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978-1-108-00088-8 - The Hand: Its Mechanism and Vital Endowments as
Evincing Design

Charles Bell

Excerpt

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THE HAND,
ITS MECHANISM AND VITAL ENDOWMENTS,
AS EVINCING DESIGN.

CHAPTER I.

IF we select any object from the whole extent of animated nature, and contemplate it fully and in all its bearings, we shall certainly come to this conclusion : that there is design in the mechanical construction, benevolence in the endowments of the living properties, and that good on the whole is the result. We shall perceive that the sensibilities of the body have a relation to the qualities of things external, and that delicacy of texture is, therefore, a necessary part of its constitution. Wonderful, and exquisitely constructed, as the mechanical appliances are for the protection of this delicate structure, they are altogether insufficient ; and a protection of a very different kind, which shall animate the body to the utmost

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exertion, is requisite for safety. Pain, whilst it is a necessary contrast to its opposite pleasure, is the great safeguard of the frame. Finally, as to man, we shall be led to infer that the pains and pleasures of mere bodily sense (with yet more benevolent intention) carry us onward, through the developement and improvement of the mind, to higher aspirations.

Such is the course of reasoning which I propose to follow in giving an account of the hand and arm, contrasting them with the corresponding parts of living creatures, through all the divisions of the chain of vertebrated animals.

When I first thought of extending my notes on this subject, it appeared to me that I might have many other topics more prolific in proofs of design, and more interesting; but I now find that there is no end to illustration, and that the subject branches out interminably.

Some may conceive that as I have for my title the Human Hand, and the relation of the solid structures of the animal frame, it will lead me to consider the body as a machine only. I neither see the necessity for this, nor do I acknowledge the danger of considering it in that light. I embark fearlessly in the investigation, convinced that, yielding to the current of thought, and giving the fullest scope to enquiry, there can be no hidden danger if the mind be free from vicious bias. I cannot see how scepticism should arise

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out of the contemplation of the structure and mechanism of the animal body.

Let us for a moment think what is the natural result of examining the human body as a piece of machinery, and let us see whether it makes the creation of man more or less important in his relation to the whole scheme of nature.

Suppose that there is placed before us a machine for raising great weights, be it the simplest of all, the wheel and axle. We are given to understand that this piece of mechanism has the property of multiplying the power of the hand. But a youth of subtile mind may say, I do not believe that it is possible so to multiply the power of the hand; and if the mechanic be a philosopher, he will rather applaud the spirit of doubt. If he condescend to explain, he will say, that the piles driven into the ground, or the screws which unite the machinery to the beams, are the fixed points which resist in the working of the machine; that their resistance is a necessary condition, since it is thrown, together with the power of the hand, on the weight to be raised; and he will add that the multiplication of wheels does not alter the principle of action, which every one may see in the simple lever, to result from the resistance of the fulcrum or point, on which it rests.

Now grant that man's body is a machine, where are the points of resistance? are they not in the ground he stands upon? This leads us to enquire

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by what property we stand. Is it by the weight of the body, or, in other words, is it by the attraction of the earth? The terms attraction, or gravitation lead at once to the philosophy of the question. We stand because the body has weight, and a resistance, in proportion to the matter of the animal frame, and the magnitude of the globe itself. We wait not at present to observe the adjustment of the strength of the frame, the resistance of the bones, the elasticity of the joints, and the power of the muscles to the weight of the whole. Our attention is directed to the relations which the frame has to the earth we are placed upon.

Some philosophers, who have considered the matter curiously, have said, that if man were translated bodily to another planet, and were it smaller than the earth, he would be too light, and he would walk like one wading in deep water. If the planet were larger, the attraction of his body would make him feel as if his limbs were loaded with lead; nay, the attraction might be so great as to destroy the fabric of the body, crushing bones and all.*

However idle these fancies may be, there is no doubt that the animal frame is formed with a due relation to the earth we inhabit, and that the

* The matter of Jupiter is as 330,600 to 1000 of our Earth. The diameter of Pallas is 80 miles; the Earth is 7,911 miles in diameter.

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parts of the animal body, and we may say the strength of the materials, have as certainly a correspondence with the weight, as the wheels and levers of a machine, or the scaffolding which sustains them, have relation to the force and velocity of the machinery, or the load that they are employed to raise.

The mechanism and organization of animals have been often brought forward for a different purpose from that for which I use them. We find it said, that it is incomprehensible that an all powerful Being should manifest his will in this manner; that mechanical contrivance implies difficulties overcome: and how strange it is, they add, that the perceptions of the mind, which might have been produced by some direct means, or have arisen spontaneously, are received through an instrument so fine and complex as the eye;— and which requires the creation of the element of light, to enter the organ and to cause vision.

For my own part, I think it most natural to contemplate the subject quite differently. We perhaps presume too much, when we say that light has been created for the purpose of vision. We are hardly entitled to pass over its properties as a chemical agent, its influence on the gases, and, in all probability, on the atmosphere, its importance to vegetation, to the formation of the aromatic and volatile principles, and to fructification, its influence on the animal surface by

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invigorating the circulation, and imparting health. In relation to our present subject, it seems more rational to consider light as second only to attraction, in respect to its importance in nature, and as a link connecting systems of infinite remoteness.

To have a conception of this we must tutor our minds, and acquire some measure of the velocity of light, and of the space which it fills. It is not sufficient to say that it moves 200,000 miles in a second; for we can comprehend no such degree of velocity. If we are further informed that the earth is distant from the sun 95,000,000 of miles, and that light traverses the space in 8 minutes and 1-8th, it is but another way of affirming the inconceivable rapidity of its transmission. Astronomers, whose powers of mind afford us the very highest estimate of human faculties, whose accuracy of calculation is hourly visible to us, have affirmed that light emanates from celestial bodies at such vast distance, that thousands of years shall elapse during its progress to our earth: yet matter impelled by a force equal to its transmission through this space, shall enter the eye, and strike upon the delicate nerve with no other effect than to produce vision.

Instead of saying that light is created for the eye, and to give us the sense of vision, is it not more conformable to a just manner of considering these things that our wonder and our

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admiration should fix on the fact, that this small organ, the eye, is formed with relation to a creation of such vast extent and grandeur :—and more especially, that the ideas arising in the mind through the influence of that matter and this organ, are constituted a part of this vast whole !

By such considerations we are led to contemplate the human body in its different relations. The magnitude of the earth determines the strength of our bones, and the power of our muscles ; so must the depth of the atmosphere determine the condition of our fluids, and the resistance of our blood vessels ; the common act of breathing, the transpiration from the surfaces, must bear relation to the weight, moisture, and temperature of the medium which surrounds us. A moment's reflection on these facts proves to us that our body is formed with a just correspondence to all these external influences.

These views lead us to another consideration, that the complexity of our structure belongs to external nature, and not of necessity to the mind. Whilst man is an agent in a material world, and sensible to the influence of things external, complexity of structure is a necessary part of his constitution. But we do not perceive a relation between this complexity and the mind. From aught that we learn by this mode of study, the mind may be as distinct from the bodily organs as are the exterior influences which give them exercise.

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Something, then, we observe to be common to our planet and to others, to our system and to other systems; matter, attraction, light; which nearly implies that the mechanical and chemical laws must be the same throughout. It is perhaps too much to affirm, with an anonymous author, that an inhabitant of our world would find himself at home in any other, that he would be like a traveller only, for a moment perplexed by diversity of climate and strangeness of manners, and confess, at last, that nature was every where and essentially the same. However this may be, all I contend for is, the necessity of certain relations being established between the planet and the frames of all which inhabit it; between the great mass and the physical properties of every part; that in the mechanical construction of animals, as in their endowments of life, they are created in relation to the whole, planned together and fashioned by one Mind.

The passiveness which is natural in infancy, and the want of reflection as to the sources of enjoyment which is excusable in youth, become insensibility and ingratitude in riper years. In the early stages of life, before our minds have the full power of comprehension, the objects around us serve but to excite and exercise the outward senses. But in the maturity of reason, philosophy

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should present these things to us anew, with this difference, that the mind may contemplate them : that mind which is now strengthened by experience to comprehend them, and to entertain a grateful sense of them.

It is this sense of gratitude which distinguishes man. In brutes, the attachment to offspring for a limited period is as strong as in him, but it ceases with the necessity for it. In man, on the contrary the affections continue, become the sources of all the endearing relations of life, and the very bonds by which society is connected.

If the child, upon the parent's knee, is unconsciously incurring a debt, and strong affections grow up so naturally that nothing is more universally condemned than filial ingratitude, we have but to change the object of affection, to find the natural source of religion itself. We must show that the care of the most tender parent is in nothing to be compared with those provisions for our enjoyment and safety, which it is not only beyond the ingenuity of man to provide, but which he can hardly comprehend, while he profits by them.

If man, of all living creatures, be alone capable of gratitude, and through this sense be capable also of religion, the transition is natural ; since the gratitude due to parents is abundantly more owing to Him “ who saw him in his blood, and “ said, **Live.**”

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For the continuance of life, a thousand provisions are made. If the vital actions of a man's frame were directed by his will, they are necessarily so minute and complicated, that they would immediately fall into confusion. He cannot draw a breath, without the exercise of sensibilities as well ordered as those of the eye or ear. A tracery of nervous cords unites many organs in sympathy, of which, if one filament were broken, pain and spasm, and suffocation would ensue. The action of his heart, and the circulation of his blood, and all the vital functions are governed through means and by laws which are not dependant on his will, and to which the powers of his mind are altogether inadequate. For had they been under the influence of his will, a doubt, a moment's pause of irresolution, a forgetfulness of a single action at its appointed time, would have terminated his existence.

Now, when man sees that his vital operations could not be directed by reason—that they are constant, and far too important to be exposed to all the changes incident to his mind, and that they are given up to the direction of other sources of motion than the will, he acquires a full sense of his dependance. If man be fretful and wayward, and subject to inordinate passion, we perceive the benevolent design in withdrawing the vital motions from the influence of such capricious sources of action, so that they may neither