

# THE EXPRESSION OF THE EMOTIONS IN MAN AND ANIMALS

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*WITH PHOTOGRAPHIC AND OTHER ILLUSTRATIONS*

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# ON THE EXPRESSION OF THE EMOTIONS IN MAN AND ANIMALS.

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## INTRODUCTION.

MANY works have been written on Expression, but a greater number on Physiognomy,—that is, on the recognition of character through the study of the permanent form of the features. With this latter subject I am not here concerned. The older treatises,<sup>1</sup> which I have consulted, have been of little or no service to me. The famous ‘Conférences’<sup>2</sup> of the painter Le Brun, published in 1667, is the best known ancient work, and contains some good remarks. Another somewhat old essay, namely, the ‘Discours,’ delivered 1774–1782, by the well-known Dutch anatomist Camper,<sup>3</sup> can hardly be considered as having made any marked advance in the subject. The following works, on the contrary, deserve the fullest consideration.

Sir Charles Bell, so illustrious for his discoveries in physiology, published in 1806 the first edition, and in

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<sup>1</sup> J. Parsons, in his paper in the Appendix to the ‘Philosophical Transactions’ for 1746, p. 41, gives a list of forty-one old authors who have written on Expression.

<sup>2</sup> ‘Conférences sur l’expression des différents Caractères des Passions.’ Paris, 4to, 1667. I always quote from the republication of the ‘Conférences’ in the edition of Lavater, by Moreau, which appeared in 1820, as given in vol. ix. p. 257.

<sup>3</sup> ‘Discours par Pierre Camper sur le moyen de représenter les diverses passions,’ &c. 1792.

1844 the third edition of his ‘Anatomy and Philosophy of Expression.’<sup>4</sup> He may with justice be said, not only to have laid the foundations of the subject as a branch of science, but to have built up a noble structure. His work is in every way deeply interesting; it includes graphic descriptions of the various emotions, and is admirably illustrated. It is generally admitted that his service consists chiefly in having shown the intimate relation which exists between the movements of expression and those of respiration. One of the most important points, small as it may at first appear, is that the muscles round the eyes are involuntarily contracted during violent expiratory efforts, in order to protect these delicate organs from the pressure of the blood. This fact, which has been fully investigated for me with the greatest kindness by Professors Donders of Utrecht, throws, as we shall hereafter see, a flood of light on several of the most important expressions of the human countenance. The merits of Sir C. Bell’s work have been undervalued or quite ignored by several foreign writers, but have been fully admitted by some, for instance by M. Lemoine,<sup>5</sup> who with great justice says: —“Le livre de Ch. Bell devrait être médité par quiconque essaye de faire parler le visage de l’homme, par les philosophes aussi bien que par les artistes, car, sous une apparence plus légère et sous le prétexte de l’esthétique, c’est un des plus beaux monuments de la science des rapports du physique et du moral.”

From reasons which will presently be assigned, Sir

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<sup>4</sup> I always quote from the third edition, 1844, which was published after the death of Sir C. Bell, and contains his latest corrections. The first edition of 1806 is much inferior in merit, and does not include some of his more important views.

<sup>5</sup> ‘De la Physionomie et de la Parole,’ par Albert Lemoine, 1865, p. 101.



C. Bell did not attempt to follow out his views as far as they might have been carried. He does not try to explain why different muscles are brought into action under different emotions; why, for instance, the inner ends of the eyebrows are raised, and the corners of the mouth depressed, by a person suffering from grief or anxiety.

In 1807 M. Moreau edited an edition of Lavater on Physiognomy,<sup>6</sup> in which he incorporated several of his own essays, containing excellent descriptions of the movements of the facial muscles, together with many valuable remarks. He throws, however, very little light on the philosophy of the subject. For instance, M. Moreau, in speaking of the act of frowning, that is, of the contraction of the muscle called by French writers the *sourcilier* (*corrugator supercilii*), remarks with truth:—"Cette action des sourciliers est un des symp-

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<sup>6</sup> 'L'Art de connaître les Hommes,' &c., par G. Lavater. The earliest edition of this work, referred to in the preface to the edition of 1820 in ten volumes, as containing the observations of M. Moreau, is said to have been published in 1807; and I have no doubt that this is correct, because the 'Notice sur Lavater' at the commencement of volume i. is dated April 13, 1806. In some bibliographical works, however, the date of 1805--1809 is given, but it seems impossible that 1805 can be correct. Dr. Duchenne remarks ('Mécanisme de la Physionomie Humaine,' 8vo edit. 1862, p. 5, and 'Archives Générales de Médecine,' Jan. et Fév. 1862) that M. Moreau "*a composé pour son ouvrage un article important*," &c., in the year 1805; and I find in volume i. of the edition of 1820 passages bearing the dates of December 12, 1805, and another January 5, 1806, besides that of April 13, 1806, above referred to. In consequence of some of these passages having thus been *composed* in 1805, Dr. Duchenne assigns to M. Moreau the priority over Sir C. Bell, whose work, as we have seen, was published in 1806. This is a very unusual manner of determining the priority of scientific works; but such questions are of extremely little importance in comparison with their relative merits. The passages above quoted from M. Moreau and from Le Brun are taken in this and all other cases from the edition of 1820 of Lavater, tom. iv. p. 228, and tom. ix. p. 279.

tômes les plus tranchés de l'expression des affections pénibles ou concentrées." He then adds that these muscles, from their attachment and position, are fitted "à resserrer, à concentrer les principaux traits de la *face*, comme il convient dans toutes ces passions vraiment oppressives ou profondes, dans ces affections dont le sentiment semble porter l'organisation à revenir sur elle-même, à se contracter et à *s'amoinrir*, comme pour offrir moins de prise et de surface à des impressions redoutables ou importunes." He who thinks that remarks of this kind throw any light on the meaning or origin of the different expressions, takes a very different view of the subject to what I do.

In the above passage there is but a slight, if any, advance in the philosophy of the subject, beyond that reached by the painter Le Brun, who, in 1667, in describing the expression of fright, says:—"Le sourcil qui est abaissé d'un côté et élevé de l'autre, fait voir que la partie élevée semble le vouloir joindre au cerveau pour le garantir du mal que l'âme aperçoit, et le côté qui est abaissé et qui paraît enflé, nous fait trouver dans cet état par les esprits qui viennent du cerveau en abondance, comme pour couvrir l'ame et la défendre du mal qu'elle craint; la bouche fort ouverte fait voir le saisissement du cœur, par le sang qui se retire vers lui, ce qui l'oblige, voulant respirer, à faire un effort qui est cause que la bouche s'ouvre extrêmement, et qui, lorsqu'il passe par les organes de la voix, forme un son qui n'est point articulé; que si les muscles et les veines paraissent enflés, ce n'est que par les esprits que le cerveau envoie en ces parties-là." I have thought the foregoing sentences worth quoting, as specimens of the surprising nonsense which has been written on the subject.

'The Physiology or Mechanism of Blushing,' by Dr.

Burgess, appeared in 1839, and to this work I shall frequently refer in my thirteenth Chapter.

In 1862 Dr. Duchenne published two editions, in folio and octavo, of his '*Mécanisme de la Physionomie Humaine*,' in which he analyses by means of electricity, and illustrates by magnificent photographs, the movements of the facial muscles. He has generously permitted me to copy as many of his photographs as I desired. His works have been spoken lightly of, or quite passed over, by some of his countrymen. It is possible that Dr. Duchenne may have exaggerated the importance of the contraction of single muscles in giving expression; for, owing to the intimate manner in which the muscles are connected, as may be seen in Henle's anatomical drawings<sup>7</sup>—the best I believe ever published—it is difficult to believe in their separate action. Nevertheless, it is manifest that Dr. Duchenne clearly apprehended this and other sources of error, and as it is known that he was eminently successful in elucidating the physiology of the muscles of the hand by the aid of electricity, it is probable that he is generally in the right about the muscles of the face. In my opinion, Dr. Duchenne has greatly advanced the subject by his treatment of it. No one has more carefully studied the contraction of each separate muscle, and the consequent furrows produced on the skin. He has also, and this is a very important service, shown which muscles are least under the separate control of the will. He enters very little into theoretical considerations, and seldom attempts to explain why certain muscles and not others contract under the influence of certain emotions.

A distinguished French anatomist, Pierre Gratiolet,

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<sup>7</sup> '*Handbuch der Systematischen Anatomie des Menschen*.' Band I. Dritte Abtheilung, 1858.

gave a course of lectures on Expression at the Sorbonne, and his notes were published (1865) after his death, under the title of 'De la Physionomie et des Mouvements d'Expression.' This is a very interesting work, full of valuable observations. His theory is rather complex, and, as far as it can be given in a single sentence (p. 65), is as follows:—"Il résulte, de tous les faits que j'ai rappelés, que les sens, l'imagination et la pensée elle-même, si élevée, si abstraite qu'on la suppose, ne peuvent s'exercer sans éveiller un sentiment corrélatif, et que ce sentiment se traduit directement, sympathiquement, symboliquement ou métaphoriquement, dans toutes les sphères des organes extérieurs, qui la racontent tous, suivant leur mode d'action propre, comme si chacun d'eux avait été directement affecté."

Gratiolet appears to overlook inherited habit, and even to some extent habit in the individual; and therefore he fails, as it seems to me, to give the right explanation, or any explanation at all, of many gestures and expressions. As an illustration of what he calls symbolic movements, I will quote his remarks (p. 37), taken from M. Chevreul, on a man playing at billiards. "Si une bille dévie légèrement de la direction que le joueur prétend lui imprimer, ne l'avez-vous pas vu cent fois la pousser du regard, de la tête et même des épaules, comme si ces mouvements, purement symboliques, pouvaient rectifier son trajet? Des mouvements non moins significatifs se produisent quand la bille manque d'une impulsion suffisante. Et chez les joueurs novices, ils sont quelquefois accusés au point d'éveiller le sourire sur les lèvres des spectateurs." Such movements, as it appears to me, may be attributed simply to habit. As often as a man has wished to move an object to one side, he has always pushed it to that side; when forwards, he has pushed it

forwards; and if he has wished to arrest it, he has pulled backwards. Therefore, when a man sees his ball travelling in a wrong direction, and he intensely wishes it to go in another direction, he cannot avoid, from long habit, unconsciously performing movements which in other cases he has found effectual.

As an instance of sympathetic movements Gratiolet gives (p. 212) the following case:—"un jeune chien à oreilles droites, auquel son maître présente de loin quelque viande appétissante, fixe avec ardeur ses yeux sur cet objet dont il suit tous les mouvements, et pendant que les yeux regardent, les deux oreilles se portent en avant comme si cet objet pouvait être entendu." Here, instead of speaking of sympathy between the ears and eyes, it appears to me more simple to believe, that as dogs during many generations have, whilst intently looking at any object, pricked their ears in order to perceive any sound; and conversely have looked intently in the direction of a sound to which they may have listened, the movements of these organs have become firmly associated together through long-continued habit.

Dr. Piderit published in 1859 an essay on Expression, which I have not seen, but in which, as he states, he forestalled Gratiolet in many of his views. In 1867 he published his 'Wissenschaftliches System der Mimik und Physiognomik.' It is hardly possible to give in a few sentences a fair notion of his views; perhaps the two following sentences will tell as much as can be briefly told: "the muscular movements of expression are in part related to imaginary objects, and in part to imaginary sensorial impressions. In this proposition lies the key to the comprehension of all expressive muscular movements." (s. 25.) Again, "Expressive movements manifest themselves chiefly in the numerous and mobile muscles of the face, partly because the nerves

by which they are set into motion originate in the most immediate vicinity of the mind-organ, but partly also because these muscles serve to support the organs of sense." (s. 26.) If Dr. Piderit had studied Sir C. Bell's work, he would probably not have said (s. 101) that violent laughter causes a frown from partaking of the nature of pain; or that with infants (s. 103) the tears irritate the eyes, and thus excite the contraction of the surrounding muscles. Many good remarks are scattered throughout this volume, to which I shall hereafter refer.

Short discussions on Expression may be found in various works, which need not here be particularised. Mr. Bain, however, in two of his works has treated the subject at some length. He says,<sup>s</sup> "I look upon the expression so-called as part and parcel of the feeling. I believe it to be a general law of the mind that, along with the fact of inward feeling or consciousness, there is a diffusive action or excitement over the bodily members." In another place he adds, "A very considerable number of the facts may be brought under the following principle: namely, that states of pleasure are connected with an increase, and states of pain with an abatement, of some, or all, of the vital functions." But the above law of the diffusive action of feelings seems too general to throw much light on special expressions.

Mr. Herbert Spencer, in treating of the Feelings in his 'Principles of Psychology' (1855), makes the following remarks:—"Fear, when strong, expresses itself in cries, in efforts to hide or escape, in palpitations and tremblings; and these are just the manifestations that

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<sup>s</sup> 'The Senses and the Intellect,' 2nd edit. 1864, pp. 96 and 288. The preface to the first edition of this work is dated June, 1855. See also the 2nd edition of Mr. Bain's work on the 'Emotions and Will.'

would accompany an actual experience of the evil feared. The destructive passions are shown in a general tension of the muscular system, in gnashing of the teeth and protrusion of the claws, in dilated eyes and nostrils, in growls; and these are weaker forms of the actions that accompany the killing of prey." Here we have, as I believe, the true theory of a large number of expressions; but the chief interest and difficulty of the subject lies in following out the wonderfully complex results. I infer that some one (but who he is I have not been able to ascertain) formerly advanced a nearly similar view, for Sir C. Bell says,<sup>9</sup> "It has been maintained that what are called the external signs of passion, are only the concomitants of those voluntary movements which the structure renders necessary." Mr. Spencer has also published<sup>10</sup> a valuable essay on the physiology of Laughter, in which he insists on "the general law that feeling passing a certain pitch, habitually vents itself in bodily action;" and that "an overflow of nerve-force undirected by any motive, will manifestly take first the most habitual routes; and if these do not suffice, will next overflow into the less habitual ones." This law I believe to be of the highest importance in throwing light on our subject.<sup>11</sup>

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<sup>9</sup> 'The Anatomy of Expression,' 3rd edit. p. 121.

<sup>10</sup> 'Essays, Scientific, Political, and Speculative,' Second Series, 1863, p. 111. There is a discussion on Laughter in the First Series of Essays, which discussion seems to me of very inferior value.

<sup>11</sup> Since the publication of the essay just referred to, Mr. Spencer has written another, on "Morals and Moral Sentiments," in the 'Fortnightly Review,' April 1, 1871, p. 426. He has, also, now published his final conclusions in vol. ii. of the second edit. of the 'Principles of Psychology,' 1872, p. 539. I may state, in order that I may not be accused of trespassing on Mr. Spencer's domain, that I announced in my 'Descent of Man,' that I had then written a part of the present volume: my first MS. notes on the subject of expression bear the date of the year 1838.

All the authors who have written on Expression, with the exception of Mr. Spencer—the great expounder of the principle of Evolution—appear to have been firmly convinced that species, man of course included, came into existence in their present condition. Sir C. Bell, being thus convinced, maintains that many of our facial muscles are “purely instrumental in expression;” or are “a special provision” for this sole object.<sup>12</sup> But the simple fact that the anthropoid apes possess the same facial muscles as we do,<sup>13</sup> renders it very improbable that these muscles in our case serve exclusively for expression; for no one, I presume, would be inclined to admit that monkeys have been endowed with special muscles solely for exhibiting their hideous grimaces. Distinct uses, independently of expression, can indeed be assigned with much probability for almost all the facial muscles.

Sir C. Bell evidently wished to draw as broad a distinction as possible between man and the lower animals; and he consequently asserts that with “the lower creatures there is no expression but what may be referred, more or less plainly, to their acts of volition or necessary instincts.” He further maintains that their faces “seem chiefly capable of expressing rage and fear.”<sup>14</sup> But man himself cannot express love and humility by external signs, so plainly as does a dog, when with drooping ears, hanging lips, flexuous body, and wagging tail, he meets his beloved master. Nor can these movements

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<sup>12</sup> ‘Anatomy of Expression,’ 3rd edit. pp. 98, 121, 131.

<sup>13</sup> Professor Owen expressly states (Proc. Zoolog. Soc. 1830, p. 28) that this is the case with respect to the Orang, and specifies all the more important muscles which are well known to serve with man for the expression of his feelings. See, also, a description of several of the facial muscles in the Chimpanzee, by Prof. Macalister, in ‘Annals and Magazine of Natural History,’ vol. vii. May, 1871, p. 342.

<sup>14</sup> ‘Anatomy of Expression,’ pp. 121, 138.



in the dog be explained by acts of volition or necessary instincts, any more than the beaming eyes and smiling cheeks of a man when he meets an old friend. If Sir C. Bell had been questioned about the expression of affection in the dog, he would no doubt have answered that this animal had been created with special instincts, adapting him for association with man, and that all further enquiry on the subject was superfluous.

Although Gratiolet emphatically denies<sup>15</sup> that any muscle has been developed solely for the sake of expression, he seems never to have reflected on the principle of evolution. He apparently looks at each species as a separate creation. So it is with the other writers on Expression. For instance, Dr. Duchenne, after speaking of the movements of the limbs, refers to those which give expression to the face, and remarks:<sup>16</sup> “Le créateur n’a donc pas eu à se préoccuper ici des besoins de la mécanique; il a pu, selon sa sagesse, ou—que l’on me pardonne cette manière de parler—par une divine fantaisie, mettre en action tel ou tel muscle, un seul ou plusieurs muscles à la fois, lorsqu’il a voulu que les signes caractéristiques des passions, même les plus fugaces, fussent écrits passagèrement sur la face de l’homme. Ce langage de la physionomie une fois créé, il lui a suffi, pour le rendre universel et immuable, de donner à tout être humain la faculté instinctive d’exprimer toujours ses sentiments par la contraction des mêmes muscles.”

Many writers consider the whole subject of Expression as inexplicable. Thus the illustrious physiologist Müller, says,<sup>17</sup> “The completely different expression of

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<sup>15</sup> ‘De la Physionomie,’ pp. 12, 73.

<sup>16</sup> ‘Mécanisme de la Physionomie Humaine,’ 8vo edit. p. 31.

<sup>17</sup> ‘Elements of Physiology,’ English translation, vol. ii. p. 934.