

The duality of the mind : read at the meeting of the Psychological Society of Great Britain, May 12, 1875 / by Mr. Serjeant Cox.

Contributors

Cox, Edward W. 1809-1879.
Royal College of Surgeons of England

Publication/Creation

[London] : [Longman], [1875]

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THE DUALITY OF THE MIND.

PHYSIOLOGISTS are agreed in holding the brain to be the material organ of the mind, but opinions differ whether the entire organ is employed in each mental operation, or if special parts of the brain are devoted to special mental functions.

Doctors GALL and SPURZHEIM first publicly maintained that the whole mind is not occupied in each mental act, and that its material organ, the brain, is not one homogeneous whole, but constructed of parts, each part having its own office corresponding to various mental faculties.

They asserted, also, that the brain is constructed of two distinct hemispheres; that all the organs of the mental faculties are also double; that as we have two eyes and ears so we have two organs of imagination, causality, hope, and so forth. Hence paralysis of one side of the brain does not extinguish the mental faculties on the other side of the brain; a condition wholly inconsistent with the theory that the whole mind and the entire brain are engaged in every mental act.

GALL's teachings were unmercifully ridiculed and abused by the Physiologists and Philosophers of his time. Orthodox Science will not tolerate scientific heresies. It cannot burn its heretics, but it can excommunicate them.

It is the old, old story of which the history of science is half made up. Dogmatic authority rejected evidence

upon *à priori* argument, and for a while prevailed. But the seed had been sown, which in good time was to grow to the rich harvest that our generation is girding itself to reap.

Thirty years ago Dr. ARTHUR LADBROOKE WIGAN, a Physician of considerable eminence, whose practice had given him an extensive acquaintance with cases of Insanity, had the moral courage boldly to reassert the doctrine GALL had taught and, in defiance of the hostility of his Profession and of the Metaphysicians, whose prejudices he directly defied, to proclaim the "the Duality of the Mind." Not merely did he adopt the doctrine that the brain is the organ of the mind; that the brain is a duplex organ; that the brain does not work as one whole for each mental operation but that distinct parts of the brain have distinct functions—but he advanced a step beyond GALL and asserted that the two hemispheres of the brain are not only two parts of one mind, as GALL had taught, but that they are two distinct and perfect organs as of two minds. Reflecting on this fact of the complete duplicity of the brain, he instituted a most patient investigation into the phenomena exhibited by brain action in its various phases, and especially in its abnormal conditions, and thus he was brought to the conclusion, that as the brain is so is the mind. He proved by anatomical examination that each brain hemisphere is a perfect brain—that we have in fact two brains, as we have two eyes and two ears, and he deduced from this the conclusion that as the brain is the organ of the Mind, and we have two brains, we have two Minds. Careful examination of the Phenomena of Mind satisfied him that so it was, and, with a moral courage that cannot be too highly commended, he published a volume entitled "The Duality of the Mind," in which he detailed the experiments and observations by which he had been conducted to the conclusion that as we have two brains so we have two Minds.

Dr. WIGAN found the same fate as Dr. GALL. The Scientists of *his* day excommunicated him. The abundant facts by which he supported his arguments, his experiences as a physician, were declared to be impostures or illusions, his deductions from them fallacies. They would not condescend to inquire if his asserted facts were true, because they *could* not be true—they were inconsistent with the established principles of Physiology and Mental Science. Had we not whole libraries of books by the highest authorities based upon the assumption that the mind is a metaphysical abstraction—a thing without parts, or shape, or substance, wholly incorporeal in essence and in association? Were these big books to be reduced to waste paper by a new quackery, and the authority of all the great M.D.'s destroyed by facts and phenomena noted by a little M.D.? Were the arguments of so many philosophers to be answered by reference to the sayings and doings of madmen and somnambulists? "For our own parts," said the Scientists of that day, as some of the Scientists of our own day say now, "We will not waste our time in looking at facts and phenomena, which cannot be accepted in opposition to established principles of science and known laws of nature, and which, therefore, even if we beheld we should not believe?"

So Dr. WIGAN was put down in his turn.

But truth is immortal. A *fact* may be suppressed; it cannot be killed. It will turn up again and again, and in the end it will prevail.

This fact of the *Duality of the brain* and consequently of the *Mind*, announced by GALL, proved by WIGAN, was long after confirmed partially by FERRIER, and now is proclaimed boldly, positively, and without reserve by BROWN-SEQUARD, hitherto held to be the foremost in his Science, but who, perhaps, will at once be deposed as labouring under "partial insanity," or having a natural

proneness to gullibility—the characteristics, according to some Scientists, of all who differ from themselves.

What is the teaching of these four famous Physiologists ?

As the object of this Society is to diffuse, as well as to acquire and accumulate, knowledge in relation to the *Life*, *Mind*, and *Soul* of Man, I will endeavour briefly to describe in popular language what they have discovered and asserted about the Duality of the Mind.

The brain (*cerebrum*) is composed of a mass of twisted folds (*convolutions*) closely gathered together within the skull and covered with a thick membrane, fastened to the skull at a central line from front to back. This membrane descends into the middle of the brain, dividing it into two equal parts, or *hemispheres*, as they have been improperly termed, and stretching down between the hemispheres to a band composed of an ashy white material (the *corpus callosum*), which links together the two sides of the brain—or, to speak more correctly, the two brains. Other small fibrous bands also extend from brain to brain.

The brain is constructed of a mass of extremely minute fibres. These fibres extend to the extremity of the hemisphere to which they belong, but do not pass beyond it into the other hemisphere ; thus affording further proof that each hemisphere is in itself a complete organ.

The membrane that divides the two hemispheres of the brain is called *the Falx*, because it resembles a sickle in shape, the point being towards the forehead. At the other end it meets a like membrane, running across the skull at right angles to it (*the Tentorium*). The use of these membranes is supposed to be to sustain the weight of the overlying mass when the head is reclined, so as to prevent pressure on the parts of the brain that lie beneath them.

From the base of each of these two brains a set of nerves descends. But these two sets of nerves do not pass into the side of the body to which the brain from which they spring

belongs. They cross each other and, entering the body on the opposite side, each permeates the half of the frame that does *not* belong to it. The nerve system flowing from the right brain supplies with nerve force the left side of the body and *vice versâ*. This is distinctly shown in paralysis and it has been demonstrated beyond further question by the experiments of Professor FERRIER. (a)

Probably, few have formed the slightest conception of the true character of the fibrous structure of the brain. The number of fibres has been actually counted to the extent of a surface inch, shewing, says Dr. WIGAN, the inconceivable number of more than *three thousand millions to the square inch!*

From this outline of the structure of the brain, we learn that in fact we have two brains, distinct and entire, as we have two eyes and two ears. One brain can act when the other is impotent, as is proved by the partial loss of brain control in paralysis, when one hemisphere of the brain only is affected.

These two brains rest upon a bed of pulpy material which forms the point of union between them as also between the brain and the body. Upon this as a centre converge the nerves that pass from the brain to the body, conveying the commands of the will, and the nerves that carry to the mind the impressions made upon the senses by the external world. It is at this point that they are transmitted to the brain.

The precise function of this organ has not been positively

(a) Dr. Wigan says, "the object of this arrangement is at present incomprehensible" (p. 19). In a little treatise on *Heredity and Hybridism*, I have ventured to suggest that this is the contrivance by which the two germs of the two parents are united so as to form one structure. The suggestion of two germs will account also for two brains and two nerve systems, and for the duplex structure of the whole body, for all of which no reason whatever has hitherto been even surmised.

traced because, unlike the brain, it presents no surface on which observation or experiment can be made. It lies within the bone structure and cannot be reached without death to the patient. But, considering its position, its connection with both brains, with the entire nerve system and through that with the body, there can be no doubt that it is the organ by means of which the two brains are brought into harmonious action, and also that through which the *Psychic* or *Soul Force*, directed by the WILL, is brought to bear upon the two mental organs above and the two nerve systems below. As the nerves of the senses also centre here, it is probably the medium through which the impressions made upon the senses are conveyed to the brain, and by the brain to the Conscious Self by whom they are received and stored away and become *memories*.

If this be so, the important conclusion follows, that here is the point at which the Conscious Self receives its information from the senses and conveys its commands to the body, and here also is the mechanism by which the unity of the individual self is reconciled with the duality of the mental machinery—a question to be considered hereafter.

Dr. WIGAN says of the material mechanism of the Mind :

The two hemispheres of the brain are really and in fact two distinct and entire organs, and each respectively as complete (indeed, more complete) and as fully perfect in all its parts, for the purposes it is intended to perform, as are the two eyes. It would be just as reasonable to talk of the two lobes or globes of the eye as of the two hemispheres of the brain. The decussation of the fibres in the *corpora pyramidalia* is not merely visible, but proved by innumerable consequences necessarily resulting from it, as Hemiplegia and Paralysis. Each set of fibres retains its separate functions in passing to the opposite side and the opposite columns of the spinal marrow. That some of the powers and functions may be combined in the *medulla oblongata* is no greater objection to the absolute completeness and individuality of each hemisphere of the brain, or evidence of their forming but one organ, than the fact of our seeing only one object

with two eyes proves that the two eyes are not distinctly complete and separate organs, each capable of acting alone when its fellow is injured or destroyed."

The late Sir HENRY HOLLAND, I believe, also maintained the same doctrine of the duplicity of the brain, and the consequent Duality of the Mind.

BROWN-SEQUARD fully admits this to be the anatomical structure of the brain, and makes a practical application of it by asserting that, as the necessary consequence of such a brain structure, if brain be the mental organ, we have *two minds*. He accepts this conclusion without hesitation and proceeds to make practical application of it to education and other mental uses.

The Duality of the Mind being thus established as a fact, it will be found of invaluable importance in psychological science, every branch of which it must modify more or less. It will solve a multitude of problems that hitherto have baffled the most sagacious of the mental and moral philosophers. It will throw light upon the sources of the earliest forms of life. It will revolutionize the Science of Mind; it will advance the Science of Soul. Nor is it of theoretical and scientific interest merely. It is of immense practical value in the processes of education, in the guidance of our own minds, in observation of the minds of others. It would be impossible to do anything like justice to so great a theme in one or in a dozen evenings. The fact itself deserves, and I hope will insure, discussion here. But the applications of it are so many that they must be themes for many future papers and many profoundly interesting debates in this Society. Illustrative facts are invited from all quarters as contributions to the store of information which we hope to gather relative to this question. It would be impossible for me in one paper to do more than open the inquiry and indicate what there is to be explored.

But first let me anticipate some difficulties that will probably occur to those who have heard of this suggestion but have given no thought to it. "Are we," they will say, "*conscious* that we have two minds?" Does any sensation inform us of a double mental action? Would not confusion result from two different ideas being presented by the two minds? What if they were to conflict? Are the two minds identical in structure? If not, how do they act in concert, for if they did not act in concert, what confusion of ideas and emotions would follow?"

The answer to these not unreasonable objections is that the two brains as organs of thought and feeling work together precisely in the same manner as do the two eyes and ears. In the normal condition of the organism the two eyes and two ears are so adjusted that the brain receives the impression of one object and communicates that impression to the Conscious Self. In fact, two objects are presented by the two eyes to the optic nerve, but at the point of junction of the two optic nerves at the base of the brain the two pictures presented on the two retinas fall into exact focus, and thus one picture (and not two pictures) is presented to the brain and thence to the Conscious Self. So the ears receive two sounds, but the brain only one sound. But if the two eyes be thrown out of focus by the slightest pressure, we are instantly conscious of their double action, for we perceive two pictures instead of one. If we close one eye the objects seen by the other eye appear in a different position, which is again changed if we close that eye and open the other, and then changed again when we open both. So it is with the double brain. When the two brains are acting together, the Conscious Self receives only one impression and as a rule they work in perfect accord. But in many abnormal conditions, as in reverie, in dream, in somnambulism, in trance, in insanity, the two brains do not act together. Like the two eyes when their action is

disordered, the two brains convey incongruous and conflicting impressions to the Conscious Self, and it is from an examination of these that we shall learn the true characteristics of the *Dual Mind* and the manner of the action of its duplex structure.

Taking, then, for our standpoint the facts :

- (1) That we have two distinct and perfect brains united for common action, perhaps by the bands that pass between them, certainly by the common base upon which they rest.
- (2.) That the brain being the material organ by means of which the individual Conscious Self maintains its communication with the material world without and performs its functions in its present state of existence, such a double brain conducts to the inevitable conclusion that we have two minds, that act in perfect harmony in the normal condition of the organism, but which can and do act separately in many of its abnormal conditions and under special circumstances.

These conclusions of GALL, SPURZHEIM, WIGAN, Sir HENRY HOLLAND, and BROWN-SEQUARD being accepted as the *actual* form of our mental structure, there remains to us the important and interesting inquiry—

What are the consequences of such mental structure ?

To what extent are those anticipated results ascertained by observed mental phenomena ?

These questions will occupy the remainder of this paper and probably two or three more which I hope to have the honour to submit to the Society during the next Session; for they will certainly demand, and doubtless will receive, the most ample consideration and discussion by the members. My present purpose is to direct their thoughts into a channel probably new to most of them,

but which, carried to their consequences, will work a revolution in Psychological and Mental Science. (a)

The first proposition to be submitted is :

1. That each of our two brains can and does work as one whole and complete Mind.

This follows as the necessary result of the brain structure. If the brain be the mental machine, and if that brain be double, and if each part of that double brain be a complete organ, there must be a double action of the mental machinery. But of that double action there is but one consciousness. How can this be.

The mechanism of the organ of vision shows us how it can be. We have two eyes. Two distinct pictures of the one object of sight are depicted upon those eyes. But we are conscious of one picture only. Why? Because the two branches of the optic nerve which carries the impressions upon the retina to the brain, to be there communicated to the Conscious Self, are so admirably adjusted that the two pictures painted upon the two retinas blend and present one picture to the recipient brain, as is proved by the stereoscope. The two brains are adjusted in like manner. By reason of their having a common centre at which all impressions are received from without, and to which all internal action is conveyed from within, and at which centre the Conscious Self exercises over the brain above and the nerves below the controlling power of the Will, the same

(a) I propose to follow very nearly the division of the subject adopted by Dr. A. Wigan, to whose admirable treatise I must express my obligation for some of the cases I shall have occasion to cite. But it is also fair to state that I had never seen his book until the present paper had been commenced. The conception of the Duality of the Mind suggested in the little treatise on "What am I?" was deduced entirely from the teaching of Dr. Gall that the brain is duplex. Brown-Sequard had not then affirmed the fact, which was vehemently denied by the Physiologists and Mental Philosophers who held themselves to be authorities.

action is set up by the same cause at the same instant in both brains—that is, in both minds. The common action is consequently presented to the Conscious Self (or Soul) as if it were one act, impression, or emotion. Only when something occurs to disturb that community of action is there any consciousness of the double process. Precisely as with the two eyes we discover their double image when by force or disease they are thrust out of focus, so the two brains are, in such cases of temporary or permanent disarrangement, unfocussed, as it were, and the Conscious Self consequently receives two impressions instead of one, as will be instanced in a subsequent part of this investigation.

A multitude of undisputed facts prove that one brain may be destroyed, or its action paralysed, and yet the other brain preserve its power and perform the mental functions. As already stated, this result may be witnessed in cases of paralysis. One half of the body has lost sensation by reason of disease in one brain only; the other side of the body continues in full possession of its powers of sensation and mental action, because the other brain is uninjured. Dr. WIGAN tells us of a boy who, climbing a tree, fell on a sharp edge of iron, which sliced off a large portion of the skull and brain on one side of his head, 4oz. of the brain being thus lost. His mental faculties remained uninjured until death from hæmorrhage many days afterwards. In another case, one hemisphere of the brain was wholly destroyed by disease, but the man conversed rationally. Dr. CONOLLY records the case of a man of family, one side of whose brain was found on examination to have been annihilated by an abscess, and in its place was “a yawning chasm.” His mental faculties were apparently quite perfect to the moment of death. Dr. JAMES JOHNSON reports another case of a man who preserved his mental faculties, although on a *post mortem* it was found that one hemisphere of the brain had been reduced to a thin membrane,

the whole solid contents of one-half of the cranium having absolutely disappeared. A similar case is recorded by CRUVEILHIER of complete atrophy of the left side of the brain without apparent injury to the intellectual powers, proving conclusively that the functions of mind were performed wholly by the right side of the brain.

These are but a few of a multitude of cases reported by medical observers, and they are adduced here merely as illustrations of the evidence upon which the great Physiologists named have based their contention that each brain is a complete machine, capable of performing alone the mechanism of mind.

But I must accompany this proposition with a slight reservation. Neither Dr. WIGAN, nor BROWN-SEQUARD, recognises the existence of distinct faculties as being located in distinct parts of the brain. Neither of them, therefore, appears to have studied the bearing of the dual mind upon the various mental operations, and the effect of the destruction of one brain upon the action of the other brain. It is, therefore, necessary to accept with caution their unreserved assertion that in all the cases noted by them the *entire* of the mental operations were unaffected. It is almost certain that with the two brains, as with the two eyes, the double action gives more completeness to the mental view. Vision with the two eyes conveys to the mind the sense of roundness in objects that is wanting in vision by one eye, the effect of which is shown in the stereoscope. It is probable that the double brain operates in the same manner. It is also more than probable that certain mental operations need the assistance of *both* brains, such as the process of reasoning, which is the work, not of one faculty only, but of many, and for its perfect accomplishment probably requires the co-operation of both minds. But this is a question that must hereafter be considered by the Society.

It is here referred to as a reservation from the too general assertion, that one brain can perform *all* the functions of mind perfectly though the other brain be destroyed. Dr. WIGAN, indeed, recognises the fact that the highest exertions of mind require the concentration upon them of the exertions of *both* brains, and he has noticed in all cases of extensive disease of one brain an "inability to exercise continuous study, or to learn by heart," although the one healthy brain may exercise the ordinary functions of mind.

It is, perhaps, necessary to prevent possible misconception by stating once for all, that when the terms "mind" and "brain" are here used, it is not in the sense in which they are used by the Materialists, who contend that the brain is the mind and deny the existence in Man of anything other than brain. The proposition I venture to advance is that the brain is the material mechanism by which the operations we call "mental" are conducted, and that "the *Mind*" is the name given to the sum of these operations viewed as a whole. But besides this material mechanism there is the *Conscious Self*, that takes cognizance of the conditions and actions of the brain, and controls them by that *Psychic* or *Soul Force* we call the Will.

Dr. WIGAN presents the argument in this conclusive form :—

One of two things must be : either each hemisphere is a perfect whole, capable of exercising all the functions which in the aggregate form the mind of the individual, or else each half must exercise some of those functions, and the other half the remainder, so as between them to make up a *mind*.

The exact resemblance of the two hemispheres of the brain at once negatives the supposition that they perform different offices. If the functions of mind were performed cumulatively by the two, it is clear that, on being destroyed, *only* portions of the mind would be annihilated, and not the *whole mind*.

The propositions sought to be maintained in this paper are :

1. That the brain is constructed of two hemispheres :
2. That the brain is the mechanism by which mental operations are conducted.
3. That one hemisphere of the brain may be injured or destroyed without seriously impairing the operations of the other hemisphere.
4. That in such cases the mental operations also proceed without serious impediment.
5. That therefore each hemisphere of the brain is a complete and perfect mental machine, capable of performing alone most of the mental operations.
6. That therefore we have *two minds*.
7. That this is proved abundantly by recorded cases of persons who have exercised the ordinary mental faculties when one brain has been destroyed.

The subject will be continued in future papers. In the meanwhile, the serious attention of Psychologists is invited to it, for it would be impossible to exaggerate its importance to our Science.
