumonia and infantile paralysis is notable. Osteopathy saves lives in all types of pneumonia, regardless of whether there has been developed a serum for a given type, because osteopathic treatment causes the body to use its own biochemical resources to make for itself the right one. So many persons suffering with pneumonia, and given up to die, have been saved by osteopathic manipulative treatment, that one cannot escape the conclusion that this is so.

Independent research is nowadays confirming that which the followers of osteopathy have long contended. For example, The New York Sun of November 17, 1936, contained the following:

Chicago, Nov. 17 (U.P.)—Man's body creates its own cure for pneumonia—a special cell which “eats” the pneumonia germ [has been found], the National Academy of Sciences was informed today at its autumn meeting.

Dr. O. H. Robertson, professor of medicine at the University of Chicago, described the process for the first time.

“When pneumonia occurs,” he said, “certain small fixed tissue cells in the lungs create a special type of larger size. These special cells engulf and digest the pneumonia germs and do it much faster than ordinary phagocytic, or engulfing cells.”

“When the disease is conquered, the special cells disappear and are replaced by the normal type.”

If this be true and the body is able to combat pneumonia by such a mechanism, it would be just as able to combat any other infection by settling up a similar mechanism of defense. Such things go far to confirm our major premise.

Cerebrospinal fluid has been found to be somewhat bactericidal and contains antibodies.

It has been found that the secretions of the lacrimal glands contain a substance, lysozyme, which is said to work like vitamin A in assisting the system to ward off infection. Tears, therefore, it would seem, are an aid in protecting the eyes and nasal passages against infection.

The lymph, according to Macleod, is purely a scavenger.

The bone marrow in certain infections is stimulated to throw out an increased number of young cells into the blood.

In acute poliomyelitis it has been found that there is a great natural resistance in most individuals. This power of resistance is partly in the nasal secretions of a healthy individual. Harold Amos of Johns Hopkins Hospital, has shown that poliomyelitis virus, plus the normal secretions from a healthy nose, allowed to stand for a time and then injected into the spinal canal of a monkey and his nasal washings do not produce the disease. He has also shown that the use of antiseptics in the nasopharynx in an effort to prevent infection is disastrous.

L. H. Walker, D.O., in The Journal for October, 1935, refers to the Amos experiment as follows:

A healthy individual is selected who has never been in contact with the disease and whose nasal washings have been proven by experiment to neutralize the virus. The nasopharynx is treated with some one of the antiseptics, saline solution, argyrol or even plain water a few times. After treatment his nasal washings are mixed with the virus and injected into the spinal canal of a monkey and his nasal washings have lost the power to effect a neutralization of the virus.

Walker calls attention to the statement made by the Washington State Department of Health: “There is no reliable treatment available for the prevention of poliomyelitis,” and goes on to speak of the experience of the Los Angeles County Osteopathic Hospital during the recent infantile paralysis epidemic:

Los Angeles was in the midst of an epidemic of this dread disease which was attacking young and old alike. Unit No. 1 (medical) saw its nursing and physician staff decimated by the contagion of paralysis, while Unit No. 2 (osteopathic) instituted daily osteopathic treatment for all connected with the institution and, so valuable was the prophylaxis of these treatments, no one was lost from duty during the entire epidemic.

A few years ago Sir Almroth E. Wright, a famous English pathologist, in lauding the value to health of exercise, stated that he had found that the blood of football players was more bactericidal after play. It is, of course, well known that both the whole blood and blood serum are germicidal and antitoxic. It is clear that exercise, either as the result of physiological gymnastics; that is, the usual use of tissues in the performance of function, or exercise deliberately employed as a means of health, is the greatest natural means of increasing blood flow.

Starrling shows that chemical stimulation of the vessels themselves by means of metabolites, or substances produced by the chemical changes accompanying their activity, is one of the most important causes of increased blood flow. He shows that the flow of blood laden with the results of muscular metabolism, such as lactic acid or carbon dioxide, produces a marked dilatation of the blood vessels in the used part. To this he adds the further fact that carbon dioxide, an universal hormone, acts upon the vasomotor centers, medulla and spinal cord, causing contractions of the blood vessels. This is to say that
exercise produces lactic acid in the local tissues, which lactic acid gives off CO₂ from its carbonates, which in turn acts to cause dilatation in the blood vessels of the active part, but vasoconstriction elsewhere.

It is obvious, therefore, that the presence of an increased amount of blood in a part gives it increased immunity to infection. We all know that by osteopathic means we can practically at will increase the blood flow through a given part, as well as in general.

In those who can take no exercise, the use of osteopathic manipulative treatment, circulating the blood actively, is a vitally important protective measure.

The bactericidal power of the blood, however, does not rest solely upon the phagocytic power of the white blood corpuscles. The serum of the blood itself possesses this power. Vaughan and Novy¹⁵ state:

The bactericidal action of normal blood is probably due to the presence of enzymes. . . . It has also been shown that normal serum may in some instances manifest anti-infectious properties. For instance, one-tenth cc. of the blood serum of men who have never had typhoid fever agglutinates readily the bacillus of the disease. Not only is this the case, but the blood serum of such men may protect animals against the peritonitis normally induced in them by the typhoid bacillus. It follows from these observations, which might easily be multiplied, that the blood of normal animals frequently contains anti-infectious substances.

Incidentally, it has been shown that the serum of blood is much more bactericidal than the plasma of the blood. Hence, we see that a wound, for example, glazed with blood serum which Nature constantly supplies, is thus protected against infection.

In this connection Starling⁴ says:

Normal blood serum is found to have a strong destructive influence on most species of bacteria, whether pathogenic or not. Since this property is not shared to anything like the same extent by the blood plasma, it may be ascribed to the breaking up of bactericidal substances. Extracts made from any collection of leucocytes have a similar bactericidal effect, and it has been shown by Wright that the ingestion of bacteria by normal leucocytes goes on much more rapidly in the presence of blood serum if the bacteria have been previously subjected to the action of blood serum.

It is interesting to note in this connection a statement by McDowall⁶:

Local heat . . . very effective in raising body temperature, and there is evidence that the antibacterial power of the blood is increased when the body temperature is increased.

Heat, through increasing the circulation of the blood, calls to the site of infection more red corpuscles and more white corpuscles. Phagocytosis is encouraged. These facts have been taken into account by Deacon,¹¹ and others in the treatment of disease by raising body temperature.

The chemical basis of immunity is furnished chiefly by blood. It contains innate bodies and lysins which are substances produced in it which are able to kill bacteria by a process of lysis. McDowall³ quotes Muir as saying:

that the substances are not in themselves capable of destroying bacteria, but act as ions in that they make it possible for the substances known as complements, or alexins normally produced in this serum, to attack bacteria. (Italics mine.)

The blood also contains opsonins, which are similar to immune bodies, which, nevertheless, can act in the absence of complements.

According to McDowall the toxins produced by bacteria are neutralized by antitoxins formed in the blood serum. This is the basis for the practice of artificial immunity. It likewise becomes in part the basis for the osteopathic contention that the body produces its own agents for its protection in disease. Osteopathic manipulative treatment causes the body to erect its own fortifications against the onslaught of the disease.

Various precipitins and agglutinins which are supposed to be anti-substances are found in serum after the injection of antigen.

In this connection Vaughan and Novy¹⁵ say:

There are bacterial enzymes which in the animal body destroy not only the bacteria cells but their toxins as well, . . . The bactericidal action of normal blood is probably due to the presence of enzymes.

In recent years it has been shown repeatedly by scientists that immunizing substances are extracted from pathogenic bacteria, such as streptococci, and so forth.

The New York Times of January 3, 1937, in reporting the proceedings of the American Association for the Advancement of Science speaks of this matter as follows:

Antigens are part of the bacteria, which, when used in the form of vaccines, increases the body’s resistance to that particular bacterial disease by stimulating the body’s defensive mechanisms to producing a plentiful supply of antibodies. Thus the antibodies are the direct immunizing agents, whereas the antigens are the agents which stimulate the building of the antibodies.

This is, of course, the basis for the use of vaccines and sera. But we would believe that, as shown by the remarkable record of osteopathic physicians in overcoming pneumonia and other virulent diseases, we assist the body in the work of elaborating according to the invading organism its own natural serum.

Starling⁴ says:

Finally there may be produced as a result of the excess of microorganism, substances such as the amboceptors, which render the microorganisms susceptible to destruction by the complements or cytoxins normally present in the circulating fluids and possibly themselves derived from the activity of destruction of the leucocytes and other phagocytes of the body.

Perrin T. Wilson, D.O.,⁶ says:

Natural immunity is the most important factor in the entire human problem, and yet very little is said about it. It is osteopathy’s cornerstone. If we have it, we live. If not, we die . . . . To those who grasp the whole picture, disease is a failure on the part of the body and not the success of an invading germ.

In the British Osteopathic Review for February, 1935, Wallace M. Pearson, D.O., under the caption "Research Substantiating the Osteopathic Claim," says:

It is interesting to know that the principle of natural immunity (self-contained body protection in response to external stimulation) was propounded as a fact twenty years before Ehrlich read his classical paper on immunity in 1906. Now we know how the body creates its own medicines, while in the early days of osteopathy such a thought was revolutionary. In order to maintain this protection there must be adequate blood supply to the cells so that they have the vital elements from which they can build a response.

Fundamentally it is the blood which offers the human body the most valuable protection against infection. If it be kept pure and in good circulation,
it constitutes a mighty fortress against the invasion of disease. The chemical basis of immunity lies here. The biochemistry of the human body is the sharp and ready tool in the hands of the osteopathic physician.

"The blood is the life." "The rule of the artery is supreme."

From this general summary of the various bactericidal and other protective powers residing in the human body, it may be concluded readily that the body is so constituted as to resist the invasion of pathogenic agents.

We have endeavored to make a thorough review of what the human body possesses as a basis for immunity, natural or acquired. Reviewing these facts, considering all the evidence, we must conclude that the basic fact is that the body possesses the basis for natural immunity. Well and truly did Still say: "The body has its own drug store inside it. It is your business to see that this drug store is well run."

Osteopathy's power to rally all the natural defences of the body against disease, for either protection or cure, is the very core of its greatness. To construct or insure natural immunity, or, this lacking, to construct or insure acquired immunity constitutes osteopathy's great contribution to human well-being.

REFERENCES
11. Wilson, Perrin F.: Personal communication.

The pages appearing in this "Special reprints" section have been electronically scanned from the original journals in which they appeared. Consequently, the scanning process at a density to enhance readability has picked up such artifacts as "bleed-through" type from reverse pages and other "blemishes" that existed in the original paper on which the text was printed. Even the yellowning of the original pages has caused some darkening of the margins. JAOA regrets these anomalies and hopes that readers will overlook them and concentrate on the content of these works published in the osteopathic medical profession's early history.

For interest sake, concluding pages of articles may contain "newsy" items of the original date.

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Osteopathic Treatment of the Common Cold*

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The common cold is defined by Kerr as, "An acute disorder presenting its most obvious symptoms in the nasal passages, occurring most frequently in the fall and early spring in temperate climates and attacking great numbers of the population almost simultaneously."

Regarding statistical frequency, it is estimated, as a result of careful investigation by many observers, that adults in business and professional life average three colds each year with measurable loss in efficiency as well as actual loss of time. The common cold creates one of the serious problems among large employers of labor. The common cold, with its many possible complications, constitutes a real problem in economics. Colds among children are equally serious and frequently serve as the initial factor in the onset of many of the diseases of childhood.

The tendency to seasonal epidemics has long been recognized. In the fall, when people begin to live more indoors, there is a marked increase in the number of colds. In the middle of the winter with the severe weather conditions, and possibly associated with dietary irregularities of the holiday season, there is another marked increase in incidence. In the early spring, with the many sudden and marked changes in the weather and with the opportunity for exposure and wetting of feet, the chart line of incidence again rises sharply.

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