

SPECIAL ARTICLE

A Research Program for the Osteopathic Profession

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PART I

During my first few days at Kirksville College of Osteopathy and Surgery, in the course of being introduced to the osteopathic lesion by Dr. J. S. Denslow, I caught a glimpse of osteopathy in transition—of the osteopathy of today and of the osteopathy to be. I watched the palpation of the spinal columns of a number of subjects and heard some of the segments designated as lesioned. However, I found myself unable, at the time, to detect the distinguishing features of the lesioned segments. Even expert guidance could not, in a few days, compensate for untrained fingertips dulled by years of skepticism and prejudice.

Then I watched a coldly objective group of instruments, in the form of electromyographic equipment, unequivocally demonstrate that the segments subjectively determined by Dr. Denslow to be lesioned, were indeed different from the others. Furthermore, it quantitatively measured the severity of the lesion. Even more important, from a scientist's viewpoint, it yielded information regarding the fundamental basis for the difference. A lesioned segment, whatever else it may be, was one with a low motor reflex threshold; the more severe the lesion, the lower the threshold. Still more important, a key was provided for further and deeper investigation of lesion mechanisms.

That striking demonstration was an epitomization to me of the accomplishments of a program of fundamental research in osteopathy and of the potentialities of further research. Here, in progress, was the conversion of an art into science. Here was a major step from empiricism to experimentally established theory. Here, in the theory, was the seed of new and better practice.

In the few succeeding months of continued investigation some of the potentialities have been explored and the way has been pointed, we are confident, to some very significant and practical advances. Yet, in the same period of time, it has not been possible to detect any substantial recognition by the profession of the potentialities of fundamental research. There is little generalized appreciation of the nature of fundamental research in osteopathy, of its potential impact on the practice of osteopathy, and of its relation to the future of osteopathy as a profession.

This conclusion is supported by two main facts. First, basic research in osteopathy is pitifully small in comparison to what osteopathy needs and can support. Second, certain serious misconceptions are prevalent. One hears the statement, even from distinguished leaders of the osteopathic profession, that fundamental research is academic, impractical, sterile, useless. This is usually accompanied by the demand for more practical work. "Give us better diagnostic instruments; new therapeutic tools." (With this, of course, there can be no disagreement. But what is the shortest path to those practical advances?) One hears also that the main value of basic research lies in public relations; it is good window dressing; it lends "respectability" to osteopathy, its institutions, and practitioners. Others, with a glance at Osteopathic Progress Fund, assert

that research is an expensive luxury; leave it to those who can afford it.

The most common misapprehension, and the source of much cynicism with respect to research, is that the function of research is to "prove" osteopathy. This is patently false; osteopathy is very satisfactorily "proved" to thousands of grateful patients daily. On the contrary, the sole, ultimate, function of research in osteopathy is not to *prove* osteopathy, but to *improve* osteopathy—to render osteopathy a more effective weapon for the prevention, healing, and compensation of man's ills.

What is fundamental research? Research is said to be conducted on one (or both) of two levels: (a) the basic or fundamental (often misnamed "pure") and (b) the practical or developmental. The first is concerned with the properties, the processes, the interactions, the interrelations, and the energy transformations of matter—at all levels of organization—whether that matter be the helium atom, the earth's core, the stratosphere, the vertebral column, or the human cerebral cortex. Practical research proceeds from the newly revealed laws to develop or create devices, instruments, or techniques for the fulfillment of certain practical purposes. Practical research cannot progress very far without constant "transfusion" with new fundamental knowledge. Often the boundary line between the fundamental and the practical is nonexistent. Although the practical proceeds from the fundamental, it opens new fundamental problems. Theory leads to practice, but is in turn enriched by practice.

Striking illustrations of the relation of fundamental to practical research as they applied to both materiel and personnel were furnished by the last war. A host of phenomenal war machines and gadgets sprung up during or shortly before the war: radar, proximity fuses, self-aiming projectiles, and, of course, the atom bomb. It is too often forgotten, however, that the developmental work which led to the final product was in each case made possible by the decades of basic research that preceded. Thus, radar really began to emerge with the discovery of electromagnetic waves by Hertz over 60 years ago. The atom bomb really began to be built by the Curies, with their discovery of radioactivity. In fact none of the startling weapons of war which gave this country its technical superiority would have been possible without the tremendous backlog of information previously yielded by basic research—often unrelated to the final product.

The critical need for basic information was even more clearly demonstrated in connection with personnel problems in the war—because in many cases the backlog was inadequate. In the course of the war hundreds of unanticipated problems arose concerning man's relation to the new war machines and to the conditions, climactic and others, under which he fought and operated. Attempts were made to solve these problems early in the war by what appeared to be the most direct approach. Change it; test it; keep changing and testing until it comes out right. Effective and important as this was in many cases, too many others did not

come out right. Many of the most urgent problems remained unsolved by this pragmatic field research; the work ended in blind alleys. After much of such unsatisfactory, empirical "prodding," the various divisions of the armed forces began to establish in their own laboratories and through civilian agencies an extensive and far-flung network of fundamental research projects. The air forces were conducting research on cerebral metabolism and circulation, oxygen dissociation curves of hemoglobin, hemodynamics, and retinal mechanisms. The Signal Corps was conducting studies on the metabolism of muscular work, on the shivering mechanism, and control of blood flow through the skin. The Quartermaster Corps was conducting research on radiation and evaporation from the skin, salt and water balance, and endocrine function under various climatic conditions. The Chemical Warfare Service was engaged in basic studies on cellular metabolism in plant seedlings and chick embryos, on acetylcholine synthesis, and the mechanisms of myoneural transmission. In many cases the research had no apparent relation to the immediate practical problem. Yet, quickly, the answers to the most urgent problems began to be found. In many instances the disclosure of a single new fact or set of facts solved a number of apparently unrelated practical problems, merely because they had some fundamental factors in common.

Thus, one of the most important lessons of the war for the medical and biological sciences is that the quickest, the most economical, and most effective way to solve practical problems concerning the human organism is through fundamental research. It is a most dramatic fact that the very practical armed forces, in the midst of one of mankind's greatest emergencies, a war for survival, found it expedient to put the medical and biological scientists to work on apparently "pure," "academic" projects.

Does this lesson apply to osteopathy? I sincerely believe that it does. The laws describing the vital processes in man's body are the same whether the body is that of a soldier operating a radar set, that of an M.D.'s patient or that of a D.O.'s patient. We must fully recognize that osteopathic manipulative treatment, though its effectiveness in the healing of man's bodily ills is demonstrated in daily practice, is still largely in the stage of empirical "prodding," as, of course, are many other forms of therapy. History shows that empiricism, though it may play an important exploratory role in the opening of a new field, operates under the law of diminishing returns and rapidly runs its course. Osteopathic empiricism (and therefore empirical osteopathy) is rapidly and inevitably approaching its limit. The limit, however, is not inherent to osteopathy, which is potentially limitless. The limits are today being set by the available theory—which is in dire need of enrichment by fundamental investigations.

But did not Dr. A. T. Still leave a large body of theory? He did indeed leave a revolutionary body of doctrines, the intrinsic soundness of which has made possible the successful practice of osteopathy as we know it today. But Still recognized also the stultifying effect of absolute, unchanging—and therefore non-living—dogma. He left to his successors a great heritage of principles—to be applied, developed, enriched, multiplied—and amended. He said he had but scratched the surface. After a half century the surface

is still only scratched. There are more scratches, but they are not much deeper. This is not to deny the advances and improvements in diagnostic and therapeutic technics. But it is to say that during this period there has been little alteration, little advance in our understanding of basic mechanisms involved. Practice has ceased to enrich theory—and will therefore be limited by theory. We are in the process of ploughing and reploughing fields first broken by Still. True, they are being worked with better and fancier tools, but vast new fields ever remain to be broken. The fresh, unimpovertished soil will inevitably yield a superior product. As will be indicated later, those fields are today being ploughed and planted by others. Some of the more important fields very closely adjoin those first broken by Still. Yet osteopathy cannot do the reaping nor will it be able to claim the product as its own.

What justification is there for asserting that osteopathy today is in urgent need of extension and deepening of our understanding of basic osteopathic concepts? I believe it a very significant fact, for instance, that recently a textbook of osteopathy which is over 40 years old was considered, by some of the older leaders of the profession, to have not only historical significance, but also theoretical and practical relevance today. This is true of no other biological field today.¹ It is tempting to make the defense that such a situation is attributable to the perfection, the absoluteness, and the comprehensiveness of the principles developed by Still and his early disciples. But the fact is that there are no perfect, absolute, unchanging principles. Even the laws of thermodynamics, which appear to be so final and irrefutable, are daily undergoing change, development, and enrichment in meaning. The laws of gravity, first enunciated by Newton, revolutionary and significant as they were, took on completely new meaning and usefulness in the light of the revolutionary principles of relativity, quantum mechanics, and nuclear physics. Osteopathy, also a revolutionary and vital doctrine, is still in an early stage of development. Only basic research, on an extended scale, can raise and maintain it at the highest level. In the field of physics it is leading to the control of atomic energy. The developments in osteopathy could be as spectacular.

Our small theoretical advance since Still's time is even more clearly reflected, I believe, in the current concepts of the osteopathic lesion. It was a striking revelation to me that after 50 years of direct or inherited experience in identifying, localizing, describing, and correcting osteopathic lesions, a group of progressive leaders in the profession recently found themselves unable to agree upon the distinctive characteristic of the osteopathic articular lesion. To one, the anatomical change assumed most prominence; to another, altered range of motion was the distinctive feature; to another, anatomical features were of negligible significance superseded by alterations in tissue texture, or hyperesthesia, or neurological changes, or combinations thereof. The most careful empirical prodding and clinical testing of lesions will not yield the essence of the osteopathic lesion, the intrinsic, central factors which lie at the center of, and tie together all the peripheral, palpable, and clinical manifestations.

1. In fact, in our own colleges we would not be content with any but the latest editions of textbooks of medicine, surgery, pathology, physiology, etc.

The disclosure of that essence, the fundamental basis of the osteopathic lesion, is the very purpose of the research program in progress at Kirksville. Proceeding from the pioneer demonstration by Denslow and his colleagues that the lesion is associated with reduced reflex thresholds, it has been possible through further investigation to learn considerably more about the basis for the low reflex threshold in the lesioned segment, its relation to other parts of the nervous system, central and autonomic, and about features intimately correlated with threshold. As a result of these investigations² a new concept of the osteopathic lesion is emerging. The lesion is demonstrated as being intrinsically a segment of the spinal cord which is in a state of chronic facilitation, a segment of the cord from which, so to speak, "the insulation has rubbed off," potentially exposing all structures innervated from that segment to overexcitation or inhibition.³

Although it is inevitable that further development of this concept will have some impact upon the practice of osteopathy, it is of special interest to clinicians that these beginning studies already have some conspicuous practical implications. In the course of the investigations some simple, inexpensive, and portable instruments were developed or adapted for the precise measurement of certain aspects of the lesion. I believe that these and others which are contemplated are destined, in one form or another, to become valuable diagnostic aids, far more revealing than the most sensitive finger tips and certainly much easier to standardize.

It is also safe to say, I believe, that such instruments could emerge only from fundamental study. It is most improbable that they could be produced by an empirical project in which the investigators deliberately set out to create diagnostic instruments without the necessary backlog of basic information.

Lest it appear that I have completely discounted the "public relations" aspects of fundamental research, which are overemphasized by others, it may be said that the profession can be proud that osteopathic research is rapidly becoming an integral part of the scientific stream of this country. Reports from this laboratory are published in the leading physiological and biological journals. A grant-in-aid has been assigned this college by the United States Public Health Service upon the recommendation of a distinguished group of physiologists. There are good prospects of grants from other agencies. For the first time a Doctor of Osteopathy presented a paper before the American Physiological Society, at its 1947 meetings; he will read another at the 1948 meetings. At those meetings a growing interest in osteopathy was evinced by the scientists. Dr. Denslow and I found it possible to break down the "resistance" of the most inveterate scientific skeptic in a few minutes by presenting the experimentally substantiated concept of the osteopathic lesion.

It is most important to emphasize, however, that important and gratifying as are the growing acceptance, "respectability," and improved "public relations," they are purely secondary and inevitable by-products of sound and significant research. The primary objective of the research is, and must ever remain, the discovery of sound osteopathic principles leading to the continu-

ous evolution of superior diagnostic and therapeutic methods.⁴

The results of these investigations, small as they are as yet, clearly indicate that osteopathy is ready to be transformed from a subjective, qualitative healing art into a precise, quantitative, and objective science, with an infinitely widened range of usefulness, certainty, and predictability. Not only is osteopathy ripe for that transformation, but the information and theory which will make it possible lie fairly close to the surface. However, a vast amount of spade work remains to be done to uncover all the necessary facts. At the research tempo maintained by the profession today, the practical advances would be unnecessarily delayed for many years. As a matter of fact some of the more important problems are not solvable with our present low-power facilities. The research must be greatly stepped up in tempo and in power—and in the very near future. It must be admitted that fundamental research on the scale required is expensive. But it is not a luxury. It is today the best long-term investment the profession can make.

The investment in osteopathic research is already long overdue, and from the viewpoint of the osteopathic profession it now has a special urgency. That is, the investment is being made by others. The dividends are not to be expected to accrue to the osteopathic profession. It was said previously that research in osteopathic institutions is pitifully small, but it is most important to recognize that osteopathic research is proceeding on a grand scale in nonosteopathic laboratories throughout the world—especially in this country, Great Britain, and in the Soviet Union. True, it is not identified nor recognized as osteopathic, but it is osteopathic nevertheless.

In addition to the extensive studies on body mechanics which are carried on in many laboratories and clinics, the intrinsic nature of the osteopathic lesion is being slowly, but surely and accurately elucidated in many other laboratories. As early as the beginning of this century, in A. T. Still's day, Mackenzie⁵ described in considerable detail the somatic relations (and the neural basis therefor) of visceral pathology. His descriptions closely resemble the modern description of the lesion, even to the tender spinous processes, and rigid and hyperesthetic muscles—segmentally related to the affected viscus. Lewis and Kellgren⁶ have produced the equivalent of artificial acute spinal lesions and have studied not only the somatic effects, but also the relations to visceral and other autonomic functions. Recently a group of investigators at Cornell University Medical College were able to relieve certain severe

2. Reported in the *American Journal of Physiology* 105:229-238, Aug. 1947; this work and its clinical implications are reviewed also in *THE JOURNAL OF THE AMERICAN OSTEOPATHIC ASSOCIATION* 47:191-198, Dec. 1947.

3. This is by no means synonymous with "interference with nerve supply" so frequently ascribed to the lesion.

4. Osteopathic research and theory are not ends in themselves. The universal acceptance of osteopathy as a superior form of therapy will be predicated not upon the *theory* of osteopathy, but directly upon the *practice* of osteopathy. Osteopathy is what osteopathy *does*. This was very sharply illustrated by an incident at the 1947 physiological meetings. Having convinced one of my most skeptical friends, a very talented young physiologist, of the sound theoretical basis for osteopathy, our conversation turned to more personal matters. He informed me that his wife was almost incapacitated by what was a frank joint problem. He had spent all his savings, fruitlessly, on orthopedists' fees. I asked him, quite naturally, why he had not gone to an osteopathic physician. He stepped back, raised an eyebrow and asked incredulously (and perhaps a little contemptuously), "Are you serious?" Only after he recalled that one of his family's best friends was a regular and very satisfied patient of the sole osteopathic physician in his community, did he agree to give osteopathy a trial. I had sold him on the theory of osteopathy, but not on the practice. That is for the practitioner to do.

5. Mackenzie, J.: Some points bearing on the association of sensory disorders and visceral disease. *Brain* 16:321-354, 1893; also, *Symptoms and their interpretation*. Shaw & Sons, Ltd., London. Ed. 1, 1909; Ed. 4, 1920.

6. Reviewed in Pain, by T. Lewis. Macmillan Co., New York, 1942.

visceral symptoms by chemical treatment of segmentally related muscular "trigger spots." Their conclusions regarding visceral pathology resulting from somatic insult, and regarding the vicious cycle, etc., were strongly reminiscent of osteopathic views.

These are only a few examples; there are many others. Shortly after beginning my work at Kirksville, several colleagues, eager to introduce me quickly to osteopathic theory, thrust upon me copies of books by Pottenger, Judovich and Bates, Speransky, Livingston and others, with the invariable comment that this was "straight osteopathy."

At the other extreme are those D.O.'s who shout "usurpation." Their attitude, I believe, is even less defensible. There is a swelling tide of comprehension and practical interest in the phenomena long known to this school. The tide of trial and investigation by others cannot be made to recede upon command. Even if the osteopathic profession had the "secret" of the osteopathic lesion, it could not keep it long. It has had, however, for many years, and will for some time continue to have, the "know-how" of effective diagnosis and therapy of the lesion.

In certain respects osteopathy is in a situation very similar to that of the United States with respect to the atom bomb. This country does not alone have the secret of nuclear fission. It does alone have the practical know-how of the bomb. There is no question, however, that not only will atomic research throughout the world make possible the creation of atom bombs by other countries, but also the creation of atomic weapons far superior to the present bomb. The United States, then, has the choice (among others) of "sitting tight" with the present bomb and leaving the research to others (an obviously ridiculous choice) or of itself conducting fundamental research on an expanded, accelerated scale. (It is unfortunate that the comparison is with a weapon of destruction. A more fitting one would have been with atomic utilities for the elevation of standards of living and for the general improvement of man's personal, social, economic and cultural lot.)

A very similar choice faces the osteopathic profession today. There is no question that continued osteopathic research (whether or not it is designated as osteopathic) will inevitably lead to the development of new forms and methods of diagnosis and therapy superior to those of the osteopathy practiced today. The profession has the choice of leading the revolution or of having the revolution thrust upon it—with easily foreseeable consequences. The profession has the choice of leading in the development of new and superior osteopathic weapons, constantly swapping the old for the new, or of sitting tight with the present ones (remarkably effective as they are) only to have them superseded anyway. To a very great extent the future of osteopathy and its recorded place in the history of healing will be determined by the choice. The wrong choice would constitute an unforgivable betrayal of A. T. Still and the founding principles which he left to his heirs. To delay the choice much longer is to make the wrong choice.⁷

The ploughing and planting by others of the rich fields which so closely adjoin those first broken by Still,

7. It is well to keep in mind in this connection, that if the osteopathic profession decides to leave the fundamental research to others, very probably when the history of the osteopathic lesion (whatever its ultimate name) is written, credit will go mainly to the researchers and their sponsors who establish and substantiate its fundamental and intrinsic nature, and not to those who empirically discovered its existence even though they knew how to exploit it practically. As has happened in other major scientific developments, the empiricists, though they may have been the pioneers and the first discoverers, figuratively and literally are mentioned only in footnotes, for the sake of scholarly completeness.

should not be viewed only as a threat to (or an encroachment upon) the distinctive position of osteopathy in the art and science of healing. Rather it should be viewed as a tremendous historic opportunity which is being forfeited to others. The profession need only reclaim that opportunity. Further, and most important, the osteopathic profession has an immense advantage. The others are just discovering the osteopathic lesion in one form or another; they are just now becoming impressed by the influence of the soma on visceral function; they are just beginning to recognize the vicious somatic-visceral-somatic cycle. The D.O.'s have not only known the lesion and its functional effects for a long time, but have dealt with it effectively for more than half a century. This advantage must be consolidated, not only for the sake of the profession, but for all of mankind. What other group is better fitted by history, by experience and by tradition, to lead this next major advance in the science of preventing and healing man's ills?

For these reasons, to forfeit the opportunity is also to shirk a grave responsibility to society and to forego its everlasting gratitude and honor. For these reasons the research program of the osteopathic profession must be broadened and deepened and expanded many fold. An adequate research program would be the best possible tribute to the founder of osteopathy.

PART II

A research program which purports to serve an entire profession must embody the following elements:

1. There must be the fullest utilization of existing scientific resources and facilities, and continuous improvement and expansion of these resources.
2. There must be large centralized research facilities and laboratories.
3. There must be centralized planning and coordination.

Existing Facilities within the Osteopathic Profession.—There are already within the profession potentially rich sources and facilities for the disclosure of new and valuable basic and clinical information. I refer, of course, to the osteopathic colleges, in which research output is minute in comparison to the potentialities. Even at Kirksville, though a productive research program has been in progress for a number of years, it has involved but a very few departments and staff members. At present research is considered too much the specialized function of a "privileged few." This attitude must be replaced by the more correct one that every member of the faculty, with a little planning, and often only through recording observations which he makes in the course of his other duties, can make some worthwhile contribution to the knowledge or methods in his chosen field. It is most desirable that research, regardless of its scope or type (experimental, clinical or statistical) become a regular activity of as many departments as possible in each college.

The thousands of patients passing through our clinics and hospitals (including those who come to the autopsy table) represent rich sources of new and basic knowledge in osteopathy, disease processes and the functions of the human body. A wealth of such knowledge is irrevocably lost every day. Much of it can be saved by more careful and thorough record keeping. In other cases, it will merely require making certain simple clinical tests or observations before and after manipulative treatment, or in the course of therapy. In still other fields much fruitful work can be accomplished through cooperation of clinical departments

with one or more of the basic science laboratories. There are literally hundreds of osteopathic problems in cardiology, endocrinology, dermatology and the other specialties, which are amenable to experimental, clinical or statistical solution.

It is important to begin to stimulate research at each college, clinic and hospital. Discussion, at regular seminars and journal clubs, of the major problems in osteopathy and the approach to their solution in clinic, hospital and laboratory, is one suggested stimulus. It is further suggested that inducements, in the form of reduced routine teaching or clinical duties, and of salary increases be offered.

It must not be thought, however, that all that is required to do research, especially fundamental research, is the desire, the time and the energy. In addition to natural ability, imagination, ingenuity and an inquiring mind, it requires intensive and specialized training, experience, familiarity with scientific and clinical literature, new habits of thought and objectivity, and the capacity for painstaking attention to detail as well as to broad concept.

Sound and fundamental investigation of osteopathic problems requires not only training in the basic and clinical sciences, and in research methods, but a thorough grounding in osteopathic theory and practice. The profession suffers from a critical shortage of research personnel with these qualifications. Unfortunately, the research scientists trained in our universities and medical schools are not familiar with osteopathic concepts, and few physicians trained in our osteopathic colleges have an interest in research and postgraduate scientific training.

Until a sufficient number of persons embodying the proper combination of qualifications is developed, the closest collaboration between physicians and scientists must be established and maintained; this, of course, is desirable even under the best of circumstances. But our osteopathic colleges must begin to produce, as soon as possible, a steady stream of research workers.

This requires that our students receive good training in the basic sciences; that the courses in osteopathic theory and practice constantly incorporate the current advances in biological and medical science; that these courses not only be well taught, but that they be critically taught, with frank and inquiring attention to the uncertainties, the controversies, the gaps in our knowledge, the unanswered questions and the present limitations, as well as to the certainties. It requires that our students come in contact with sound research in the course of their studies, and that selected ones be given the opportunity to participate and be encouraged to prepare themselves for careers as teachers and research workers in the osteopathic institutions.

Obviously, the pump must first be well primed before such a stream of research workers is forthcoming. A cadre of qualified osteopathic research workers must first be established in our colleges, and given the means, to train others. Toward this end it is suggested that a system of fellowships be established by the profession whereby talented young D.O.'s may acquire the needed postgraduate training. These fellowships should permit them to go to any college, university, medical school or laboratory where they can obtain the desired training in the specialties of their choice, and for as long as is required. The fellowships should carry a sufficient stipend to ensure security to each Fellow and his family, and at least partially offset

the economic sacrifice he makes in withdrawing from practice. Each fellowship must be viewed as an investment in osteopathy and its institutions rather than in an individual.

Centralized Research Facilities.—The tremendous value of highly concentrated research institutes has been amply demonstrated many times over in the progress, in the past 25 or 30 years, of the medical and biological sciences. Their importance was fully recognized by the armed forces. Although every branch of the armed forces profited from and constantly drew upon the investigations conducted in private and other laboratories throughout the country, each branch maintained its own concentrated facilities for the investigation of problems of importance to its special function. Thus, although medical and biological laboratories throughout the country were investigating various aspects of aviation medicine, the air arms of the Army and Navy operated large laboratories of aviation physiology. Similarly the Chemical Warfare Service maintained extensive medical laboratories; as did the Signal Corps, Quartermaster Corps, Armored Forces, and others.

Osteopathy has long been sufficiently mature to have a research institute of its own encompassing all the major fields of basic and clinical research related to osteopathy—biochemistry, biophysics, physiology, pathology, body mechanics, medicine, etc.

The primary function of an Osteopathic Research Institute would be to conduct intensive, full-time investigations of broad major problems not possible in the colleges, nor amenable to piecemeal solution by separate laboratories. Such a role would be made possible by three main features: (a) a high concentration of scientific and clinical talent; (b) well coordinated teamwork; concerted action; simultaneous investigation of the different aspects of each problem; and (c) the availability of rare, elaborate or expensive facilities and equipment not found in the colleges.⁸ Such an institute would provide the highest degree of flexibility, versatility—and economy. Its contribution is not merely a quantitative one, but mainly a qualitative one. It makes possible not only *more* research but a different *kind* of research. The kind osteopathy needs—and deserves—is possible in no other way.

The institute should be so planned and so well supported as to attract and give maximum opportunity to leading scientists and clinicians. The institute should not, however, be considered as a plant or a factory in which "hired hands" grind out data *for* the profession. In every sense of the word the research must be done *by* the profession—of which the scientists must become an integral segment. The institute cannot be established as a separate department or instrumentality to which is relegated the special function of research, and in which the scientists operate in ivory-tower isolation from osteopathy in practice. The investigators must be conversant with the problems of osteopathy, its methods, potentialities, present limitations—and its history. This can be achieved only through constant contact of the institute staff with osteopathy and its practice. Planned interchange between the institute on the one hand, and the osteopathic colleges, institutions and the field on the other is therefore required.

For these reasons it is desirable that the Osteopathic Research Institute be closely associated with one

8. I have in mind such apparatus as an electron microscope for the study of cellular changes in areas of lesion; and of such equipment as that required for the study of the metabolism and distribution of natural substances "tagged" by radioactive isotopes.

of the colleges. While the institute would eventually require a modern, well-planned and well-constructed plant, it might be wise, during the early developmental stage, to house it temporarily in one of the larger osteopathic colleges. To hasten familiarization with osteopathic problems and theory newly engaged experimental investigators could be appointed to part-time faculty positions. Conversely, qualified physicians from the colleges and the field should be able to participate in the research program of the institute. Every laboratory in the institute should enjoy the fullest possible collaboration between specialized scientist and osteopathic physician. Physicians from field or faculty, as well as Fellows, should be able to come for training and experience in research, to conduct investigations of special interest to them, and thereby to enrich the research program with their own practical experiences. For similar reasons I believe it desirable that the director of the institute should be an outstanding Doctor of Osteopathy who knows the current practical and basic problems in osteopathy and medicine, and who will be advised by a board of distinguished scientists and clinicians in the various specialties. He must be a leader who can inspire confidence and esprit de corps and maintain a high level of coordination without encroaching upon the independence that every good scientist needs and demands.

The institute, for obvious reasons, should be close, geographically and organizationally, to extensive hospital and clinical facilities. A hospital which is specifically designated as a research hospital, or which at least provides opportunity for field research and for clinical testing and standardization of new developments, would be a vital adjunct to such a research institute.

Centralized Planning and Coordination of Osteopathic Research.—This is an indispensable element for the most productive utilization of facilities and for the planned growth of the research program. The Coordinating Committee on Osteopathic Research could be comprised of the Director of the Osteopathic Research Institute, his board of advisors in the institute, and qualified representatives from osteopathic institutions.

The committee would serve as the planning, coordinating and integrating agency for research in the entire profession, including the colleges. It would make a survey of the facilities and personnel at the various osteopathic colleges, hospitals and institutions and determine what types of investigations could best be conducted in the various departments in the different institutions. On the basis of the survey, it would propose projects to those departments, give aid and advice in their execution, and when necessary, recommend allocation of money from the Osteopathic Research Fund. It would also receive and review proposals for research and applications for funds, and make recommendations on the basis not only of merit and needs, but also on the basis of what work is in progress at other institutions. The committee would thus serve not only as clearing house and coordinator, but also as stimulator of research throughout the profession.

The existence of such a central committee, serving the entire profession, would make possible clinical surveys on a national scale, through the collection, compilation and analysis of data and clinical observations obtained and sent in by physicians throughout the country.

The coordinating function of such a committee is by no means synonymous with detailed direction. The

need, in scientific research, for the highest degree of autonomy and independence of the individual laboratories and investigators would have to be fully recognized. The coordinated planning would, however, give direction to the over-all program, make possible maximum utilization of facilities and personnel, eliminate duplication of effort, make possible concerted effort on a large scale, and the solution of problems which cannot be approached in any other way.

This principle is today being applied on a national scale in cancer research. A centralized program is being established which will coordinate the work of laboratories and clinics throughout the country. There is no question that in a short time this will result in a tremendous advance in our knowledge of cancer, and therefore in its treatment, prevention and cure.

Admittedly, a research program having the above major elements, and of such magnitude as to be in keeping with the needs of osteopathy, and its place in the healing arts, would be costly. Such a program is possible only if it receives the strong support of the profession, its organizations and its patients.

To achieve this support—to “sell” research to the profession as a whole, it is necessary that every practitioner and his patients be fully informed as to what osteopathic research is; what it can promise with respect to diagnosis, therapy and concept; and what it will do for him and his practice. A program of research, on broad general lines, should be drawn up for presentation to the profession. It does not require intensive scientific training for a modern disciple of Still to conceive the effects on his profession of a thorough knowledge, for instance, of the intrinsic nature of the osteopathic lesion in all its aspects; or of its true mode of action on the autonomic nervous system; or of the relation of body mechanics to immunological processes in the body, and endocrine function; or of the prophylactic value of osteopathy (as, for instance, in a 30-year follow-up on 1000 children); or of the relation of the lesion to the cerebral cortex and the emotions; or of the basic differences between the acute and chronic lesions; or of the development of instruments and techniques for the precise and objective evaluation of articular characteristics and tissue changes associated with lesions, etc.

What would such a program cost? From the beginning, the operation of the institute, the services of distinguished scientists and clinicians, and the support of projects in the colleges and other institutions, would require an annual budget of no less than \$100,000. Lest this seem fantastically beyond the means of the profession, it is well to recognize that even now there are probably at least 1000 physicians who would be happy to pledge \$100 annually for a research program which they could call their own and which would be directed toward their needs. I am confident that after a brief educational campaign among the profession and the laity the number and size of the pledges would be greatly increased.

It should be emphasized, too, that such munificent support would not be required of the profession indefinitely. Good research, based on good personnel and good facilities, attracts funds from a variety of sources. (This has already been demonstrated on a small scale at this College.) In view of the probable creation of a National Science Foundation in the near future, it is urgent that osteopathic research demonstrate its possibilities on a large scale very soon, so that osteopathy may justly claim its share of the funds that will be made available. It must be remembered that grants

from Federal agencies will be more in proportion to achievement and proven potentialities than to needs. Further, research institutes, limitless as they are in their potentialities, and enduring as are their products, attract endowments and memorial funds.

But research is more than just a financial investment. It is an investment in the principles of Still, in osteopathy and in mankind itself. The osteopathic profession is ready to make the investment.

PROPOSALS

A. It is proposed, therefore, that the osteopathic profession take under early and serious consideration the establishment and implementation of an osteopathic research program similar in nature and scope to that described previously and embodying three cardinal organizational features:

1. Maximum utilization and expansion of existing and potential research resources in the colleges and other osteopathic institutions.

2. A centralized Osteopathic Research Institute.

3. Centrally planned stimulation and coordination of research throughout the profession.

B. It is proposed that concrete plans for such a program be drawn up in the near future, which shall comprise the basis of an extensive educational campaign among the profession and laity.

C. It is proposed that a system of postgraduate fellowships be established whereby selected D.O.'s may acquire specialized training for research and for teaching in the osteopathic colleges. It is recommended that the stipends be relatively generous, and that the Fellows be encouraged to study and work at the institutions providing the best training in their specialties, and for as long as is required. As many of these Fellows as possible shall upon completion of their studies, be appointed to the faculties of our osteopathic colleges to teach, conduct research, and to train other osteopathic research workers.

D. It is proposed that the leadership of the American Osteopathic Association take under consideration sources of funds and means for the establishment of a substantial research budget adequate to the program outlined, and in which provision for regular increases is made.

Such a program represents an historic opportunity for the profession, but at the same time it will represent a great and continuing responsibility. An adequate research program, such as that suggested, requires far more than the creation of the machinery and the instrumentalities. It requires more than financial support. In all respects the success of the program, the productivity of the machinery, will be in proportion to the power and the sustenance provided by the profession. These are measured in terms of moral and

intellectual support and cooperation as well as in economic sacrifice.

It has to be recognized that the osteopathic colleges must form the very foundation for such a program—a foundation which yields sustaining nourishment and inspiration to the osteopathic research program. Of all the resources involved in and required for research none is more precious and more urgently needed than research personnel. Our wealth in that resource will be in proportion to the quality and scope of our educational program. Our faculties must consist of the best osteopathic physicians, the best specialists and the best scientists. They must be given the wherewithal to do their best work. Only in this way can the colleges themselves become research centers; only in this way can they produce critical and scientifically minded physicians who will be on the constant look-out for technical advances to be incorporated in their practice; only in this way can they produce the steady stream of osteopathic research workers who can provide those advances for the profession. At the present stage of osteopathic development, the colleges are becoming more and more the determiners of the rate of progress—and of the future of osteopathy.

The success of the program will require new habits of thought from the entire profession. Success of a scientific program requires a scientific atmosphere. Research cannot flourish if the profession upon which it depends for sustenance and inspiration is slow or reluctant to cast aside cherished, but disproved, notions for new and substantiated concepts and for superior methods which emerge from the research program.

New habits of objectivity will need to be acquired. Dogmatism will have to be replaced by fact; fervor and wishful thinking by science and logic. It will not be possible to make statements and claims or give explanations unsupported by evidence, regardless of how reasonable they may appear. Editorial staffs of osteopathic journals must establish rigorous standards; contributors of clinical and other articles should be required to substantiate all statements and conclusions; it will be necessary to quote data rather than opinions. Such new standards, therefore, will require in turn that osteopathic physicians, especially those who teach and write, shall familiarize themselves with the current scientific and clinical literature in their respective fields.

This is doubtless a very big order. Its fulfillment will require the same vision, the same disdain for orthodoxy, the same courage, energy and devotion to principle that made possible the birth, survival and maturation of osteopathy in the face of scorn, skepticism and organized opposition. Today the choice is between senescence and renaissance.

Kirkville College of Osteopathy and Surgery