

by Randy Alley

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Dr. Kreider Speaks Out
Part 2: On Phrenology

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Kreider defined phrenology as a pseudoscience that "professes to be a system of philosophy of the human mind, founded on the physiology of the brain."¹ As described in "Phrenology Considered" (Vol. 6, No. 9), phrenologists believed that many different organs made up the human brain. During Kreider's lifetime, no one knew the number of such organs because each phrenologist professed knowledge of new and different organs. Kreider refuted phrenology by examining the scientific validity of its premise. He also provided humorous contradictions which arose from the phrenologist's claims.

Your Brain on Phrenology Phrenologists claimed that the size and shape of these organs would determine the size and shape of the skull. Measuring the exterior of the skull could then disclose and identify these organs. Once the size of the various organs was determined, phrenologists could learn their relative strengths. A person could then emphasize desired traits and reduce undesirable ones by exercising the appropriate organs. With proper exercise a person could obtain any desired goal. Kreider made light of these claims:

If the fundamental principles of Phrenology are true, every other system of mental and moral science, must of necessity be absolutely abandoned as utterly false... The human skull has been mapped out, and the region of the brain occupied by each faculty and propensity carefully noted. Men have only to learn the geography of the skull, look at its general shape, and feel its protuberances and indentations, traverse its mountains and valleys and note its jutting promontories, and they can at once read the whole character of the individual, intellectual and moral! The study of the philosophy of the mind according to these masters has become almost a matter of mere mathematics, geometry and arithmetic constituting the chief part of it! Lecturers of all dimensions and titles, including medical doctors, traverse the country to enlighten the people in the principles of this wonderful science, and to confirm them, by examining indiscriminately the heads of all both great and small who are willing to undergo the process.²

Kreider knew that simple answers for the problems of mankind did not exist and that performing simple exercises would not provide answers for man's desires.

Dr. Kreider was also extremely critical of Franz Joseph Gall and his followers, who he believed had an inflated idea of their own value to humanity. They placed themselves alongside the greatest scientific minds of their time and Kreider found this to be ludicrous:

The Vienna Philosopher was looked upon by his disciples as head and shoulders above the immortal [Benjamin] Franklin, and they assigned to him the highest niche in the Temple of Fame! Precocious youth! While yet a child, he discovered the foundation of the wonderful superstructure he was afterwards to rear.³

Kreider qualified his response. He absolutely stated that Gall's theory should be and had been scientifically tested. These tests, for Kreider, settled conclusively that phrenology was simple fraud:

The exalted claims of this wonderful discovery, and the extensive and important influences it proposes to exert in modifying or entirely changing all received opinions in relation to mental and moral science, are certainly good reasons why its principles should be subjected to careful scrutiny. The aid which it (with its twin-sister Mesmerism) holds out to the embrace of the medical philosopher, makes it peculiarly appropriate that we should thoroughly investigate its high claims, and if true, as philanthropists embrace its benign spirit. This we should do because its influence is by no means confined to men of speculative minds. It is a visible tangible thing... I come now to enquire if they are true. If true, then it is not only a science worthy of being embraced, but of the utmost importance to understand. If false, it is time that we should be certified of the error that our minds may be led in another direction to find truth. If it is sustained by physiology, then all other notions of the animal economy are erroneous. If it is consistent with self-evident and universally admitted principles of mental and moral science, it [is] passing strange that all intelligent men who have investigated its claims to credence have not embraced it... There never was a system of philosophy so erroneous as this.⁴

Clearly Kreider opposed phrenology from the standpoint that it had not been proven. It was full of contradictions, and simply did not work.

Kreider did give phrenology some credit. However, this credit was not the result of the direct phrenological inquiry. Phrenologists did not make new discoveries, but they forced physicians and scientists to examine brain in terms of regions associated with functions of the body. Kreider compared this contribution to the alchemist's search for the philosopher's stone. The philosopher's stone was a magical elixir searched for by alchemists who believed it would cause the transmutation of metals (such as turning lead into gold). The ingestion of this elixir would also cure all ills and provide immortality. Alchemists searched the world for this substance, but never found it. Although discredited, alchemists did make some scientific discoveries as a result of their investigations. The most famous discovery was that by Paracelsus (1493-1541). Prior to his discovery, it was believed that disease was caused by imbalances in the body. Paracelsus discovered that disease was caused by elements outside the body. He also determined that the spread of disease could be stopped by the use of certain chemicals. Other scientists examined these theories and found them to be accurate and direction of medicine shifted. While this discovery did not provide credibility to the alchemists, it was a step forward for medicine.

Phrenology's contribution to science was that it focused doctors and scientists on thinking of the brain in terms of functional areas. Each area of the brain influences a human function. This function was demonstrated in Kreider's time by the case of Phineas Gage, a railroad worker who, during an accident, had an iron rod driven through his brain. The resulting injury did not kill Gage. In fact, Gage walked away from the scene of the accident under his own power. However, extensive damage occurred in the area of Gage's prefrontal cortex. The prefrontal cortex is believed to be essential in controlling and influencing conscience and behavior. Before the accident, Gage was described as an even-tempered person. After the accident, Gage became argumentative and abusive. These changes demonstrated the ability of different parts of the brain to control or influence actions.⁵ Phrenologists claimed this example as proof that their theories were true. Kreider, in recognizing this contribution to medicine, gave the phrenologists specific credit for this contribution, with some reservations:

The first principle as we have stated is, that "the brain is the organ of the mind." That is, the mind performs all its operations by means of the brain, or some one or more parts of it. This principle, with certain qualifications is admitted. It is undeniable that it is by means of the brain that the mind manifests itself. Nor is it to be denied, that a diseased state of the brain may and mostly does interfere with intellection and consequently, with moral feeling. But that the mind cannot act at all without using the brain as an organ, has not and cannot certainly be proved. So far however, as the truth or falsehood of Phrenology is concerned, it is unnecessary to determine this question. Its falsity can be established on other and more obvious grounds. The general principle did not arise out of Phrenological investigation. It was held long before the German Philosopher [Gall] illumined a benighted world, and is still held to be true by many who reject his dogmas.⁶

Kreider clearly believed that Gall stood on the shoulders of greater men to make his so-called discoveries. Incidents like

the Gage accident were understood from the standpoint that certain areas of the brain controlled given functions. However, this did not provide credibility to the separate organ claims made by phrenologists.

Kreider became much less tolerant when examining other phrenological principles. He vehemently attacked the second principle of phrenology with an analysis of physiology and anatomy that completely repudiated the principle "that the brain is a congeries of organs, constituting a distinct organ for each faculty, sentiment or propensity of man."⁷ Phrenologists proposed that the brain was made up of a series of smaller organs and that each organ controlled a specific pattern of human function. As the study of phrenology progressed, additional organs were discovered and each was assigned a function. Kreider was adamant in his position that no evidence existed to support this idea:

Physiology affords no evidence in support of this principle. Phrenologists reckon above thirty different organs composing in the aggregate the brain. Or as each organ, like the eyes and ears for sight and hearing is said to be double, there are more than sixty organs, each pair being employed for a different operation or feeling. Phrenologists the most ardent and devoted, themselves admit that neither the eye or the knife of the most skillful anatomist reveal such a division. To the Phrenologist as well as to the uninspired eye the brain appears to be "a map of curiously convoluted matter; and the understanding declares its incapacity to penetrate the purposes of its parts." If there were in the brain thirty or more distinct organs perceptible, when it is dissected, it might safely be left to observation, as in the case of the nerves of motion and sensation, to determine the particular function of each organ. But the mere assumption however positively insisted upon that the brain is made up of a congeries of organs, greater or less in number, and each endowed with a distinct power to rule over a certain kingdom in the world of mind is a dogma which may at least raise a doubt as to its verity in the mind of the simple enquirer after truth.⁸

Kreider criticized the phrenologists for their inability to prove the brain was made up of separate, distinct organs. To Kreider, the phrenologists more than admitted that their "science" was a matter of faith.

Kreider went farther in his opposition. He knew that eminent physiologists had examined the human brain at length. No evidence had ever been found to support the theory that different organs made up the brain. Kreider freely questioned why anyone would oppose a thorough examination of the brain in regard to its role in human anatomy and behavior:

It has been well said that, during every age, since anatomical inquires have been prosecuted, there has existed an earnest wish on the part of curious minds to solve the mysteries of psychology by the light of physiology. Or in other words, to make the size and structure of the brain a groundwork of interpretation to the enigmas of the mind. And as far as two points are concerned, there can be no objection, upon the part of the strictest logic, to this investigation; first there can be no valid objection to a careful examination of the questions, what relation does the size of the brain in man, and in the lower animals, bear to the peculiar attributes of mental and instinctive capacity, which each species of living beings displays? And second, what are the conditions, which these capabilities of thought in man, and of instinct in animals, require for their healthful performances?⁹

Valid scientific method stresses logic and careful examination. Kreider, in questioning the lack of evidence to support phrenology, defined these limits himself and chastised those who would suggest further unscientific inquiry, calling it a reckless disregard for the truth:

But when the physiologist goes beyond these legitimate points of inquiry, and hazards rash speculations in reference to the nature and modes of action of the mind, because he has ascertained the peculiar formation of the human brain, and upon this exclusive research grounds the assumption that there is no such separate entity or mind, and that all we know of the soul, is through the physical organization which it inhabits, he at once throws off the reserve and modesty which ever characterize true science, and surrenders himself up to all the vagaries of a reckless a priori fallacy.¹⁰

These physiologists could not support their position with scientific evidence. For them to suggest otherwise was irresponsible in Kreider's eyes.

When Kreider did question why physiological evidence could not be found, he was precise, within the limits of his knowledge. First, he separated the arguments for phrenology into three questions. These questions divided phrenology into scientific discussions of organology and craniology, and a philosophical discussion of what defines the nature of

the mind.

Kreider began his discussion by questioning the physical points of phrenology. He believed that if these separate organs existed, they would be visible to the anatomist. Each measurement of the skull would be absolute rather than in the ranges used by phrenologists. If a person measured high or strong in a given characteristic, that measure should be absolute and pronounced exactly upon the skull. This trait would be a demonstrable trait in all animals. However, this was not the case. Phrenologists had made the claim that any animal could be analyzed phrenologically. Characteristics possessed by all animals, such as speed and strength, could be determined. These characteristics enabled physiologists a method of experimentation. Flourens' pigeon experiments demonstrated that while different parts of the brain controlled different body processes, significant portions of the brain could be removed without damaging the capabilities of the animal. However, if the reductions were carried too far, intelligence and sensation would be impaired and eventually lost. Once the ability was destroyed, it could never be replaced. This work was further supported by human research. Kreider discussed the work performed in these studies:

How far do all the discoveries in anatomy and physiology bear testimony to such averments? Phrenology assigns to the anterior part of the head the organs of intellection; to the middle portion, those of sentiment; and to the posterior region, the propensities. But positive experiment has proven, that in the lower animals the entire hemispheres may be gradually pared off, either in front or behind, or above, or on one side, to a very considerable extent, with no obvious impairment of intelligence. If these reductions are carried on, the intelligence becomes enfeebled, and certain limits being passed, extinguished. As soon as our sensation is lost, in this process of cutting away the brain, all sensation is lost: with the disappearance of our faculty, all the faculties disappear. This experiment performed by eminent physiologists (Solly, Flourens, Leuret and Retzius¹¹) shows that the entire brain, the whole cerebral substance is a unit in functional action; that the whole concurs to the full exercise of the intelligence. Gall places the love of offspring in the posterior lobes of the brain; but unfortunately for this allocation the posterior lobes are wanting in most of the mammifer and in all the birds.¹²

Phrenology had contradicted itself. The tenets of phrenology stated that all animals had brains which possess certain characteristics in certain areas. Yet, in some animals' brains, these anatomical areas do not exist. Kreider knew that experimentation had revealed many examples of this contradiction:

Phrenology attributes the seat of sensation to the cerebrum or upper and larger portion of the entire mass filling the skull; but it has been demonstrated that the cerebrum is not the seat of sensation; insects have no cerebrum, and yet they possess sensation. Phrenology ascribes to the cerebellum, or the posterior and lower portion of the encephalon, a particular function. But we know that this little brain, is the organ for combining and regulating voluntary muscular actions; coordinating the locomotive efforts, and maintaining the equilibrium of the body. Where there is no cerebrum, there is no cerebellum. Comparative anatomy and physiology disprove the Phrenological position, fixing in the cerebellum the sexual propensity. There is a gradual increase in the size of the cerebellum, as we ascend in the scale of animals up to man. There is however no corresponding increase in this propensity. No one will contend that man transcends the simian tribe in this particular, and yet this organ is larger in man than in the quadrumanous series. Moreover in emasculated animals the cerebellum on the average is larger than in either sex unmutated. Besides, it is a well ascertained fact that the average size of this little brain in females is greater relatively, to the entire brain, than it is in males. These facts do not prove either superiority, or, inferiority, of mental power; that question is to be settled by other kinds of evidence than that afforded by anatomy; but the facts addressed prove that Phrenology is certainly at fault in attributing the seat of the sexual propensity to the cerebellum.¹³

Kreider demonstrated an understanding of anatomy and physiology of the animal kingdom which prevented phrenology from being true. The dictums of phrenology had proved to be their own undoing.

And yet with all these data at his fingertips, Kreider had not exhausted his objections to phrenology. Phrenologists had ignored a major portion of the brain. They could only measure the area of the brain which came into contact with skull. What was the purpose of the portion of the brain that did not contact the skull? Phrenology had no answer. Kreider questioned directly that "one half of the cerebral surface is unappropriated." The phrenologist only considered the exterior portion of the brain. Kreider could not but help to ask "why all this waste of material?"¹⁴ Kreider theorized that if the organs identified by the phrenologist existed at all they would only be pressed against the skull because the larger

cerebellum and mesencephalon were pushing them outward. Therefore, it would not be only because the organs were large, but also because the cerebellum and mesencephalon were large. Kreider concluded that "embryonic development of the human cerebrum has determined this controversy against Phrenology... These facts have never been disproved, and are directly antagonistic to Phrenology."¹⁵ Phrenologists had presented a theory with a major flaw and basic anatomy had proven them wrong. Kreider was aware of this flaw and used it as a basis for his argument by challenging phrenologists to identify this material that constituted the major portion of the brain's tissue.

Phrenology's alleged contribution was that it discovered which parts of the mind control certain functions. Kreider, however, stated that this discovery was false. Science had already discovered that certain parts of the brain controlled given functions. Diseases affect the brain in different ways. As the body starts to age, the power of the mind weakens. This was common knowledge and Kreider believed that phrenology could not expand upon it.

Phrenology was an absurd, false philosophy whose "fundamental principles... are wholly inconsistent with self-evident and universally admitted principles of mental and moral science."¹⁶ Science had proven that the organs of the mind did not exist. The anatomist could not locate them. The phrenologist could not point them out, but had to conjure them up using magical powers. The idea that unseen organs of the mind, although not found, controlled man's destiny was utterly false. Phrenology flew in the face of reason and contradicted the testimony of the great philosophers of human consciousness.

[Randy Alley recently received his Masters Degree in History; this article is taken from a part of that thesis.]
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