The Emerging Concept of the Osteopathic Lesion*

IRVIN M. KORR, Ph.D.
Department of Physiology, Kirksville College of
Osteopathy and Surgery
Kirksville, Mo.

INTRODUCTION

The survival, growth, achievements, and increasing effectiveness of osteopathy are eloquent testimony to the soundness of the principles upon which it was founded. The attainments of the osteopathic profession have been possible only because the profession is founded upon the solid rock of basic truth. Its continued growth and prestige indicate that those truths continue to be correctly applied and soundly developed.

The time has come, however, when increasing attention must be given to the theoretical reserves upon which continued technical advance is predicated. For many reasons these reserves have been consumed far more rapidly than they have been replenished. In osteopathy, as in all technological aspects of modern life, large backlogs of fundamental information must be maintained and enlarged if continued practical advances are to be assured. They are, indeed, the springs from which the advances flow.

In osteopathy these reserves consist of our understanding of the basic biological processes and mechanisms associated with the phenomenon designated as the osteopathic lesion. Today this understanding is not, or at least until a very few years ago was not, a great deal larger than in Still’s day. Although knowledge of the mechanical aspects of the lesion (the “cause”) and of its clinical manifestations (the “effect”) has greatly advanced, there has been no parallel advance in our knowledge of the processes intervening between these two aspects of the problem.

These processes are the problems before us today. Given a lesion—so well known to osteopathic physicans through their trained fingers and through x-rays—how does it produce its effects? Through what mechanisms and channels does it “impair the defensive, reparative, and homeostatic functions of the body”? How does it predispose to disease? How does it upset physiological equilibria? What processes does it initiate? The very future of osteopathy, as a distinct and advanced system of practice, is directly related to the accuracy and thoroughness with which these questions can be answered in the next few years.

It is my purpose in this paper to present our current theories regarding these central aspects of the osteopathic lesion. Then I wish to draw some of the practical implications of these emerging concepts. Paradoxically, I shall present our current theories by dealing to a large extent with other matters. It is possible to do this because those other matters are so intimately, and sometimes inseparably, related to the osteopathic lesion. The discovery of these relations is as important as the discovery of the new facts about the lesion itself because, with the establishment of such relations, a whole body of knowledge, ready-made and usually still growing, is automatically incorporated into the osteopathic concept. With every such incorporation our concepts, in which clinical and professional advances have their origin, are deepened and widened.

The history of science—physical, biological, or medical—records again and again the collapse of fences separating scientific and technical fields. As a result of certain fundamental discoveries entire fields of scientific pursuit, whole schools of thought, and major concepts begin to develop and attract disciples. These fields may develop independently and remain separate, one from the other, and apparently unrelated, for many years. However, as the knowledge and understanding within each field accumulates, through experience and research, it becomes apparent in many cases that the walls which separate these fields have very little substance; in fact, they exist only in the minds of men, and not in nature itself. Each field begins to draw from, and give to the other, new and additional meaning. Finally they merge.

Nowhere is this better illustrated than in the fields of immediate interest to the osteopathic profession. I have selected for discussion only three major fields which, from our perspective, appear to have much basic and distinctive substance in common. Each has yielded a major body of concepts, a school of thought or a school of practice. Each originated independently, at different periods and in three different countries, separated by thousands of miles, and under very different circumstances. Today they are adjoining fields and the fences between them are crumbling. They have in common the following general concepts:

1. The body is a unit; all parts function in the context of the entire organism.

2. Disease is a reaction of the organism as a whole. Abnormal structure or function in one part
exerts abnormal influence on other parts and, therefore, on the total body economy.

3. The organism has the inherent capacity to defend itself, to repair itself, and to resist serious upsets in equilibria.

4. The nervous system plays a dominant organizing role in the disease processes.

5. There is a somatic component to every disease which is not only a manifestation of the disease, but an important contributing factor.

6. Appropriate treatment of the somatic component has important therapeutic value in that it leads to improvement in the other components.

The concepts I refer to are: (1) the osteopathic, (2) the concept of referred pain and associated phenomena, and (3) the concept of disease developed by A. D. Speransky and his colleagues in Leningrad. These concepts have not only very different origins, but very different courses of development.

The osteopathic concept soon led to the development of a most effective therapeutic weapon which became, and for more than 60 years has been the basis for a new and expanding school of practice. From the beginning, this weapon—osteopathic manipulative therapy—was so revolutionary and so effective that the major concern of its designers, developers, and practitioners was with: (1) Learning how to use it most effectively, (2) winning the right to use it, (3) determining its effects on the various ills with which man is heir, and (4) reproducing the weapon, winning recruits, putting the weapon in their hands and teaching them how best to use it.

Possessed of such a weapon, but with few other material resources, and preoccupied with those struggles in the face of opposition, it is understandable that the founders, the disciples, and the earlier practitioners of this school found it impossible to engage in the more leisurely pursuit of investigating experimentally the fundamental basis for the effectiveness of their therapeutic weapon.

The founders of the other two schools did not, however, strike upon new therapeutic measures in the early development of the concepts. They and their disciples, therefore, devoted themselves to seeking the mechanisms whereby pathological processes are initiated, and the channels whereby pathology of one part affects others. These investigations have led to extensive research programs which are now conducted throughout the world and which have won much support and many recruits.

These research programs have made available a great wealth of information, which has led to some sound theory. This, in turn, like all good theory, is today leading to good practice. New and promising forms of therapy are emerging from the work of these schools. It is to be expected that these forms of therapy, experimental though they may be today, but based as they are on rapidly expanding bodies of fundamental knowledge, will rapidly develop and increase in applicability and effectiveness. As I hope to demonstrate, both of these fields of investigation are actually concerned with certain fundamental aspects of the osteopathic lesion, though they may not be recognized as such.

In preparing this lecture, I have found it convenient to review the work of these two fields—referred pain and the work of the Speransky school—before summarizing the emerging concept of the osteopathic lesion, since that concept is emerging, not only from osteopathic research and experience, but from their integration with contributions of these two schools in particular.

REFERRED PAIN AND ASSOCIATED PHENOMENA

This field of investigation has its most important beginnings in England in the work of Sturge,2 Ross,3 Head,4 MacKenzie,5 and others in the early 80's and 90's. More recently important contributions have been made by Sir Thomas Lewis and his co-workers,6,7 also in Britain, and by a number of laboratories and medical institutions in this country. These workers were primarily concerned with the somatic manifestations of visceral disease, especially the somatic pain, and with related phenomena.

Even very superficial study in the field of referred pain reveals the close resemblance of this syndrome to the osteopathic lesion. MacKenzie,5 for instance, many years ago spoke of the triad of somatic manifestations of visceral pathology: (1) referred pain, (2) hyperalgasia, and (3) motor phenomena.

1. Referred Pain.—In many cases, the pain of visceral disease is felt not in the organ itself, but is referred to the soma, that is, skin, muscles, etc. Very often these somatic structures do not overlie the area of disease and may be remote from it. It was soon demonstrated, however, that the zone of reference bears a segmental relationship to the area of origin; both are innervated from the same segments of the spinal cord. The pain is said to be referred to the corresponding dermatome and myotome. Many examples are familiar to the physician: The pain of angina pectoris, originating in the myocardium and referred to the chest wall, the back, shoulder, and mediastinal surface of the arm; renal colic, which produces intense pain in the lower back and groin; irritation of the diaphragm which is referred to the base of the neck and shoulder tip.

2. Hyperalgasia.—Tenderness is also found in somatic structures segmentally related to the pathological viscera:

a. Cutaneous tenderness—the over-sensitivity to pinching and to friction in the dermatomes related to the sick viscera;

b. Muscular tenderness and exaggerated sensitivity of the muscles to deep pressure; and

c. Tender spinous processes. Interestingly enough to osteopathic physicians, MacKenzie5 placed great diagnostic significance on the tender spinous processes. He demonstrated, for instance, that diseases of the heart were commonly associated with tender spines T1 to T4; stomach, with T4 to T8; liver, with T8 to T11; rectum and uterus, L5 to S2.

3. Motor Phenomena.—MacKenzie described the spasm, sustained contraction, and rigidity in muscles segmentally related to the pathological organ. He included under motor phenomena the autonomic changes in the zone of reference although they properly belong in a fourth category.

What is the basis for the "referred pain complex"? Much of the final answer is certain to be found in the spinal cord (Fig. 1). There is obvious interchange of excitation among all the types of neurons which meet or have their origin in a given segment of the spinal cord: The dorsal root (afferent) fibers conveying centripetal impulses from all the tissues, somatic and visceral; the various efferent or motor neurons, including those which have their cell bodies in the anterior horn and which regulate activity of the skeletal musculature, and those originating in the intermediolateral column which regulate visceral...
Fig. 1.—Diagrammatic representation of segmental reflex pathways among somatic and visceral afferent and efferent fibers.

I—Somatic afferent (spinal root neurones);
2—Spinal reflex arc (somatic afferent and efferent fibers)
3—Paravertebral ganglia
4—Parasympathetic preganglionic fibers to somatic nerve fibers
5—Parasympathetic preganglionic fibers to visceral afferent and efferent fibers
6—Somatic afferent (splanchnic or autonomic nerves)
7—Sympathetic preganglionic fibers to somatic afferent and efferent fibers
8—Parasympathetic preganglionic fibers to parasympathetic nerves
9—Sympathetic preganglionic fibers to parasympathetic nerves

EMERGING CONCEPT OF THE OSTEOPATHIC LESION—KERR

Acute activity (muscle and secretion), sweat gland activity, respiration, etc. The splanchnic fibers which convey sensation of pain to the higher centers are also extensively involved in this complex. Although the splanchnic fibers can be excited by impulses transmitted by the afferent fibers from the viscera, regardless of the central cortical projects or "reflex" these connections to somatic structures whose afferent fibers are the same dorsal root (See the paper by Dresser" a review of the mechanism.)

On the basis of these observations McCann developed the hypothesis of the "irritable focus." This hypothesis states, in essence, that irritation from the daera, conveyed by the afferent fibers, renders many of the nerve cells in the same segment hyperirritable. As a result, fibers and organs innervated from that area are affected by the visceral pathology. The "irritable focus" hypothesis has since been modified and restated in accordance with more modern concepts of causation.

More recently Lewis and his colleagues, J. E. Myers, showed that the phenomenon of pain relief was not peculiar to visceral irritation since similar and even identical patterns ("trigons") could be produced by irritation of deep-lying somatic structures. They found that injection of 0.1 to 0.3 cc. of 5 per cent sodium chloride solution into certain ligaments, tendons, and muscles, could produce intensity in relatively large and often remote areas of the corresponding dermatome and myotome. The pain reference was accomplished by the other components of the classical triad, namely entrapment and muscular hyperesthesia and muscular rigidity.

Even more striking was the demonstration that such localized irritation of the interosseous ligaments or spinal extensor muscles in certain segments reproduced with remarkable precision the pain patterns and other somatic phenomena which are associated with visceral pathology. This was true to such an extent that patients who had experienced the real disease could not distinguish between the experimentally induced and the naturally occurring syndromes. For instance, the injection of the eighth cervical intertransverse ligament with the hypodermic needle solution produced a perfect facsimile of an original attack, not only with respect to pain distribution (including the rib and posterior surface of the neck), but also with respect to reflex changes (including the muscular and skeletal rigidity, and the sense of compression of the chest). Injection of the first lumbar intertransverse ligament produced the typical pain distribution of renal colic (lower back, lower abdomen, groin, and scrotum), rigidity of abdominal and spinal muscles, hyperesthesia, and often a marked somatic reflex on the corresponding side. (In our own laboratory, we have not only confirmed these observations, but have demonstrated certain associated autonomic changes.)

Furthermore, other workers and others demonstrated that experimental trauma to certain visceral.
EMERGING CONCEPT OF THE OSTEOPATHIC LESION—KORR

JOURNAL A.O.A.
November, 1948

452 • JAOA • Vol 100 • No 7 • July 2000

Special reprints

organ produced recordable contractions of skeletal muscles in corresponding segments. These contractions could be almost perfectly reproduced (with respect to location, amplitude, and time characteristics) by irritation of certain somatic structures in the same segment. (Studies on the converse, namely the influence of somatic irritations on visceral function, are in progress in our laboratories.)

It may be concluded from these observations that not only does irritation or pathology in one tissue or organ stir up abnormal activity of other tissues in the corresponding segments, but that the complex—the pattern of the overall response to the primary pathology—is organized by the spinal cord. The character of the pattern is determined by the segment or segments which are involved, and not by the tissue which is first irritated (somatic or visceral) nor by the nature of the irritation.

It was recognized by workers in this field that the secondarily irritated structures, that is, those tissues in the zone of reference, may themselves, as a result of this pathological influence, become secondary sources of irritation—leading to the establishment of a vicious cycle. This recognition has formed the basis for certain important therapeutic measures which have been end to end work from this work. Give such a pattern, including visceral pathology and the reference phenomena, then why not eliminate the irritation contributed to by the most accessible part of the complex—the somatic component? The potentialities of this approach were explored 20 years ago by Weiss and Davis who showed that at least the pain due to visceral pathology could be relieved by local anesthesia of the skin areas to which the pain is referred. It is of special interest that the relief from pain often outstripped the expected duration of the local anesthesia by considerable periods of time.

Other work reviewed by Wolff and Hardy and Wolff and Wolf has demonstrated that the sustained muscular contractions or spasms which are part of the referred pain patterns, may themselves comprise sources of irritation. Local infiltration of the rigid muscles, identified by palpation, relaxed those muscles, relieved the pain, and often produced improvement in the associated autonomic disturbances. This general approach has been recently documented in the studies of Travell and her colleagues at Cornell University Medical College. They were able to produce complete and immediate relief from cardiac pain due to myocardial infarct by infiltrating appropriate trigger areas with dilute procaine hydrochloride. These were intensely hyperesthetic areas located in the myofascial structures of the reference zone (usually the pectoralis major, pectoralis minor, and serratius anterior). When sufficiently near the surface the trigger points could also be effectively blocked by spraying the underlying skin with ethyl chloride. Relief from pain was not only immediate, but lasting. Relief was obtained for periods of months and even years. It is of interest that when similar trigger areas, in patients with skeletal muscle disorders without organic disease, are irritated, as by needle, referred pain occurs "which is indistinguishable in distribution and quality from the subternal and radiating pain of coronary insufficiency."

Of interest to those familiar with the osteopathic concept and the current theories of the osteopathic lesion are the explanations of these observations proposed by these workers. Thus Travell and Rinzler say, "The most reasonable explanation is that the initial insult, whether to visceral or somatic structures, sets in motion a chain of events perpetuated by a vicious cycle of nerve impulses which have no further dependence on afferent impulses from the heart and which are probably transmitted to and from the soma by virtue of sustained facilitation of the noxious impulses by the closed self-reexciting chains of interneuronal neurons in the central nervous system." Apparently, even brief interruption of this self-sustaining cycle of nerve impulses at any point in the chain may be effective in permanently abolishing it.

In explanation of the lasting effect of this brief interruption by local somatic block therapy they offer the possibility that the "somatic trigger mechanisms contribute to the perpetuation of the primary source of pain," that is, the coronary insufficiency. In support of this hypothesis they refer to the evidence obtained by Lindgren that local anesthetization of the precordial structures produced improvement in the coronary circulation. Although the authors are careful not to make therapeutic claims unsupported by their observations, they point out that the relief of pain due to myocardial infarction may itself, have true therapeutic effect since there is evidence that pain may induce reflex spasm of collateral coronary vessels.

Autonomic changes in the zone of reference are well established, but it has only recently begun to be appreciated that the blood vessels supplying the brain and spinal cord may also be included in the zone of reference. Travell and Bigelow have recently shown, for instance, that phenomena of hyperesthesia may be mediated by afferent impulses from trigger areas in skeletal muscles. Whether these zones are activated by psychogenic stress or (experimental) trauma, the same clinical patterns are produced. The patterns are often bizarre, and may be not only spatially, but also segmentally remote from the somatic trigger area. Infiltration of the appropriate and specific somatic structures dramatically relieved disorders of vision, respiration, motor power, and cutaneous sensation (e.g., glove-and-stocking paresthesias). The concept is advanced that "high intensity stimuli from somatic trigger areas reflexly produce prolonged vasospasm with partial ischemia in localized areas of the brain, spinal cord, or peripheral nerve structures." The authors point out that, in these patterns raising the threshold of excitability at the synapse in the central nervous system directly, by general anesthetia, hypnosis or psychotherapy, may be expected to accomplish the same result as blocking the source of noxious impulses at the somatic trigger area.

No attempt has been made in this section to review this field, but rather to present a few outstanding examples and to establish several important concepts. (For more comprehensive reviews see references 8, 14, and 15.) These may be summarized as follows:

1. There is extensive interchange, through the spinal cord, among the various structures, visceral and somatic, blood vessels, glands, smooth muscle, skeletal muscle, skin, etc., which draw their innervation from the same segment.

2. Pathology or irritation of one of these structures may lead to the establishment of a pattern of changes in all the others. The pattern is determined more by the part of the nervous system affected than by the irritated structure or the nature of the irritation.

3. As a result of these associated pathological processes new sources of irritation may be produced, which lead to the establishment of an autogenetic vicious cycle of nervous impulses.
EMERGING CONCEPT OF THE OSTEOARTHRITIC LESION—EGER

4. Interruption of this cycle for even a brief period may permanently prevent, or greatly delay its re-establishment, permitting reparative processes (i.e., in the viscera) to proceed under more favorable circumstances.

5. Highly localized areas in skeletal muscle or articular structures frequently become important sources of referred impulses in these complexes, reinforcing or facilitating the primary irritation, or even becoming independent of it. Localization of the osseous congruence of the pattern associated with visceral pathology, may disrupt the pattern and break the vicious cycle.

6. This has therapeutic import not only because the osseous component is accessible and easily localized, but also because it may be the most important factor in sustaining the (primary) pathology.

7. The patterns are not exclusively segmental, in view of the involvement of the vasculature of the central nervous system. Vasospasms in the brain, spinal nerves, or nerves may provoke secondary effects quite segmentally remote from the locus of primary irritation.

THE WORK OF THE NEURAL LABORATORY

Without going into the elaborate detail which the work of Spenstmann and his coworkers deserves, let me summarize the main conclusions to which their extensive laboratory and clinical observations have led them:

1. The nervous system can not participate in every disease but plays a dominant role in organizing pathological processes and their various manifestations.

2. Sustained irritation, inflammation, or pathology of nerves, skin, bone, viscera, or nervous structures initiate processes in the nervous system which may lead to certain functional and organic changes designated as "neurodysfunction." Once initiated, the process in the nervous system do not require the stimulation of the irritant, and the neuritis may persist long after the primary pathology has ceased.

3. The neurodysfunction expresses itself through psychological and trophic changes in the various organs of the body, first, usually, in the segments related to the primary pathology, and later in other segments.

4. The nature of the process, and its final expression, are independent of the nature of the irritation—chemical, physical, or biological. The biological factors—the microorganisms, viruses, etc.—act fundamentally in the same way as the chemical and physical agents; they merely initiate the process, which then becomes independent of the primary pathology.

5. This role of the nervous system appears to be upon many lower processes—nervous—trophic processes. (Spasmodically emphasized recently to his approach as distinguished by its constant utilization of the time factor.) These trophic affections of the nervous system may well have their roots in the movement of substances along the spinal reflex arcs (hypothesis), as indicated by recent observations of Wyss and Schenkel. 4+ 4

6. As a result of the primary lesion, lasting, and histologically demonstrable, effects on the nervous system follow, due to the long-continued irritation of the same segments, or more widespread, giving rise to the clinical symptoms of the disease.

Simultaneously, the reparative processes are initiated, leading to the appearance of subcutaneous masses which may remain latent for long periods of time. The signs of the original irritation may long have disappeared before the first signs of the disease appear.

A recent dramatic illustration of changes in the cord which occurred after the healing of the original lesion appeared in a report by Franklin. 2+ 2 The first used of cats were injected with turpentine, producing pain and inflammation, and the typical limping and limb-withdrawal pattern. After some time the irritations disappeared, no signs of the inflammation were detectable, and the animal no longer limp or "fastened" the paw. At this time the cat was dissected, and it was found that the precautions assumed by the animal were similar to those produced when a secondary animal receives intense stimulation upon the foot corresponding to that which had had the lesion, namely, flexion of the affected legs and espoused extension. In other words, radicis signs of the original irritation reappeared, although that irritation had apparently vanished. Franklin pointed out that the irritant had not been removed from the animal, but that the state of the animal, originally established by irritative processes, persisted to disease, though they may be masked for some time. These segments are, so to speak, the vulnerable segments of the nervous system, which may serve as a base of disease processes under certain circumstances.

This concept bears a distinct resemblance to that originally developed by Mackenzie, the concept of the injuring of the area of "irritating," beyond the duration of the initial stimulation. It will be recalled that Mackenzie also believed that once established, the irritative focus remained for a variable period of time after the exciting source of irritation had been removed, and continued to influence the activity of structures innervated by that segment for some time. Similarly, an osteopathic lesion may exist for years without producing symptoms.

7. The effect of a given irritation, that is, the disease pattern is evident, if only, depending largely on the condition of the "motoric"—the patient and his nervous system, rather than upon the irritation itself. The "motoric" system varies from individual to individual, and within the individual from time to time according to circumstances, environmental influences, etc. The disease—and the therapy—must be considered in the context of the patient as a whole.

8. These concepts are today providing the basis for therapy. Attention is focused not on the offending organism, irritant, or primary lesion, but rather on the nervous system, and more specifically on those parts (e.g., spinal segments) which in each case organize the disease process. The bulk of therapy is to alter the balance of nervous factors in such a manner as to provide optimal circumstances for the operation of the normal reparative and defensive processes of the body.

These principles were illustrated in a large series of cases of cases of chronic paraneuritis. 3+ 3 Spenstmann and his coworkers had previously demonstrated in experiments...
mental animals that intense stimulation of sensory nerve endings in muscle and skin, in areas innervated from the medulla oblongata and upper segments of the cord, or direct mechanical and chemical stimulation of these parts of the nervous system, could produce profound pulmonary changes, very similar to pneumonia. These changes in the lung may develop within a few minutes. "Treatment must therefore be directed not only at the diseased lung but also at the associated nervous disturbance... This suggested that treatment of pneumonia in men be directed at the nerve segments involved... The above experiments showed that the nerve regions involved were connected with the cervical-thoracic segments of the spinal cord and the adjacent medulla oblongata. The anterior branches of this segment, except those supplying the head, neck and extremities, supply the organs of the chest and mediastinum specifically involved in pneumonia. But the posterior branches of these nerves are distributed in the long muscles and skin of the spine and neck. Thus, by anesthetizing these posterior branches which have no direct connection with the lungs we shall affect through other axons specific nerve segments of the lung."

In several hundred cases of lobar pneumonia in soldiers during the Finnish campaign and during World War II remarkable results were obtained by injecting 60 to 70 cc. of 0.5 per cent novocain intradermally into a diamond-shaped area extending sagittally from C3 to T4 and covering the medial halves of the scapulae. The treatment, when given early, is usually followed by a drop of temperature by crisis to normal within 18 to 24 hours; in some cases a drop by lysis occurs within 48 hours. Resolution of the pneumonia consolidation begins as the temperature drops and the general condition improves. Convalescence is short and uneventful. The treatment is non-specific since beneficial results were obtained also in acute or chronic catarrhal pneumonia, and the type of pneumococci responsible for the disease did not influence the effectiveness of the treatment. "The laboratory and clinical data support the belief that the therapeutic result is affected more by the site of the application than by the drug."§

**THE OSTEOPATHIC CONCEPT**

The basic principles of the practice of osteopathy are not, of course, be reviewed in detail for an osteopathic audience. We shall state them briefly, paraphrasing them somewhat, with the foregoing in mind, and review the basic processes through which these principles operate as they have been revealed by recent researches in osteopathic and other institutions.

1. A.T. Still fully recognized, and for the first time incorporated into a system of practice, the capacity of the human organism to resist and defend itself against noxious influences, to resist or compensate for alterations in equilibrium, and to repair itself.

2. He fully recognized and incorporated into practice the unity of the body as expressed in the fact that abnormal structure or function in one part exerts abnormal influence on other parts.

3. The human organism, presumably because of its incomplete adaptation to the erect stance, is highly subject to anatomic and functional derangements of joints and their supports, especially the vertebral, pelvic, and other weight-bearing articulations.

4. These "errors" in weight-bearing unfavorably affect the structure and function of neighboring and distant parts of the body, thus initiating and contributing to pathological influences and processes. This complex of the articular disturbance and its associated phenomena has been designated as the osteopathic lesion.

5. The spinal lesion is associated with: (a) Tenderness or hyperesthesia of the paravertebral tissues and those overlying the vertebrae (skin, muscle, connective tissue); (b) muscular changes—rigidity, sustained contraction (or contracture), ropiness, and lowered motor reflex thresholds; (c) autonomic changes, as reflected in textural changes of the supraspinous tissues, vasomotor changes, alterations in visceral and other autonomic functions; and (d) pain, which, when it occurs, is of the "deep" variety; it is rather diffuse and may be radiating or "referred." §

6. The lesion may be detected and evaluated through its associated phenomena.

7. The osteopathic lesion is conceived as a most important—and frequent—pathological, predispensing, exacerbating, and sustaining factor in disease, through the establishment and maintenance of a vicious cycle of irritative, inflammatory, and other pathological processes which impair the defensive and reparative capacities of the human organism.

8. It may be present for varying periods of time without the production of symptoms.

9. The lesion may be corrected or improved through the application of appropriate manipulative technique. A highly effective system of osteopathic manipulative therapy has been developed whereby lesions of many kinds and locations may be corrected.

10. Correction of the lesion interrupts the vicious cycle and is followed by regression, amelioration, or abolition of the related pathological processes. Elimination of the lesion provides more favorable circumstances for the operation of the defensive, reparative, and homeostatic mechanisms of the body.

11. Recent researches conducted at the Kirksville laboratories support the conclusion that the patterns of local and distant effects of the articular disturbance and associated phenomena—the osteopathic lesion complex—are mediated and organized by the central nervous system; the lesion expresses itself primarily through those parts of the nervous system with which it is associated. Correction of the lesion provides a more favorable balance of nervous factors.

Since these researches and the concepts which emerge from them have been recently reviewed they will only be briefly summarized and supplemented by the advances that have been made since the publication of the review. I shall try to present our concepts dynamically rather than in the chronological order in which they have developed. (The reader may find it helpful to refer frequently to Figure 1.)

The disturbance of an articulation exerts its influence directly through the soft tissues which surround and support it. There is no known mechanism whereby the positional relationships of two bony elements or two vertebras can be "registered" except through those tissues. Further, we have the frequent clinical observation that an osteopathic lesion need not have associated with it a gross articular displacement. At

The similarity between this complex and the classical referred pain pattern is obvious.
any rate, as a result, for instance, of an intervertebral lesion (whether it be described as a subluxation, a fusion, stenosis, or rotation lesion) the (paravertebral) muscles, tendons, ligaments on at least one side of that articulation are subjected to, and maintained at, excessive tension. This causes the proprioceptors (end organs in muscle and tendon sensitive to changes in length and tension) to the increased numbers of impulses into the corresponding segment of the spinal cord, via the dorsal root fibers with which they are connected. The frequency of the impulses fired by these receptors is in proportion to the degree of stretch (severity of the lesion); and since these receptors are relatively nonspecific, the barrage is established as long as the tension is maintained.

The stretch or myotatic reflexes are self-regulatory and self-extirpating. That is, because the dorsal root fibers (afferents) carriers impulses from the proprioceptors synapse directly with the anterior horn cells which conduct impulses to the adjacent muscle segments, the stretched muscles are further stimulated to produce still more tension. This may be an important factor in the maintenance of the articular arrangement once it is established.

Because of the synaptic connections of the dorsal root fibers and through interneuronal neurons, this sensory stimulation affects, potentially or actually, the excitability of all neurons which have their origins (cell bodies) in the corresponding segment of the spinal cord. These include not only the efferent motor cells, but also the cells of the intermediolateral column, which are the preganglionic neurons of the sympathetic nervous system. They include also the neurons ascending in the spinal tracts. This is certainly true of the sympathetics fibers which conduct impulses to the brain for the registration of sensations, and there is evidence that it applies to other structures terminating in supraspinal structures.

As a result of the sustained barrage of impulses, these neurons, in the segment of the cord associated with the painful area, are excited and maintained hyperexcitable to all impulses which reach them regardless of their source—impulses from other segments of the cord, from the higher centers, including the cerebral cortex; from the skin, etc. (The inhibitory aspects of the pain stimulus exert no significant influence.) The segment of the lesion is said to be a facilitated segment of the cord, one in which "the barriers have been lowered." The efferent (motor) neurons in these segments may be said to be maintained "on" (in a state of subnormal excitation), and easily triggered into activity by relatively few additional impulses from any source.

Since the neurons which have their origins in the segment of lesion, as in all segments of the spinal cord, receive from common paths, the activity of these neurons (and the structures they innervate) will be determined by the balance of inhibitory and excitatory impulses which reach them. Given a sufficient background of nervous activity, such as that descending from the cerebral cortex, its influence will be magnified and channeled through the facilitated segments, that is, the segments of lesion. As a result, different neurons (and intrasomatic neurons) having their cell bodies in these segments will discharge along with the neurons of the supraspinal centers into the tissues.

It is to be noted that the nerve center to the tissues is in the neighborhood of the lesion, and that the impulses which reach the tissues from this point are all part of the pain reflex. Thus, the supraspinal center is involved as part of the reflex arc. The process of pain is a reflex process, a response to some new condition that has interfered with the normal function of the tissues. The latent period is the time that the pain takes to become manifest. The pain is the sensation of the irritation, and it is not necessary to the reflex action.

If maintained for sufficient periods of time, these altered states of activity inevitably lead to pathological processes in the affected structures, which in turn, become secondary sources of different irritation. Another vicious cycle is set in motion, in which such structure fatigues, through the overtaxing segments of the cord, initiates the other components. Continuation of these processes leads to profound structural and functional rearrangements of these tissues—trophic changes—which no longer depend upon native impulses for their maintenance. As was shown by Donaldson and Hasinow, and confirmed many times since, the paravertebral segments in the muscles of lesion remain rigid and seemingly shortened, and tender to touch, in the complete absence of action potentials, that is, with no stimulation from the anterior horn cells. By definition, this is a state of spasm— a reversible loss of the ability to relax the part of the contractile elements. (It will be recalled that Marxism found similar states of skeletal muscle associated with visceral referred pain.) The muscle was in such a state that it was cosmetic and unquestionably continuous to be a source of irritation to the cord.

It is important to recognize that trophic, cellular, and functional changes, due to prolonged irritation and operation of the vicious cycle, may extend also in the central nervous system itself. Golse has obtained evidence that microscopically demonstrable changes in the cord are associated with the sympathtic lesion; these bear a distinct resemblance to the changes described by workers in Spernaly's laboratory and by others. These pathological changes may explain the endorsement "irritable focus" in the literal sense and may be an important factor in the chronic lesion. Furthermore, as indicated in an earlier section, localized partial ischemia may be produced in the nervous system by irritation of the peripheral nerves. Lumb has shown that impaired circulation through neural elements may render them not only hyperexcitable, but spontaneously active, in which state they may themselves serve as "trigger zones.

Although the nomenclature of the concept of the "normal basis of the osteopathic lesion has been concerned with the segmental mechanisms and manifestations, although the primary focus is within the segment of lesion, and although the pattern of pathological processes associated with the lesion is essentially a consequence in the tissue segmentally related to the lesion, the importance of the extrasegmental and supersegmental factors is not to be minimized, and is demonstrated in daily osteopathic practice. They can, may be organized by the nervous system in at least two ways which have already been mentioned: (a) through the system of intersegmental neurons and spinal tracts and (b) by the production of localized vasospasm and partial ischemia in the nervous system. The lesion apparently may irritate extrasegmental structures which terminate in various parts of the body. Through stimulating tracts and central "pools" such as the vagus, these may in turn alter the function of other segmentally remote from the primary lesion. This concept has been presented by Cole to account for the clinical effect of one lesion on another. The same concept, and one that has been valid throughout the history of osteopathy, is similarly applicable to the nervous system.
spread effects which he claims for the experimental lesion in the rabbit. Its similarity to the spread of neurodystrophies, in Sperry's view, is suggestive. Similarly, according to the views of Travell and Bigelow,19 partial ischemia in parts of the brain stem, due to lesions in the cervical segments, could also produce far-flung effects. The evidence for the operation of these mechanisms in the osteopathic lesion is, however, still presumptive.

According to the above concepts, the basis for the effectiveness of osteopathic therapy lies in silencing the somatic component of the complex, by abolishing the contracture, spasm, or sustained contraction (and ischemia) of the skeletal muscles in the lesioned segment. Lasting effects are obtained by correcting the mechanical or articular disturbance which imposed the stress.

It is not a vital question, affecting the validity of these concepts, as to which part of the complex comes first. The mode of operation of the somatic component (the osteopathic lesion) is fundamentally the same whether the muscular and articular disturbance was the primary, precipitating factor in the complex, or whether it is secondary to irritations which arise elsewhere in the segment, e.g., in the viscera. Once established it plays a major role, or even the most important role, in the subsequent development of the pathological pattern. This is amply supported not only by clinical osteopathic experience (the secondary "reflex" lesion), but is now a well accepted fact that the sustained muscular contractions in the classic visceral referred pain pattern became an important contributor to the vicious cycle; it has also been demonstrated by Wolff and his coworkers for headaches of various kinds and origins.4 The important thing is that the somatic component, whether primary or secondary, is accessible and responsive to treatment, and that appropriate treatment of this component, by establishing a more favorable balance of neural factors, benefits all the structures associated in the pattern—and therefore the entire body.

THE TREND TO A UNITARY CONCEPT OF DISEASE

Three major fields of medical thought, which have had very different origins and different courses of development, have been briefly reviewed and shown to have a great deal that is fundamental in common. All three schools have, implicitly or explicitly, accepted certain basic principles or generalizations at which they have arrived through very different experiences and processes of reasoning. They appear to be concerned with very similar, if not identical, phenomena, although each may conceive of them differently.

All three schools agree that the somatic component of the disease pattern, of which the most conspicuous features are the sustained muscular contraction (rigidity, spasm, contracture), the sensory changes (pain, hyperesthesia) and vasomotor changes, is not only a sign or symptom of disease, but a major contributing factor to the disease, and that it may be a primary etiological factor.

All have therefore directed therapeutic attention to this component because of its accessibility and responsiveness to treatment, and because of the demonstration that improvement in this component results in improvement in the others, through interruption or retardation of a vicious cycle of impulses (or trophic influences) coursing through the central nervous system. The treatment of this component is the very core of the osteopathic system of practice, while to the others it is at best experimental or ancillary to other forms of therapy.

It is important to point out that still a fourth major field of practice, which is daily becoming a larger and more important part of the healing arts and sciences, is intimately bound, by mechanism, to the three reviewed above. Its distinctive feature, too, is the emphasis on the nervous system, especially the cerebrum, as the organizer of, and even as a primary etiological factor in, disease. Reference is made, of course, to psychosomatic medicine. Representatives of all three of the schools previously reviewed have placed emphasis on the higher centers, especially the cerebral cortex, in the role of inhibiting, exciting, exaggerating, masking, reinforcing, or initiating the disease patterns mediated by the lower levels. Travell and Bigelow,20 Theobald27 and others have done it for the referred pain school; Frankstine44 has demonstrated the influence of the cerebrum on the phenomenon designated as neurodystrophy by Sperry and his followers. Kort25 has ascribed to the osteopathic lesion (chronic segmental facilitation) a localizing, channelizing, and predisposing influence in the bodily expression of mental or emotional imbalance. It is not surprising that this is being widely recognized. After all, the nervous system exerts its influence on the body structures through the efferent neurons which are final common paths receiving and funnelling impulses from a host of sources in the body, not the least of which is the cerebral cortex.

In all these schools there appears to be a deep emphasis of the specificity between the etiological agent on the one hand and the manifestations of the disease on the other. We see an approach to a unitary concept in which disease is conceived, not as the effect of this agent or that upon this organ or that, but rather as the reaction of the organism as a whole to noxious influences.28 It is being increasingly recognized, and especially in the above four fields, that the organism can respond in only a limited number of patterns to noxious influences.29 The pattern—the character of the disease—is determined by the patient, and not by the offending or invading agent; the nervous system certainly has a key role in the organization of the patterns. These schools, then, might be said to be characterized by their emphasis on the similarities among diseases rather than on their differences. "There are no illnesses; there are only ill people."

POSSIBILITIES IN THE FUTURE OF THE OSTEOPATHIC CONCEPT

There are many important implications in the above "story" for the osteopathic profession. The present writer is hardly the person to draw the lesson for the profession, but it might be well to point out some important facts and make some predictions supported by the foregoing and by recent scientific and medical advances.

It is clear that the basic concepts upon which osteopathy is based and which have been dealt with so successfully for more than a half-century are receiving increasing investigative attention and increasing therapeutic emphasis from other major schools of medical thought and practice. Workers in these other schools have arrived at these basic concepts by different experiences and processes of
Emerging Concept of the Orthopaedic Lesion—Korr

thought that has the osteopathic profession, and indeed, will think of them and apply them in a very different context.

The osteopathic profession has earned its place in medicine and society, however, through having developed, and effectively and skillfully applied, a system of diagnosis and therapy based on the role of the somatic structures in disease. It has demonstrated, although it is not yet recognized by the other schools, that the somatic component can be most directly and effectively influenced and controlled by adjustment of the vertebral and paravertebral structures—i.e., by recognition and correction of the osteopathic lesion. One implication will suffice. The somatic trigger areas within the thoracic and abdominal organs, when tender and tender to palpation of the anterior fascial edge, in association with certain cases of muscular insufficiency and muscular disorders, are apparently identical with, and certainly similar to, those previously associated with the rib lesions similar to those osteopathic physicians. Adjustment of the articulation of the rib head on the vertebral column is followed by disappearance of intense hypertrophic spots in the tissues and parietal muscles and relief from pain. It is important to record, also, that these lesions in the upper part of the spine are prevalent in all age groups, and that reflex phenomena, typical of angina pectoris, incomplete, and lasting relief is obtained upon direction of the lesion.

That system of diagnosis and therapy and the concept of the lesion distinguish osteopathy from all other schools, and they are possessed by no other school. Osteopathic manipulative therapy, as the heart of his practice, distinguishes the osteopathic physician from others.

We must be quick to recognize, however, in light of the foregoing, that workers in other schools of antecedents are placing increasing importance, with respect to disease, upon the processes which we associate or attributed by the osteopathic physician, and are making serious and effective attempts to base their theorems of the osteopathic systems.

Although it is impossible to make accurate predictions, one can say with a high degree of certainty that important investigations by these workers must heavily lead to the development of new and better forms of therapy. Although it is possible that they may be based on a fundamental basis, it is most probable that the direct means for their treatment, it is much more probable, will be given over by the present direction of their work, that will circumvent the lesion by learning how more readily to deal with the processes is set up. As a result of our researches we are presented with promising approaches to the development of new systems of osteopathic therapy in which the lesion is abolished by preventing its effect on the body, just as with which these approaches are proved in the treatment of a large body of the population which are made available.

It can also be stated with a high degree of certainty that the stage has been set by history and science, for the emergence, in the near future, of a new and comprehensive concept of disease and its treatment. It is the present system of practice. We believe this to be regardless of what further the osteopathic practice does about the development of the osteopathic age in preparation for this historic role.

In what way is history making a place for osteopathic system of practices? From its birth osteopathy was faced with powerful competition from the concept of the "foreign agent" in disease. Pasteur's discoveries almost coincided with those of Salk. The best-official concept of disease—the concept that disease was "caused" by this organism or that—was sweeping the world (as were the diseases) while Salk and his few followers were pathetically and heroically struggling for recognition of the osteopathic concept. This was taking place at a time (the third and fourth quarters of the last century) when medical science was practically nonexistent in this country, and when, although great strides were being made in Europe (Pasteur, Virchow, Billroth, Metchnikoff, Mueller, Bernard), not one result of real scientific investigation had yet been successfully applied to therapy at a time when the infectious and contagious diseases were the major health problem, and when the average life was cut very short by disease "caused" by invading agents.

Today, as a result of the tremendous advances in our knowledge of the infectious agents and their modes of transmission, in immunology, preventive medicine, chemotherapy, in the social control of disease, in sanitation, etc., the infectious diseases are no longer the major health problem of the world. In the past 40 years we have seen them, one by one, succumb to these advances, until today the biggest killer among these diseases has been a recent one. The recent success in incidence of all infectious diseases may be relatively expected. This decline is strikingly illustrated in the leading causes of death. In 1900, tuberculosis, pneumonia and the acute infectious diseases, such as typhoid fever, were very much in vogue. Pneumococcal pneumonia today is a vanishing disease; typhoid fever is virtually eradicated; tuberculosis seems destined for a similar fate. Today the main killers are the chronic degenerative diseases, which claim their victims largely from the older segments of the population.

As a result of these advances there has been a great increase in the average life expectancy. Persons in the middle and late years comprise a much larger segment of the population than at the time of the financing of osteopathy. In the last 40 years the proportion of people over 60 years of age has doubled. It is now 10 per cent and is expected to double in the next generation. From 1955 to 1945 since the average age at death increased from 55.2 to 64.2.

However, although the percentage of people over 60 has increased, the average man at 60 has the same life expectancy as had a man of 16 in 1900—about 14 years. In other words, ever saved from infectious diseases are still being lost at an age not far from the traditional one of the past. They are being lost to the chronic degenerative diseases, the diseases of maturity and senescence, the functional disorders. Large segments of mature and older persons live highly restricted, unproductive existences, burdened with discomfort and disability, resulting from these diseases. As Dr. Leonard A. Schotz states upon his induction as Surgeon General, "We find ourselves faced with an enormous personal and social burden of disease in the adult population, the most productive elements of our society. It is possible that we shall not be able clearly to define healthy maturity until we learn more about the chronic degenerative diseases and until we attempt to apply to the entire population our knowledge of these diseases. . . . We have barely started to explore . . . the ends and ill-health among adults." (italics supplied.)

Although chronic and degenerative disorders are spoken of as diseases of maturity or of middle and late life, it is not adequately appreciated that often they...
have their beginnings in youth and childhood. Early life and childhood are themselves too frequently victimized by the chronic diseases and disabling functional disorders. These diseases are today the biggest killers, the biggest cripplers, and among our most pressing social problems.

Today the osteopathic concept is the only one sufficiently broad and sufficiently unitary in its outlook, upon which a system of practice can be based, that is capable of encompassing all these diseases. Today osteopathy is the only system of practice which has preventive potentialities with respect to these diseases. Medical practice as yet has no key, no clear-cut, and certainly no systematic approach to the prevention of these disorders. Treatment is still largely palliative, symptomatic, or substitutional. A few illustrations will suffice. In the treatment of diabetes mellitus, in which such great advances have been made since the discovery and isolation of insulin, the disease itself—the pancreatic deficiency—is taken for granted. The prevention of this deficiency, or even the elimination of the basis for the deficiency, has received no practical therapeutic attention. Without minimizing the importance and the magnitude of the advances made in the recent past through research, unfortunately no more than this can be said of the other chronic degenerative diseases and functional disorders.

What can be positively said about the prevention of heart disease, coronary thrombosis, hypertension and peripheral vascular diseases, the skin diseases, the arthritis, kidney diseases, rheumatism, peptic ulcer, and the host of endocrine disturbances? Can it yet be said that medical science, in the treatment of these diseases, has gone more than a step beyond the palliation of the signs and symptoms, or beyond the treatment of the terminal step in the disease process? In fact, the terminal process is usually referred to as the cause of the disease. The endocrine diseases are “caused” by under- or overactivity of this gland or that; they are accordingly treated. But what combination of factors led to the over- or underactivity? To ascribe them to “autonomic imbalance” or to the under- or overactivity of another gland is merely to beg the question.

The success of osteopathy in the treatment of many of these diseases and the promise of osteopathy in their prevention, lie in the following three factors:

1. The identification of a major predisposing and primary etiological factor in disorders affecting all parts of the body;
2. Its detectability in even very early stages; and
3. Its amenable to correction before it does irreparable damage. All three, in other words, mean the recognition and appropriate treatment of the osteopathic lesion.

A great deal, however, remains to be learned. Osteopathy is adequately prepared for its role as the preventive medicine of tomorrow.

1. The effectiveness of osteopathic therapy in preventing and alleviating disorders of all kinds needs to be precisely evaluated on a mass scale. This requires reliable comparisons of segments of the population receiving osteopathic therapy with those not, as to incidence of the various diseases, mortality, duration of the illness, convalescence, etc. Statistics on the control segment of the population are already amply available. It is difficult to conceive of a more informative—and more convincing—survey of the therapeutic and preventive merits of osteopathy than the comparison of two large groups of children—one of which is under osteopathic management, the other not—and following their medical records into adulthood. The osteopathic profession has simply not tested adequately, with sufficient persistence, with adequate controls, with objective enough methods, with careful enough recording, and in sufficient numbers, the value of osteopathy in a large number of baffling conditions—especially those dealt with in the various specialties which have developed since Still’s day. It is sometimes too easy to resort to convenient symptomatic treatment.

2. Osteopathic concepts and techniques have to be developed to the point where they can be applied effectively to entire populations, in the same way that the preventive medicine of today protects millions at a time against infectious diseases.

3. A great deal more needs to be learned about the factors leading to the development of the lesion—the structural, postural, congenital, environmental, hereditary, occupational, age, activity, and other factors. What again, in this regard, could be more informative than studies on large numbers of children in different age groups for the incidence of lesions of various kinds, in relation to those various factors? This would make possible education of masses of people on the prevention of the lesion.

4. We need reliable, easily applied methods of detection of the lesion which may be utilized by the lay population that they may benefit from early correction.

5. We need to learn a great deal more about the lesion itself and the processes which it initiates and sustains. Without question, the time, labor, and skill required for the correction of each lesion set a certain limit upon the mass applicability of present-day osteopathic therapy, although today that labor and skill are the basis for the very success of osteopathy, and of its distinction from other forms of therapy. On the basis of our present knowledge it is entirely conceivable that a higher, more general, less laborious form of osteopathy may be achieved by preventing or interrupting the effects of lesions, by preventing or abolishing the processes that lesions initiate wherever the lesions may be and whenever they occur. This possibility has already been referred to, and it is important to recall that the processes associated with the lesion are receiving widespread attention in osteopathic institutions.

It would appear from the foregoing that to consider that the osteopathic concept is the same today as it was at the time of its inception is a serious mistake. Any endeavor to keep it the same is even a worse mistake. This does not imply departure from the fundamental Stillian principles, but rather their extension, explanation, and elaboration, as recent advances in genetics and cytology have done for the Darwinian principles. The concept itself has been greatly enriched and developed, and its forms of application, its range of effectiveness have been widened. But most important, the osteopathic concept is different today for the simple reason that it has new roles to play with respect to the national health, and it operates in a very different, context—social, political, scientific, economic—from that in Still’s day. A living, working concept—and the osteopathic concept is certainly that—could not remain the same while the scene around it is transformed. A new and more important place in the world scene for the osteopathic concept has been and continues to be, prepared. The concept and the techniques must continue to evolve, to fill that place, fit in with the scene, and operate in the new context. But
EMERGING CONCEPT OF THE OSTEOPATHIC PRACTICE"—BORN

they must evolve. It is an accelerated pace because the scene is changing rapidly.

Conclusion

In summary, then, from this perspective, the following appear to be the major traits before the profession today:

A. The osteopathic profession is to be a leader in the field of medicine, as to what is distinctive about osteopathy as a system of medicine, and wherein its results. In view of the clinical and experimental demonstrations of the osteopathic approach, as well as the emotional and psychological factors, the question is seriously called whether any osteopathic physician has the moral right to withhold only the therapy which today will not correct. One can certainly question the wisdom or conviction of any osteopathic physician who will cause the powerful and preventive weapon which he alone possesses to pass into the hands of some other physician. One can certainly question the integrity of any osteopathic physician who casts aside the weapon which he holds to conceal his distinction from other physicians.

B. The profession must establish a research program of such magnitude and perspective as is to the historic importance of the osteopathic concept. This is required to provide the information and the new techniques which will prepare osteopathy for its role to the central theme in the healing and prevention of medicine on a mass scale. We need facts and still more facts.

C. The osteopathic college must become among the best institutions in the world for the training of physicians—physicians who will be prepared to meet the growing challenge, physicians who, through their training in scientific osteopathy, will provide the steady stream of needed information and data; physicians who will seek and know how to apply scientific advance to the health of mankind; physicians who will know how to teach others to do likewise. Our colleges must be studied by the best scientists and the best scientists must give the means of which we do their best work. The faculties must be sufficiently large that no member is so burdened with pedagogical duties that he cannot contribute through research, to the knowledge in his field.

The third is unquestionably the most important of the three, because the fulfillment of the other two, as well as those concerned with organization, legislation and public relations, will flow from the fulfillment of this one. The osteopathic profession has reached a stage of development where its progress now on will be limited by, and in direct proportion to, the progress and welfare of its training and scientific institutions.

These facts, it would appear, are the order of the day for the osteopathic profession.

It is important to remember that the scientific field and mankind in general are in the struggle of the osteopathic profession against its opponents; they are even indifferent to the question of its survival, continued growth as a distinct and separate profession. They are not neutral, however, in the question with various specialties, as it affects the life and welfare of humanity. The things that will determine the continued and rapid development of osteopathy to its fullest potential are the very things that, at the same time, will lead to its universal acceptance as a superior—and indispensable—form of practice. We refer again to data, solid, incontrovertible fact which permits no alternative conclusion; not opinions, no exceptions, not the isolated dramatic case, not even fallacy, but the scientific substance in which faith can be intrinsic.

History and society have presented the osteopathic profession with great challenges and a great opportunity—the development of osteopathy to its fullest mass-serving potential. Because of its illustrious half-century of successful application of the osteopathic concept, the profession has been best equipped by history to meet this challenge. Whether, then, how the profession meets the challenge will determine the future of the osteopathic profession, but not the survival of the osteopathic concept; this seems determined. Good health never the secret of success, makes places of honor for them. If this profession does not take that historic opportunity and meet that challenge, then others certainly will. To paraphrase an aphorism of St. William Odel's: in science credit goes to the man (or the profession) who understands the world not to the one who knows the idea first occurs. The history of the osteopathic profession shows that once a challenge has been recognized—invariably that challenge has been met—and with honor.

Acknowledgements

The author wishes to state that in preparing these concepts he has drawn on the contributions of the entire Kirksville research team. The professor is familiar with the important contributions of Dr. J. S. DeLancey, who launched our research program about a decade ago, and Dr. William P. Cole. In preparing this article the writer has borrowed heavily from the paper by his colleague, and his profuse gratitude daily discussion of these problems with him. He has learned immeasurably from all his colleagues at Kirksville who have generously contributed of their time, thought, and experience to the work of the Kirksville laboratories.

Kirksville College of Osteopathic Medicine, Kirksville, MO

RESEARCH

L. Perry, O. E., Research program, the osteopathic profession. X. Br. Scol. 50:450-461, March 1941.


S. Perry, T.: The uppermost distribution of mesenchymal activity. X. Br. Scol. 50:790-810, 1941.


Editor's note

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 artifacts and other “blemishes” that existed in the original paper on which the text was printed. JAOA regrets these anomalies and hopes that they will not detract from the content and relevance of these works that were published in the osteopathic medical profession’s early history.

Gilbert E. D’Alonzo, DO, July 2000