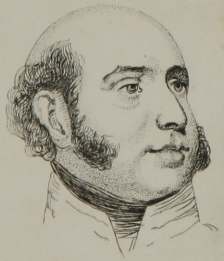
U.S. Department of Health, Education, and Welfare, Public Health Service, National Library of Medicine, Washington, D.C.

NATIONAL LIBRARY OF MEDICINE
U.S. Department of Health, Education, and Welfare, Public Health Service
Washington, D.C.



New-York, Published by J. & H. G. Langley.

THE

# ANTHROPOLOGICAL WORKS

OF

# ALEXANDER WALKER.

A NEW EDITION.

IN THREE VOLUMES.

LIBRARY
SURGEON GENERAL'S OFFICE
MAY-23-1901
172912

VOL. II.

## INTERMARRIAGE.

NEW YORK:
J. & H. G. LANGLEY, 57 CHATHAM STREET.

1843.

GN
W173a
1844
v.2

# INTERMARRIAGE:

OR

THE MODE IN WHICH, AND THE CAUSES WHY,

## BEAUTY, HEALTH, AND INTELLECT,

RESULT FROM CERTAIN UNIONS, AND

## DEFORMITY, DISEASE, AND INSANITY,

FROM OTHERS;

DEMONSTRATED BY

DELINEATIONS OF THE STRUCTURE AND FORMS, AND DESCRIPTIONS OF THE FUNCTIONS AND CAPACITIES, WHICH EACH PARENT, IN EVERY PAIR, BESTOWS ON CHILDREN,—IN CONFORMITY WITH CERTAIN NATURAL LAWS, AND BY AN ACCOUNT OF CORRESPONDING EFFECTS IN THE BREEDING OF ANIMALS.

**WITH EIGHT ILLUSTRATIVE DRAWINGS.**

---

BY ALEXANDER WALKER.

---

NEW YORK:
HENRY G. LANGLEY, 8 ASTOR-HOUSE.

1844.

"Après nous être occupés si curieusement des moyens de rendre plus belles et meilleures les races des animaux ou des plantes utiles et agréables; après avoir remanié cent fois celle des chevaux et des chiens: après avoir transplanté, greffé, travaillé de toutes les manières, les fruits et les fleurs, combien n'est il pas honteux de négliger totalement la race de l'homme!"

CABANIS.

"The highly interesting subject upon which you are writing is remarkably suited to the passing time in our country. Our aristocracy, by exclusive intermarriages among ancient families, proceed blindly to breed in contempt of deformities, of feeble intellect, or of hereditary madness, under the insti gation of pride or the love of wealth, until their race becomes extinct; while another portentous cause, that of unwholesome factories, threatens to deteriorate the once brave manhood of England. I believe that, among mankind, as well as domesticated animals, there are physical and moral influences which may be regulated so as to improve or predispose both the corporeal and moral aptitudes; and certainly the most obvious course is that of selecting the fit progenitors of both sexes."

SIR A. CARLISLE, *in a Letter to the Author*

ENTERED
According to Act of Congress, in the year 1839, by
J. & H. G. LANGLEY,
In the Clerk's Office of the District Court of the Southern District of New York.

# DEDICATION.

TO

THOMAS ANDREW KNIGHT, ESQ., F.R.S. & L.S.

PRESIDENT OF THE HORTICULTURAL SOCIETY, &c. &c. &c.

My Dear Sir,

One of the newly-discovered laws of nature, which are announced in this work, gives to man, for the first time, a precise rule for the guidance of intermarriage in his own race, and for that of breeding among animals.

According to that law, one parent gives to progeny the forehead and organs of sense, together with the nutritive organs contained within the trunk of the body; while the other parent gives the backhead and cerebel or organ of the will, together with the locomotive organs composing the exterior of the trunk and the whole of the limbs.

I had no sooner announced to you this law, and brought before you a family clearly exemplifying its

operation, when the vast experience and observation which has long placed you at the head of scientific breeders, enabled you to state to me a practical circumstance both as to man and animals, which at once corroborates every portion of the law.

You stated that if, in woman, you were shown merely a face short and round, full in the region of the forehead, and having what are commonly called chubby cheeks, but contracted and fine in the nose and mouth, you would unhesitatingly predict the trunk to be wide and capacious, and the limbs to taper thence to their extremities; and, so unfailing was this indication also in regard to inferior animals, that if, in adjudging a prize, there were brought before you an apparently well-fed animal of opposite form, or having a long and slender head, you would suspect it to be crammed for show, and, as such, should be disposed to reject it.

In this, your vast experience discovered a practical fact independent of all theory—a fact constituting an unerring guide in the most important decisions of husbandry—a fact of immense extent and bearing in its various relations.

Your ready prediction of the capacity of the trunk from a view merely of the forehead and face—these anterior parts, is a proof of so much of the law as states that, with the form of the forehead and face,

goes that of the nutritive organs contained in the trunk, for to these its capacity is adapted.

Regarded, moreover, even thus far, it leaves it as at least probable, that the remainder of the law is equally well founded, namely, that with the form of the backhead and cerebel—these posterior parts, goes that of the locomotive organs composing the rest of the body.

Your beautiful observation, however, does much more than render this remainder of the law a mere probability.—I have shown in this work, that, with the dimensions of the backhead and cerebel, go those of the locomotive system, and consequently those of the more muscular and moveable parts of the face, the mouth and nose. The shortness and fineness, therefore, of the mouth and nose, mentioned in your observation, being concomitant effects of the same cause with the tapering limbs, become as sure an indication, not merely of such limbs, but of the small backhead and cerebel, as the short and round face with full forehead were of the wide and capacious trunk. Thus that observation confirms also the remainder of the law.

As this fact is of such immense extent in its bearing and relations, and as it so irrefragably confirms the law, the work which announces and illustrates it, cannot be so appropriately dedicated to any one as to

you; and this accordingly it is, with great respect and esteem.

ALEXANDER WALKER.

POSTSCRIPT.—Since the whole of this work was printed, and since this dedication was written and presented to Mr. Knight, the death of that distinguished naturalist has occurred. The dedication, as accepted by him, remains as a testimony of my deep respect for his memory, and my sincere gratitude for his generous and unwearied communication of so many valuable facts.

# LETTER RESPECTING THIS WORK

FROM

## GEORGE BIRKBECK, Esq., M.D. F.G.S.

PRESIDENT OF THE LONDON MECHANICS' INSTITUTION, &c. &c. &c

## TO THE AUTHOR.

---

38, Finsbury Square,
May 23, 1838.

My dear Sir,

I have derived much pleasure from a perusal, in its progress through the press, of the work in which you have clearly developed, and satisfactorily established, those views of the formation of organized beings, communicated by you to me, in various conversations of very great interest. After having unsuccessfully although not unproductively, inspected with vast industry and ingenuity the rudiments, the *minima visibilia* of animal existence, it is peculiarly gratifying to find, much of the mysterious process of generation, unfolded by a comparison of the entire and enlarged being with its producers: and thus obtaining a solution of the obscure and difficult question, of the effect contributed by each sex in the appointed work of reproduction, not from the intricacies of the ovaria, uterus or seminal fluid, but from the condition and configuration of the visible and tangible result.

The general inquirer, not less than the philosophical physiologist, will, I am persuaded, feel grateful to you for the copious collection of facts, which you have provided on this hitherto perplexing subject: and whatever may be the decision, with respect to any of the curious and important natural laws which

you have so logically deduced, it will be admitted, I doubt not, that you have established the communication of organization by each parent in the formation of their offspring; and therefore that simple impression or simple stimulus, is not the whole actual effect of either party. It will be admitted likewise, that you have fully demonstrated the value of a due observance of several of your laws relating to reproduction, in promoting the physical, moral, and intellectual well-being of the human race, not less than the beauty and utility of form and action, of animals of every rank in the creation. And it must be admitted, I am sure —and the admission involves no common approbation——that in pursuing these most delicate inquiries, your language and your modes of expression, are always calculated to impart a knowledge of the fact or the inference which you propose to communicate, without awakening any feelings, which may disturb the chaste sobriety of philosophical research. You have indeed, in wending your way through this beautiful and physiologically attractive portion of natural science, verified if I mistake not, an exquisite expression, handed down to us with many truths of mighty moment, that "to the pure all things are pure."

I wait, with eager expectation, the appearance of your next volume, (already announced as prepared for the press) which completes this extraordinary series; and remain,

My dear Sir,

Sincerely and respectfully your's,

GEORGE BIRKBECK

To Alex. Walker, Esq.

## NOTICES OF WALKER ON INTERMARRIAGE.

---

*From "The Literary Gazette."*

"The author has struck out a new theory of generation, the leading points of which may be gathered from the following:—

"One of the newly discovered laws of nature, which are announced in the work, gives to man, for the first time, a precise rule for the guidance of intermarriage in his own race, and for that of breeding among animals.

"According to that law, one parent gives to progeny the forehead and organs of sense, together with the nutritive organs contained within the trunk of the body; while the other parent gives the backhead and cerebel or organ of the will, together with the locomotive organs composing the exterior of the trunk and the whole of the limbs.

"Upon these principles, Mr. Walker advises us how wives and husbands should be chosen, so that their progeny may be healthy, vigorous, and endowed with rich gifts in body and mind. * * *

"Here we must stop; for we dare not venture further into Mr. Walker's very uncommon investigations."

*From "The Satirist."*

"Mr. Walker's work on Intermarriage is the most curious and interesting book that has appeared for many a day.

"It is indeed strange that men should have been looking in one another's faces for some thousand years, without finding out till now—1st, That every child resembles one parent in forehead,

face, organs of sense and vital organs, and the other parent in backhead and muscular organs; 2dly, that the parent whom the progeny resemble in forehead, face, organs of sense. &c., is always the one whose sensibility was most excited at the moment of conception, and the parent whom the progeny resemble in backhead and muscular system, is always the one whose volition and locomotion were most excited at the same moment; and 3dly, that therefore the beauty, health and intellect of progeny are entirely under our control, and subject only to the choice we are pleased to make in intermarriage, and the state of the two minds at the instant of reproduction.

"All this is established by cases both among men and animals, as well as by the corresponding testimony of physiologists and physicians, and of the ablest breeders of horses, cattle, sheep, dogs, birds, &c., whose reports are here given.—The book is full of the most extraordinary and interesting matter."

*From "The Atlas."*

"The work is essentially scientific, although Mr. Walker has written it with a view to general circulation, and has treated the subject in as popular a spirit as its peculiar nature would admit. Some curious facts in the physical conformation of man are developed in the course of Mr. Walker's researches; and the laws in nature which he establishes, are placed in a clearer light than we are aware they were ever placed in before.—The book is full of the most extraordinary and interesting matter."

*From "Sherwood's Monthly Miscellany."*

"This is a work combining great learning with depth of research, and is of paramount interest to the higher classes of the community, who, by exclusive intermarriages among ancient families, perpetuate races of deformed persons, of unhappy beings of feeble and attenuated intellect, and in many cases keep up the breed of hereditary insanity.—This calamity, instigated by false family pride, or by the basest cupidity, may be averted or greatly modified by an attentive perusal of this important volume.—The work is preceded by a very intellectual letter from that philosophical physiologist, Dr. Birkbeck."

# ADVERTISEMENT.

The great object of this work is altogether new and heretofore unattempted—the establishment not merely of a new science—but of that science which is by far the most interesting to humanity—the science which, for the first time, points out and explains all the natural laws that, according to each particular choice in intermarriage, determine the precise forms and qualities of the progeny,—which unfolds the mode in which, and the causes why beauty, health and intellect result from certain unions, and deformity, disease and insanity from others,—and which enables us, under all given conditions, and with absolute certainty, to predict the degree and kind of these, which must result from each intermarriage.

The philosophical bases of this science have, moreover, nothing to do with hypothesis or supposition;—they are the indisputable, though hitherto unapplied, facts of anatomy and physiology;—and their present popular applications are rendered subjects of absolute demonstration by descriptions and drawings of families (some of them well known to the public;) while every reader has the power of adding to their number among the families of his acquaintance. They are further subjected to demonstration by all the more important facts, here stated, as to the breeding of domesticated animals—facts which have not hitherto

been explained or understood, and consequently have not hitherto afforded those principles on which the breeder may *now* act, with perfect certainty of the desired result.

In the First Part of the work is given an account of the physiological conditions connected with and terminating in LOVE,—the period of puberty, and the remarkable and interesting changes which it causes in the locomotive system and the voice, in the vital or nutritive system, and in the mental or thinking system, especially of woman. This is rendered altogether popular.

In the Second Part are described the sexual relations arising from these conditions, and connected with or leading to INTERMARRIAGE,—useful guidance and dangerous restraint, unnatural indulgence and absolute continence, and the necessity of intermarriage— subjects entirely popular and deeply interesting to both sexes.

In the Third Part are described the circumstances resulting from the preceding relations, and connected with or productive of PROGENY,—the natural preference for the various kinds of beauty for the first time explained, the state of marriage, and the propagation of forms and qualities.

In the Fourth Part are enunciated the newly discovered laws regulating the RESEMBLANCE OF PROGENY TO PARENTS,—the law of selection where both parents are of the same variety, the law of crossing where each parent is of a different variety, the law of in-and-in breeding where both parents are of the same family, the law of sex, and the law of maternal nutri-

tion (none of them heretofore observed, and all of them here physiologically demonstrated,) as well as the circumstances modifying these laws, and the consequent easy improvement of families in beauty of forms and excellence of functions.

In the Fifth and Sixth Parts are described the vague methods of regulating progeny adopted in the breeding of DOMESTICATED ANIMALS,—in in-and-in, selection and crossing, and the application of the natural laws to the breeding of these animals—horses, cattle and sheep.

In the Seventh and Eighth Parts are described the vague methods of effecting progeny adopted among MANKIND,—in in-and-in, selection and crossing, and the transcendently important subject of choice in intermarriage, as prescribed by the natural laws, and as calculated to correct each particular defect of the locomotive, the vital or nutritive, and the mental or thinking system, that may exist in any family or any individual.

It is here perhaps that I should add, to what has now been said, whatever regards my means of accomplishing this work, and a few further remarks on the chief purpose which I have in view therein.

To its anthropological views I have long been habituated; and, for several years, I have carefully observed the resemblance and the other relations of progeny to parents. Most of the sciences, however, of which man is the subject, have derived such advancement from those which regard animals—comparative physiology, has thrown such light on human physiology, that, on every thing relating to intermar-

riage and progeny, it was evident, that those who had devoted their time and attention to the breeding of domestic animals might be able to furnish very valuable information. The laws of nature are simple and uniform; the functions of organs differ no more than their structure; and as nearly all the organs of man are greatly resembled by those of domestic animals, the same resemblance exists in their functions.

I consulted, therefore, the most distinguished breeders in every department; and they have kindly and zealously given me their best assistance, for which I beg here to express my gratitude.

In a letter of the 4th February, 1837, my correspondent * * *, whose devotion to the interests of British husbandry is not more remarkable than his frank and generous communication of knowledge, says, "For the last ten or twelve years, I have attended very much to this subject, and, as I have been breeding cattle upon a very large scale, I have been enabled, I think, to satisfy myself, that some of the common opinions are unfounded, and to establish some theoretical principles which generally prove correct in practice. If Mr. Walker thinks it worth his while to take the trouble to write to me, I will, with the greatest pleasure, give him the result of my experience, if it should turn out that I have any experience which can be useful to him."

In a letter of the 11th of April, 1837, Mr. Knight of Downton, president of the Horticultural Society, says, "I have made so many experiments in cross-breeding, during more than half a century, that I believe I shall be able to communicate to you a good

deal of information upon a subject which I agree with you in thinking very highly important; and I shall be happy to give you any assistance in my power." Of what immense value this has been, as regards man as well as inferior animals, the reader will see in the work, and especially under the laws regulating the resemblance of progeny to parents. To that gentleman, indeed, I owe its earliest and most perfect confirmation.

In a letter of August, 1837, from Dr. Hancock, the South American traveller, he says, "I am fully sensible of the importance of regulating the breed amongst animals, which is, I suppose, generally recognized and acknowledged. But to me it has appeared, as it has to yourself, a matter of much surprise, that so little regard (if any) has been given to the same principles applied to our own species—as though we either considered our race to be perfect, or else of inferior importance compared with plants and animals in general.—I have had, as you seem to think, many opportunities of observing the practical application of these principles. I had even entertained an idea of composing a small treatise on the subject; but I am well pleased it should have fallen into abler hands." Dr. Hancock's information respecting the American races, is highly important.

To many other philosophical observers of nature—Sir Anthony Carlisle, Dr. Copland, Mr. Malcolm Walker, &c., as well as the ablest of the professional breeders of domesticated animals—I am deeply indebted.

Of the chief purpose of this work, I need only further say, that the knowledge of the laws here estab-

lished, in the case of all intermarriages, is evidently of great importance, though a very narrow and mistaken interest may lead to their neglect.

Means, altogether repugnant to the habits of modern society (in climates where clothing is necessary, and where morality is modified by that circumstance,) have been recommended even by illustrious writers, in order to accomplish but *a small portion* of the purposes which, as mere applications of natural science, are rendered simple, beautiful, and easily practicable by the methods pointed out in this work.

Happily *even the least offensive of these means is rendered unnecessary by the simple, beautiful, and easily practicable application of natural science pointed out in this work; by which, at the same time, that prescience of the physical forms and mental capacities of progeny is attained, which is impossible by all other means.*

In the execution of the work under obligations so manifold and great, I have scrupulously acknowledged all those that are of an original character, by naming the persons to whom they are due, and inserting the date of the communications.* I have also profited by most of the good works having any reference to the subject; and whenever the subjects described, or the opinions expressed, from them, seemed original or peculiar to the writer, I have as scrupulously marked the quotation by inverted commas; but when these

* To render the insertion of the year unnecessary, I may here say, that all the communications referred to were made between March 1837 and March 1838.

appeared to be the common property of science, employed by many writers, I have not done so nor could I, indeed, with any propriety, seeing that I have generally abridged, enlarged, or corrected their expression.

To avoid, moreover, the possibility of my being thought to claim that which may belong to others, I here subjoin a list of the more important original facts and opinions which the work contains:—

1. The brief view of a natural system of anatomy and physiology, constituting the Preliminary;

2. The assignment of the cause of early puberty, and of the catamenia in woman;

3. The physiological reasons for concluding that love is more essential to woman than to man, though she can more easily suspend or defer it,—afforded by the proportionally greater developement of her organs of sense and vital system, and the smaller size of her cerebel as the organ of will, &c.;

4. The explanation of the natural preference of the various kinds of beauty;

5. The showing that conception cannot take place under horror and disgust;

6. The pointing out the indestructibility of organization in propagation from parents to progeny, and the consequent impossibility of faulty organization being either soon or easily got rid of by mankind generally;

7. The establishment of the natural laws regulating the resemblance of progeny to parents;

8. The establishment of the law of selection, where both parents are of the same variety, and when either parent gives either of two distinct series of organs;

9. The explanation of the accompaniment of particular organs;

10. The explanation of the influence of the posterior series of organs upon the anterior ones, and *vice versa*;

11. The showing the cause of the division of the nervous or thinking system;

12. The explanation of the differences in the features of children, who yet resemble the same parent;

13. The showing that fatuity is the disease of hereditary royalty, and hereditary aristocracy;

14. The application of this law to the prevention of fatuity in progeny;

15. Its application to the correction of defects of the locomotive or of the nutritive system:

16. Its application, and that consequently of the propagation of organization in two series of organs, or in halves, to the exposure of the hypothesis of blood, and the practices founded upon it;

17. The establishment of the law of crossing, where each parent is of a different variety, and when the male gives the backhead and locomotive organs, and the female the face and nutritive organs;

18. The showing the cause why, in crosses, the male gives the backhead and locomotive system;

19. The showing the cause of the apparent or real want of permanence in cross-breeds by the re-formation of the original races, and the mode of obviating it;

20. The pointing out the perpetual re-formation of the original races inhabiting the British isles—Celtic, Saxon, Danish, Norwegian, Sclavonic, &c.;

21. The conclusion from the law of crossing, as to the limits of what may be obtained by its means;

22. The establishment of the law of in-and-in breeding, where both parents are of the same family, and when the female gives the backhead and locomotive organs, and the male, the face and vital organs;

23. The showing the cause why, in in-and-in, the female gives the backhead and nutritive organs;

24. The explanation why nearly perfect animals breeding in-and-in must degenerate;

25. The better explanation of in-and-in breeding;

26. The showing the cause of the rapid improvement of the Turks by polygamy;

27. The assignment of the philosophical basis of the general superiority of the modern practice of horse-breeding, in depending greatly on the male;

28. The statement of the fact that, though either parent may give the vital system to progeny, it may have the opposite sex, the communication of the reproductive organs being thus apparently independent of the general vital system;

29. The explanation of this fact; and the remarkable confirmation thereof;

30. The establishment of the law of sex, by which either kind is, along with the general vital system, given by either parent;

31. The establishment of the law of maternal nutrition, by which a certain likeness is spread over the countenances of all the children of a family;

32. The showing the cause of this law;

33. The pointing out the modifications of these laws according to age.

34. The pointing out the modifications of these laws according to sex;

35. The pointing out the modifications of these laws according to the various new parts which are combined;

36. The explanation of atavism;

37. The statement of the fact of the resemblance of old married couples, and the explanation;

38. The demonstration of the easy improvement of families by the operation of these laws;

39. The statement of the fact, that a man may have no rational interest, physical or moral, in his second generation, or that a grandson may not have the slightest resemblance, external or internal, to his grandfather.

40. The statement of the fact, that a man has the power to reproduce and preserve either series of organs—the best or the worst portion of his organization;

41. The statement of the fact, that the means of improved general organization and beauty of countenance in progeny, are equally subject, by intermarriage, to the control of man;

42. The pointing out the particular means of this as to beauty of face; and the cases which illustrate it;

43. The showing the reason why beautiful parents may produce ugly children, and ugly parents, beautiful children;

44. The application of the natural laws to the breeding of horses;

45. The statement of the fact, that it is preferable that the male should give to progeny the voluntary

and locomotive systems; and the female, the sensitive and vital systems; if these respectively be well conformed;

46. The statement of the fact, that pace and speed depend on the posterior organs, and action on the anterior ones;

47. The admirable illustration afforded by the Arab horse, that organization is propagated in halves, as well as that he has introduced more perfect sensitive and vital systems, while the British stock have given the more powerful voluntary and locomotive systems;

48. The mode of discovering the mental qualities of animals;

49. The clearer view of the relative uses of the posterior and anterior extremities of quadrupeds;

50. The statement of the fact, that, in cattle, both fattening and milking are dependent on a good vital system;

51. The indication of the characteristics of fatteners and milkers respectively, as opposed in tendency, as distinguished by the structure of the mammæ and the degree of sensibility, and as influenced by climate;

52. The application of the natural laws to the breeding of cattle;

53. The statement of the fact, that, in sheep, fattening is entirely, and the production of wool greatly, dependent on a good vital system;

54. The pointing out the circumstances respectively influencing fattening and the production of wool, as in some measure opposed, and related to sensibility and climate.

55. The application of the natural laws to the breeding of sheep;

56. The observation of the reproduction of the hymen;

57. The showing that the great condition of aptitude for reproduction is the greatest possible perfection of the vital system;

58. The pointing out that want of adaptation of the anterior and posterior series of organs which causes the impressions made on the skin of the abdomen and mammæ during gestation and lactation;

59. The affording the surest means of determining the parentage of children;

60. The affording the surest guidance of their education;

61. The pointing out the mode of improving the organization where there is a tendency to mental weakness.

## PREFACE TO THE AMERICAN EDITION

The following work of Mr. Alexander Walker has received strong marks of public favour in England, where it first appeared, and has been considered by many, as eminently worthy of republication here. On examining it, however, it was soon perceived, that though highly original in its design, and peculiarly valuable in its details, still its phraseology was sometimes exceptionable, as it seemed to violate those conventional forms of language, to which American readers are mostly accustomed. It was therefore deemed expedient to modify, and in some cases, change certain modes of expression, so as to obviate all objections on the score of refinement, and thus render the work acceptable to the most fastidious taste. This has been done, however, without in the least abridging the original, and without the suppression of a single sentence, necessary to the complete elucidation of the author's views.

We are aware that there is a class of persons, who condemn all works of a physiological character, addressed to general readers; who seem to regard Physiology—that science which teaches us all we know of the laws of Life,—as "the tree of knowledge of good and evil," the taste of whose fruit, if not like

Eve's transgression, death to our physical being, is still fatal to all refinement and delicacy of soul! Accordingly, it is not strange to find such persons condemning every kind and degree of knowledge, relating to our wonderful organization, and the still more wonderful functions of our curiously constructed organs; while at the same time, perhaps, they advocate Journals of Moral Reform and works of fiction, whose sole influence, if not object, is, to excite the baser passions, and minister to a morbid taste. Believing therefore, as we conscientiously do, that this is nothing more nor less than a false delicacy, a perverted sensibility—that such opinions, whether pretended or real, spring from inexcusable ignorance, or still more inexcusable prejudice, we have consented to prepare this Preface; and in doing so, we embrace the occasion of laying before the reader at the hazard of being considered out of place, a few of the many reasons, in favour of a general diffusion of Physiological science.

In the first place, such knowledge is intimately connected with the preservation of health. As this depends on an observance of the natural laws, it would seem to follow, that an acquaintance with these laws, is essential to the attainment of this object. The man, for example, who has learned the effects of alcohol upon the delicate tissue of the vital organs, will be guarded in its use, or abstain from it altogether. He, who understands the structure of the human skin, and the important office which it performs, by means of its millions of pores, will properly appreciate the importance of cleanliness, and the danger of suddenly

checking the insensible transpiration. The individual, who has studied the laws of developement, and knows how all the organs are matured and strengthened by exercise, will avoid the numerous evils consequent on inactivity and indolence. The female, who understands the wonderful and complicated function of respiration, —how the free and full expansion of the lungs is necessary to the complete vitalization of the blood—that fluid which carries life, and health, and vigour to every fibre in the system, will, most certainly, shun tight-lacing, and all other practices which impede this truly vital function. The parent also, who has learned the delicate texture of the instrument of thought—the brain, will, instead of encouraging mental precocity in his offspring, rather aim to suppress all unnatural developement; and pursue such a course as is rather calculated to produce early *physical*, than *mental* superiority. He also who has attended to the process of healthy digestion, and marked the causes, by which it is impeded, will know how to preserve the integrity of this important function, by avoiding all those influences, which interfere with its regular performance. And lastly, the invalid, suffering under a load of disease, the effect of causes which he might, and doubtless would, have escaped, had he been acquainted with his own structure, or the relations of its different parts to each other and to external objects; even he, for the want of this knowledge, stands but a feeble chance of recovery, as he cannot properly appreciate the advice of his medical attendant, and yields either a reluctant consent to prescriptions given, or, which is more likely still, disregards them altogether. We

might pursue this kind of illustration at great length, and show, step by step, the connection between physiological knowledge, and the preservation and recovery of health. But it is unnecessary; our object is attained, if the attention of the reader is excited; satisfied as we are, that a little reflection will lead him to a safe and correct conclusion.

In the second place, an acquaintance with Physiology is the only certain and sure preventive against the dangers, and evils of empiricism. That some antidote is required, for these, no one will deny. The unblushing impudence and pretension, displayed in the countless quack advertisements of our periodical prints, are without a parallel in the history of any age or nation, and speak little in favour of the intelligence and good sense of the American people. From the cancer-quack, whose arsenical plaster draws out, at the same time with the disease, the *life* of the unhappy sufferer, to the shameless female, whose pills "are not to be given during a certain condition," and whose effects are often death, to both parent and offspring,—all seem to ply their death-dealing trade, with reckless rapacity, and generally fatal consequences. But this is a *free*, a gloriously free country, and the good people have a perfect right, if they choose, to get themselves, and families poisoned by wholesale or retail, by habitual pill-swallowing, plaster-application, or any other mode, more in fashion. A slight knowledge of the structure of the human frame, and those laws that regulate its functions, in health and disease, would soon lead them, at the same time, to avoid the causes of disease, and those pretenders, whose measures are

far more likely to render it fatal, when present, than to contribute towards its removal.

In the third place, physiological science is of the very highest importance in the education of our race, and therefore to mothers. The following remarks of Dr. Southwood Smith, will apply equally well, to the females of this country, as those of England. "The communication of the knowledge and the formation of the habits, which are necessary to the due performance of the duties of women, constitute no essential part of their education; the direct tendency of a great part of their education is to produce and foster opinions, feelings, and tastes, which positively disqualify them for the performance of their duties. All would be well if the marriage ceremony, which transforms the girl into the wife, conferred upon the wife, the qualities which should be possessed by the mother. But it is rare to find a person, capable of the least difficult part of education, namely that of communicating instruction, even after diligent study with a direct view to teaching; yet an ordinary girl, brought up in the ordinary mode, in the ordinary domestic circle, is entrusted with the direction and control of the first impressions that are made upon the human being, and the momentous physical, intellectual, and moral results that arise out of those impressions. Women are the earliest teachers; they must be nurses; they can be neither, without the risk of doing incalculable mischief unless they have some acquaintance with physiology. On these grounds, I rest their obligation to study it; and I look upon that notion of delicacy which would exclude them from knowledge calculated

in an extraordinary degree, to open, exalt, and purify their minds, and to fit them for the performance of their duties, as alike degrading to those to whom it affects to show respect, and debasing to the mind that entertains it."

The author of the following work, treats of neither of the above departments of physiological science, but striking out comparatively a new path, and going back to the period before birth, he endeavours to establish such rules and observances, as tend to the physical, as well as moral perfection of our species. He has aimed, so to speak, to forestall the bodily deformities, and mental obliquities so frequently met with, and by pointing out certain laws, well known to the scientific agriculturist, to raise the standard of human perfectibility to its highest point of attainment. He has succeeded in demonstrating the inseparable connection between beauty, health and sound intellect, and perfect physical organization, and explained how deformity, disease, and imbecility of mind and body result from certain causes. The writer has also done a valuable service, by showing how marriages among blood-relations, tend to the degeneracy of the offspring, and thus illustrating the wisdom of those Levitical regulations which have appeared to some sceptics as arbitrary, and not founded in nature. From a careful analysis, and a beautiful train of inductive reasoning, he has deduced the important fact, that the means of improving general organization and beauty of countenance in progeny, are subject in a great degree to the control of man; and hence it follows, that it is the duty of every man who aspires to be the father

of a family, to become acquainted with these facts and rules, which insure such invaluable results. Indeed, there is nothing either in morals or religion, in scripture or tradition, in reason or common sense, which forbids man from availing himself in his choice of a companion, of all the knowledge, whether deduced from observation, or science, or both, which enables him to leave to his children, a legacy more valuable than riches or noble blood, health, strength, a sound physical and mental organization "mens sana, in corpore sano." On the contrary, every thing, both in nature and revelation, goes to show, that it is his imperative duty to avail himself of all these advantages, and that he would incur a fearful responsibility, if he knowingly selected a partner, whose offspring would inherit a trait of hereditary insanity, imbecility, or bodily deformity. Those who understand the hereditary nature of diseases, how the sins of the parents, are literally visited upon the children unto the third and fourth generation, will need no arguments to convince them of the importance of information on this subject. To those who are not acquainted with this fact, the following case may be valuable by way of illustration.

A gentleman, with whom the writer is acquainted married a lady, whose mother had, for many years, been afflicted with insanity, and whose brother, was at the very time of the marriage, resident in a lunatic asylum. Her nervous system was peculiarly susceptible, and she possessed that high order of intellect and genius, which belongs to such a delicate organization. In less than three years, she became hopelessly

insane, and is now an inmate of a lunatic retreat, and the only child to whom she has given birth, shows every indication of having inherited its mother's peculiarities. But we need not detail cases;—the reader's own observation will furnish sufficient facts on this subject.

In presenting the following work to the public, we have only, in conclusion, to remark that, if some passages appear obnoxious to the charge of indelicacy, our only answer is, "to the pure, all things are pure.' "Honi soit qui mal y pense."

New York. June 12th 1839.

# CONTENTS


| | Page |
|---|---|
| DEDICATION | iii |
| LETTER FROM DR. BIRKBECK to the Author | vii |
| ADVERTISEMENT, with List of Original Facts and Opinions contained in the Work | 1 |
| Preface to the American Edition | 13 |
| Preliminary, explaining Scientific Terms | 25 |
| PART I.—PHYSIOLOGICAL CONDITIONS CONNECTED WITH, AND TERMINATING IN LOVE. | |
| Section I.—Puberty | 29 |
| Its period | 29 |
| The changes caused by it | 37 |
| Section II.—Changes in the Locomotive System | 37 |
| Section III.—Changes in the Vital System | 39 |
| Chlorosis illustrating these | 42 |
| Natural Defects illustrating these | 43 |
| Extirpation illustrating these | 44 |
| Retardation in the Male illustrating these | *ib.* |
| Castration illustrating these | 45 |
| The Catamania | 53 |
| Section IV.—Changes in the Mental System | 58 |
| Mode in which Uterine Influence produces Changes in that System | 58 |
| Consequent State of Mind previous to Love | 61 |
| Love | 64 |
| PART II.—SEXUAL RELATIONS ARISING FROM THESE CONDITIONS, AND CONNECTED WITH OR LEADING TO INTERMARRIAGE. | |
| Section I.—Useful Guidance and Dangerous Restraint | 72 |
| Useful Guidance | *ib.* |
| Dangerous Restraint | 80 |

Page.

Section II.—Unnatural Indulgence and Absolute Continence . . . . . 85
Unnatural Indulgence . . . . . 86
Absolute Continence . . . . . 91
Section III.—Necessity of Intermarriage . . . 99

PART III.—CIRCUMSTANCES RESULTING FROM THE PRECEDING RELATIONS, AND CONNECTED WITH, OR PRODUCTIVE OF PROGENY.

Section I.—Natural Preference of the various kinds of Beauty, for the first time explained . . . 106
Section II.—State of Marriage . . . . . 121
Section III.—Forms and Qualities propagated . . 130

PART IV.—NEWLY DISCOVERED NATURAL LAWS REGULATING THE RESEMBLANCE OF PROGENY TO PARENTS.

Section I.—Laws of Resemblance . . . . 138
I Law of Selection, where both Parents are of the same Variety 142
1. Organs communicated by one Parent—the Anterior Series . *ib.*
2. Organs communicated by the other Parent—the Posterior Series . . . . . *ib.*
Explanation of the Accompaniment of the particular Organs in each . . . . . 143
Either Parent may give either Series . . . . 145
Slight Illustrations . . . . . 146
Various Corroborations both as to Man and Animals . . 148
Mode of verifying this Law, by examining Parents and Children . . . . . 154
Influence of the Posterior Organs upon the Anterior ones, and *vice versa* . . . . . 156
Cause of the Divison of the Mental or Thinking System . 159
Hypothesis as to the Increased Energy of that System . 161
The Directions of its Functions Hereditary . . . 162
Explanation of the Differences in the Features of Children, who yet resemble the same Parent . . . . 166
Importance of this Law . . . . . 171
II. Law of Crossing, where each Parent is of a different Variety 184
III. Law of In-and-in Breeding, where both Parents are of the same Family . . . . . 204
IV. Law of Sex . . . . . 219
V. Law of Maternal Nutrition . . . . . 238
Section II.—Circumstances Modifying these Laws . 239

Page

Section III.—Consequent Easy Improvement of Families . . . . . 251

PART V.—VAGUE METHODS OF REGULATING PROGENY ADOPTED IN THE BREEDING OF DOMESTICATED ANIMALS.

Section I.—General Principles . . . . . 257
Section II.—Breeding In-and-in . . . . . 259
Section III.—Selection . . . . . 263
Section IV.—Crossing . . . . . 266

PART VI.—APPLICATION OF THE NATURAL LAWS TO THE BREEDING OF DOMESTICATED ANIMALS.

Section I.—General Observations . . . . . 272
Section II.—Horses . . . . . 275
Section III.—Cattle . . . . . 292
Section IV.—Sheep . . . . . 303

PART VII.—VAGUE METHODS AFFECTING PROGENY ADOPTED AMONG MANKIND.

Section I.—Breeding In-and-in . . . . . 312
Section II.—Selection . . . . . 314
Section III.—Crossing . . . . . 317

PART VIII.—CHOICE IN INTERMARRIAGE, AS PRESCRIBED BY THE NATURAL LAWS.

Section I.—General Observations on Age, Stature, &c. 321
Section II.—As to the Locomotive System . . . 325
Section III.—As to the Vital System . . . . 332
Section IV.—As to the Mental System . . . . 372

# LIST OF PLATES.

I. The Duke and Duchess of Kent and Queen Victoria, as affording a General Illustration of the Law of Selection . . . . *To face the Title*

II. Napoleon, Maria Louisa, and their Son, as serving the same purpose . . . . . 147

III. Front View of a Father, Mother and two Sons, more minutely illustrating the Law of Selection 156

IV. Profile View of the same, serving the same purpose 156

V. Front View of a Father, Mother and two Daughters illustrating the Influence of the Posterior Organs upon the Anterior ones . . . . . 158

VI. Profile View of the same, serving the same purpose 158

VII. Figures 1 and 2—Front and Profile of a Mulatto, illustrating the Law of Crossing: Figures 3 and 4—Front and Profile view of a Sambo, serving the same purpose . . . . . 186

VIII Bantam Fowls, illustrating the effects of Breeding In-and-in . . . . . 207

# INTERMARRIAGE.

## PRELIMINARY.

THE anatomical and physiological knowledge necessary to the understanding of this book, is comprised in this page and the two following ones. It is merely a brief view of a Natural System of Anatomy and Physiology,—the former describing the particular structures or organs of animals, and the latter the actions or functions of these organs—drawn from the first account given of such a system, which was published by me, above thirty years ago, in several elementary works, and especially in PRELIMINARY LECTURES, (Edinburgh, 1808,) with expositions of the errors of Bichat, Richerand, &c.

According to that system, the human body and that of the higher animals consist of three classes of organs and functions: namely,

1st. The LOCOMOTIVE organs and functions, consisting of bones, which support the body and its parts; ligaments, which connect the bones together and

form the joints; and muscles or bundles of red flesh, which move these.—Together, these form an apparatus of *levers*, which exercise large and *conspicuous motion*, and of which the *limbs* are chiefly composed. It is by means of this apparatus, that all motions of the higher animals from one place to another are accomplished.

2dly. The VITAL or NUTRITIVE organs and functions, consisting of lacteals,* fine tubular vessels, which absorb nutritious matter from the food taken into the intestines, and carry it towards the heart, to be converted into blood; blood-vessels, which circulate the blood thus formed; and various glands or filters, which secrete or deposit, not only the various substances composing the different organs, but the fat, the milk, hair or wool, and other animal products.—All of these consist of *tubes*, which exercise only a minute peristaltic or *pulsating motion*, and of which the *trunk* of the body is the centre and principal seat. It is by means of this apparatus, that not only nutrition and secretion are effected, but that useless matters are removed and thrown out of the body.†

3dly. The MENTAL or THINKING organs and functions, consisting of the immediate organs of sense, the eye, ear, &c., which receive impressions from external bodies; a brain, which perceives, compares, re-

* Or lymphatics.

† The *digestive*, *respiratory* and *reproductive* organs, belong to this system, as *preparing*, *renovating* and *propagating* vital matter. These have every one of the characters of vital organs; and it was consequently a gross error of the arrangements of Bichat, Richerand, &c., to consider any of them as distinct systems.

flects, &c.; and a cerebel or little brain, situated below the back part of the greater brain, and above the neck, which wills, and consequently throws the muscles into those actions which fulfil its purposes.—All of these consist of series of *globules*, bound, by membranous investments, into fibres of various forms, of which the *motion* is *invisible*, and which chiefly occupy the *head*. It is by means of this apparatus that sense, thought, and the impulses to action, and consequently all connexion with external objects, take place.

This is rendered still plainer by the tabular arrangement of Anatomy, Physiology, and Pathology on the following page.

## NATURAL ARRANGEMENT OF ORGANS.—ANATOMY.

**CLASS I** — LOCOMOTIVE ORGANS

| *Order* I. | *Order* II. | *Order* III. |
|---|---|---|
| Bones, or Organs of Support. | Ligaments, or Organs of Connexion. | Muscles, or Organs of Motion. |

**CLASS II.** — VITAL ORGANS.

| *Order* I. | *Order* II. | *Order* III. |
|---|---|---|
| Lymphatics, &c. or Organs of Absorption. | Arteries, &c. or Organs of Circulation. | Glands, &c. or Organs of Secretion. |

| | | |
|---|---|---|
| *Organs of Digestion.* | Veins. *Organs of Respiration.* Arteries. | *Organs of Reproduction.* |

**CLASS III.** — MENTAL ORGANS.

| *Order* I. | *Order* II. | *Order* III. |
|---|---|---|
| Eye, Ear, &c. or Organs of Sensation. | Cerebrum, or Organ of Perception, &c. | Cerebellum or Organ of Volition. |

## NATURAL ARRANGEMENT OF FUNCTIONS.—PHYSIOLOGY.

**CLASS I.** — LOCOMOTIVE FUNCTIONS.

| *Order* I. | *Order* II. | *Order* III. |
|---|---|---|
| Function of Support. | Function of Connexion. | Function of Motion. |

**CLASS II.** — VITAL FUNCTIONS.

| *Order* I. | *Order* II. | *Order* III. |
|---|---|---|
| Function of Absorption. | Function of Circulation. | Function of Secretion. |

| | | | | |
|---|---|---|---|---|
| *Function of Digestion.* | Passage of Blood to Lungs. | *Function of Respiration.* | Passage of Blood from Lungs. | *Function of Reproduction.* |

**CLASS III.** — MENTAL FUNCTIONS.

| *Order* I. | *Order* II. | *Order* III. |
|---|---|---|
| Function of Sensation. | Function of Perception, &c. | Function of Volition. |

## NATURAL ARRANGEMENT OF DISEASES.—PATHOLOGY.

**CLASS I.** — DISEASES OF THE LOCOMOTIVE FUNCTIONS.

| *Order* I. | *Order* II. | *Order* III. |
|---|---|---|
| Diseases of Support. | Diseases of Connexion. | Diseases of Motion. |

**CLASS II.** — DISEASES OF THE VITAL FUNCTIONS.

| *Order* I. | *Order* II. | *Order* III. |
|---|---|---|
| Diseases of Absorption. | Diseases of Circulation. | Diseases of Secretion. |

**CLASS III.** — DISEASES OF THE MENTAL FUNCTIONS.

| *Order* I. | *Order* II. | *Order* III. |
|---|---|---|
| Diseases of Sensation. | Diseases of Perception, &c. | Diseases of Volition. |

N. B. The Genera under each order will consist of Diminished, Disordered, and Increased Function; and the articles of Materia Medica will hold an order precisely the reverse of the latter.

# PART I.

## PHYSIOLOGICAL CONDITIONS CONNECTED WITH, AND TERMINATING IN, LOVE.

---

## SECTION I.

### PUBERTY.—ITS PERIOD.—THE CHANGES CAUSED BY IT.

*Puberty and its Period.*

Man, in common with the more perfect animals, is not born with the faculty of immediately producing his like. The organs which, at a future period, perform that important function, appear to remain entirely torpid long after birth: and the appetites connected with them do not exist.

As, moreover, the infancy of man is longer, so is his puberty, or the period when the reproductive faculty is coming into action, more tardy than that of the other races of animals.

In the human race in particular, the most general difference as to the period of puberty, is attached to the difference of sex. Puberty is universally earlier in woman than in man.

Some authors, says Roussel, "have derived the reason of that difference from the smallness of the organs of woman: they observe that she is sooner fit for reproduction, because her organs being smaller, are earlier formed, and the organic or nutritive molecules which contribute to their formation and development, become an excess destined to reproduction. The circumstance of the smallness of the organs of woman is indeed favourable to this opinion; and it is reasonable to suppose that nature is not occupied about the species until the individual is perfected. But this order is often inverted; we frequently see marriageable girls who have not attained their full growth."

I have quoted this passage at length, because it expresses not merely a common and universal error, but a fundamental one, and I am anxious to correct it.

The immediate cause of the earlier puberty of woman is the circumstance that her vital or nutritive system is proportionally larger than that of man. In early life, the three classes of organs and functions*—the locomotive, the vital or nutritive, and the mental or thinking systems, bear the same proportion to each other in woman as in man; and the girl is scarcely distinguishable from the boy. In woman, this proportion is gradually departed from; her vital system, occupying chiefly the trunk, becomes larger in general, as well as in particular parts; it grows out of proportion to the other two systems—occupying chiefly the head, or composing the limbs; its functions follow its

* It is supposed, that the pages entitled PRELIMINARY have been carefully perused by the reader.

structure ; and hence alone the earliness of that aggregate of them which is denominated puberty.

The imputation of disproportion to the vital or nutritive system of woman, is not here made without due reflection. It has not been understood or noticed; but it really exists. Observation will show that this disproportion is absent in early life; that it takes place at puberty ; that it alone enables woman to discharge all her peculiar functions; and that, when it is useless for these purposes, it secretes the adipose substance which distinguishes the period of fatness, which the French call the *age de retour*, or, shrivelling up, leaves flaccidity and deformity in its place.

Hence, an old woman is a kind of new being, differ ing from the mature woman in all her chief characteristics ; and so odd is this felt to be by the vulgar, that it is sometimes made by them the subject of ridicule or of reproach. No change so remarkable takes place in man, because there has in him been no necessary out-of-proportion in any of the systems.

This final change in woman is the more remarkable, because old age in her is, in other respects, less marked than in man ; her hair does not become grey so speedily ; she rarely becomes bald ; and, with little suffering, she in general attains an advanced age.

That this disproportionate development of the vital system is the cause of the earlier puberty of woman, is further illustrated by the time at which some VARIETIES OF THE HUMAN SPECIES attain that period, independent of such influences as climate, aliment, temperament, &c.

This is remarkable in the Mongolic or north-eastern

broad-faced variety. Not only in China and Japan, but even in countries much colder than our own, does puberty commence in the female sex much earlier than with us. A French writer asserts, that a Kalmuc or a Siberian woman of the Mongolian race is marriageable at the age of thirteen even in a climate as cold as that of Sweden, whilst a Swedish female is scarcely so at fifteen or sixteen; that, still further north, and even on the confines of the icy sea, the Samoeides are nubile at eleven, and are frequently mothers at twelve; that the women of Lapland begin to evince maturity at twelve; and that the same appears to be the case with all the races of the polar regions,—as the Ostiacs, the Yakoutes, the Kamschatdales, and even the American Esquimaux.

This precocity has, indeed, been assigned to other causes than that to which I have ascribed it. Virey imagines that the early arrival at puberty amongst Mongolic nations may arise partly from the smallness of their stature, but, in a great measure, from the nature of their fish diet, which is supposed to be of a stimulating and aphrodisiac quality, and from dwelling continually in subterraneous places subject to the suffocating heat produced by the vapour of water poured upon hot stones.

The inadequacy of these causes, which apply but to a few of the Mongolic tribes, is evident to every observer of nature. But no one can notice the large vital system of the north-eastern people, without discovering a sufficient cause for this precocity, in the vast developement of that system. In all the sketches of women of the Mongolic variety, which have been

furnished by our recent voyagers, the trunk, which contains the principal organs of that class, is large, the abdomen wide and prominent, the mammæ extensive, and their habits as to food correspond. These natural organic causes apply, moreover, to all the women of the Mongolic variety, whether they inhabit cold, or temperate, or warm climates; and they can alone account for the early precocity of all. It is a miserable physiology which, finding an event common to a whole race, must seek, like this of Virey, a different cause for the same event, in every different section of that race.

Upon the same natural principle, which I have now pointed out and illustrated, there are also some FAMILIES and some INDIVIDUALS in whom we may expect this precocity.

Peculiar temperament naturally produces, in each person, some variation in the period of puberty. A girl of sanguine temperament must be earlier subject to a condition characterised by fullness of the circulating system and general excitement, than one in whom the lymphatic temperament predominates.

Such is the great natural, organic and fundamental cause of early puberty, which is, however, liable to modification from various external influences.

Of these, the most extensive in its operation is, the

TEMPERATURE OF CLIMATE.

As heat increases the vital energy in all organized bodies, and renders their growth more rapid, it must necessarily hasten the period of puberty. It is indeed notorious, that warm climates increase the de-

velopement of the reproductive organs, and excite erotic desires in both sexes.

This cause, moreover, if operating with great force during many ages, must produce organic effect so permanent, that they will remain long after removal from its direct or immediate influence. Individuals of the Ethiopic variety, even when transported to Europe or North America, arrive at puberty sooner than the white population.

On the contrary, the inhabitants of low moist countries receive a flaccid and cold temperament that naturally retards puberty; and, under all circumstances, they long retain it.

A second cause that modifies the developement of puberty, is the quantity and quality of ALIMENT.

Very nutritious food, stimulating meats, aromatics, the habitual use of coffee, wine, liqueurs, &c., greatly accelerate this period. Farinaceous substances, roots and vegetable diet, and even the habitual use of milk, cheese, &c., rather retard it.

Hence we observe, that the rich and the inhabitants of towns, who eat animal food and live in abundance, reach maturity sooner than the poor and the peasantry, who rarely eat meat, and can obtain but a limited proportion of bread or of less nutritious food. Hence, also, we see that well-fed persons are capable of reproducing at an earlier period than those who have suffered from scarcity, or who have been compelled to use unwholesome or unnutritious aliment.

The use of stimulating and aromatic lotions amongst the rich, is also a sure means of accelerating puberty.

A third cause, modifying the developement of puberty, is the MORAL CONDITION. To this must be imputed the difference, independent of aliment, which we observe in this respect, between women of towns and those of the country.

In the former, the mode of living differs according to the degree of opulence; but even the poor struggle to imitate the rich, and many other circumstances multiply excitement—as the reading of fashionable novels, voluptuous pictures, licentious theatrical scenes, conversations upon love, the constant proximity of the sexes, exciting dances, and many other causes, some of them of still more injurious character. The result is, that persons thus excited almost always reach puberty several years earlier than those who pass their childhood in the tranquillity of rural life. Puberty may then occur about twelve years of age—a premature developement, which diminishes strength of body and vigour of mind, deteriorates all moral qualities, and is extensively fatal to life and its permanent enjoyment.

In the country, on the contrary, the children of the peasantry are brought up coolly, are much in the open air, and of necessity actively employed. Toil directs the blood and the vital powers chiefly to the organs of motion, and augments perspiration. The locomotive system consequently increases at the expense of the vital one; and the developement of the bones and of muscular power predominates over every other. Amongst country people, moreover, the manners are generally simple, the sexes are less in contact, and their

presence has less influence. Hence, in the country many girls do not reach puberty before eighteen.

It has been observed that, at all times, the RETARDATION of puberty retards also the developement of the intellectual powers, but preserves energy and freshness to the sentiments, and developes vigorous bodies; and that if, in woman, this state be prolonged after the ordinary period, she appears to approximate to man both in some of her tastes and in some of her external characteristics.

In taking a general view of the period of puberty thus modified, it appears that, in Europe, women reach it later in the north than in the south. In some elevated northern regions, it does not occur till after twenty years of age. In our own country, it occurs from fourteen to sixteen in girls, and from sixteen to eighteen in boys. In most parts of France, puberty in women commences usually at fourteen years of age; and, in the southern departments and the great towns, at thirteen. In Italy, it takes place at twelve. This is also the case very generally with the Spanish women; and, at Cadiz, they often marry at that age. In Greece, it is not unusual for puberty to occur at ten years of age. In Persia, according to Chardin, it occurs at nine or ten. Nearly the same is the case in Arabia, Barbary, Egypt, Abyssinia, Senegal, and various parts of Africa. Thus, puberty in women commences generally, in tropical climates, from nine to ten years of age.

This early developement of the reproductive organs and functions is by no means advantageous. In the

nations that reach maturity early, the union of the sexes before the completion of growth diminishes the stature of young persons; beauty fades and perishes at a tender age; and they become aged early: *citius pubescunt, citius senescunt.* Their old age is a long one. On the contrary, the northern nations, who more slowly arrive at maturity, obtain sufficient time for strengthening of the body; and they retain their strength, youthful aspect, and reproductive power to an advanced age.

### *The Changes caused by Puberty.*

When puberty takes place in a regular manner, it produces a general change in existence, new relations to society are created;—in short, the child ceases to be so, and its relation to the species is proclaimed by characteristics which more and more tend to distinguish the sexes.

---

## SECTION II.

### CHANGES IN THE LOCOMOTIVE SYSTEM.

It is at this period that we often observe youths to increase suddenly several inches in stature; and if the growth be equal throughout the body, it forms handsome individuals.

There often occurs, however, at this period, a weakness of the muscles, with a great developement of the

bones, and especially of the joints, which gives to young men a clumsy and awkward appearance.

While, moreover, growth is proceeding in all directions, the weaker parts appear not always to receive sufficient nutritive supplies, and the strong parts acquire an excess of energy: hence we frequently observe something out of proportion at this period.

Upon the whole, however, the muscles, as well as the bones, acquire greater developement and vigour, and the arms and legs increase in size and power. Their muscular forms appear, indeed, the more developed, because their cellular tissue sinks down, in consequence of the diminution of its vital activity.

A young man consequently possesses muscles more square, limbs more robust, a firmer gait, a bolder demeanour.

The motive organs connected with the voice are not less affected than those of the general system. The hyoid bone, or bone of the tongue, is frequently completed about eighteen; and the muscles of the glottis then acquire a peculiar increase of growth, which, in young men, renders the voice lower by an octave.

In young women, also, the muscles of the glottis receive an increase and a vigour which confer force and brilliance upon speech. "Hence," says a French writer, "young girls like to sing and to display the attractions of their voice."

## SECTION III.

### CHANGES IN THE VITAL SYSTEM.

The GENERAL INFLUENCE of puberal developement is, at an early period, manifested in the organs of digestion, by the want of much food, and by deranged appetite. There naturally follows a superabundance of those humours that nature had previously applied more exclusively to growth. The power of the arteries augments, and the circulation assumes an unwonted activity. All the vital functions dependent on this are executed with vehemence. The chest increases, and respiration becomes free. The blood also, being acted upon by a stronger impulse, produced probably by a more powerful excitement from the nerves, their organ the heart, warms, colours, and communicates fulness and freshness to the system.

Such changes in the state and circulation of that liquid from which all others are formed, necessarily bestows, on each of these, qualities, and communicates to them impulsions, of a corresponding description. Those vessels which enter into the secretory organs redouble their action; the glands of the neck, breasts, arm-pits and groins, swell and sometimes become painful. This tendency necessarily and especially extends towards the glandular or more essential parts of the reproductive organs.

There is this, then, in common to both sexes at the time of puberty, that the blood is specially directed towards the parts subservient to reproduction; and, as

this is accompanied by increased sensibility, these organs awake from their torpor and rapidly expand. They are then no longer subordinate, but become a powerful source of vital activity, and have a general influence over the whole of the economy.

In the MALE, the flow of blood towards the reproductive organs, accompanied by sensibility, causes secretion. A sensation of heaviness, however, and a general numbness, affect the loins and the vicinity of these parts, and a confused tumult pervades the body. Meanwhile, the external reproductive organs are further developed.—In some persons, it should be observed, the testes remain, during infancy, concealed in the cavity of the pelvis; but, at the period of puberty, they descend.

The down which afterwards forms the beard, begin to grow; and it is now that hair makes its appearance in the arm-pits and on the chest, &c. and that the whole body is covered with a still softer down. It is at this period, also, among animals, that the production of horns of certain callous protuberances takes place.

In some animals, the reproductive liquid communicates to all the other liquids a strong odour, which causes both the species and the sex to be easily distinguished.

In the FEMALE, the ovaries secrete a particular liquid, which concurs in furnishing elements for the embryo. This is contained in the vesicles which are denominated ova, as these are in the ovaria.

There is now felt a weight about the loins and a general supineness. The matrix receives an increased

supply of liquids, and becomes a centre of actions with which the vital powers are greatly connected. An excess of vitality would seem to pass also to those parts that are sympathetically connected with the ovaries and matrix. The canal of the vagina, though pressed by the swelling of the neighbouring organs, becomes capable of dilatation, as well as of acquiring an intense sensibility. The nymphæ swell, redden, and become highly sensitive; the clitoris is developed, and the hymen is distended.

The cellular tissue surrounding the external reproductive organs has a greater quantity of fatty matter deposited in its cells, in consequence of which it swells, and gives an elastic contraction to the vulva. The bones of the pelvis augment in size, width, and strength.

The developement of the mammæ increases in proportion to the greater activity of the matrix. The lobes of which they are composed augment in size, and are separated by fatty masses; their lacteal vessels acquire a state of erection; they become rounded; the nipples enlarge, and acquire a lively sensibility; and they thus form in front of the chest very considerable firm projections, that at once fulfil the first object of nature.

A general excitement appears to be given to the cellular tissue, which pervades all parts of the body, and which, being replete with juices, fills up the interstices of the muscles, communicates to the body a soft, elastic fulness, and, renders it projecting, defines its outlines, and forms those fine and delicate contours which are constant objects of admiration.

The developement of the mammæ, already described, generally precedes the first appearance of the catamenia, and is their indicator. The matrix then receiving a remarkable activity, the blood flows thither, and determines a plethora, which is monthly discharged.

The reproductive organs in woman now no longer subsist in a subordinate condition, but, on the contrary, dominate over the whole animal economy.

### *Chlorosis, illustrating these Changes.*

Instead of the natural progression of these phenomena, there sometimes occurs a state of debility, an absence of excitability, in those organs by which the female participates in reproduction. This appears to cause the non-appearance of the catamenia, and of the other phenomena of puberty, as well as great derangement of the general economy, evidenced in extraordinary tastes and depraved appetites.

The majority of chlorotic girls eat with avidity salt, plaster, hair, charcoal, sealing-wax, and drink vinegar and a variety of other unnutritious substances. This is generally accompanied by disorders, more or less intense, of the digestive organs, a softness of the flesh, and the almost œdematous swelling of the lower members, a discoloration of the exterior of the body, a complexion pale and sickly white, with a greenish tint, sunken eyes, extreme nervous susceptibility, and a multitude of nervous disorders.

That these maladies depend on the state of the organs of reproduction, is proved by their yielding in proportion as the activity of these is increased; by

their being remedied only when the matrix and the ovaries enter into the regular order of their functions; and by the possibility even of curing them suddenly, by leaving a free course to the exercise of those faculties which have just been developed.

Under these circumstances, it becomes dangerous to increase the young woman's desire for inactivity, or aversion to society; and it is wisely recommended, that she should be induced to read works of imagination, to cultivate music, painting and poetry, and to pass from study to amusement. With those interested in her, it is urged, that every opportunity should be seized of procuring for her lively and pleasing amusement; that she should be constantly led to combat her natural frigidity, and increase her activity.

*Natural Defects, illustrating these Changes.*

The observations of the most accurate physiologists have shown, that those women in whom the matrix and the ovaries have remained, owing either to organic fault, or defect of sensibility, in complete repose during the whole of their lives, have always had forms and manners very similar to those of men—a sufficient proof that their presence gives the feminine character.

Morgagni observed that the skin of sterile women is commonly coarse, and destitute of that softness and delicacy which are peculiar to the female sex. Nuns, as well as old women, often present moustaches and beards, which made Bartholine say, "Ob desuetudinem virorum et mensuum defectum barbatæ fiunt."

*Extirpation, illustrating these Changes.*

When young pullets are made capons, by cutting out the floating horns of the matrix which join the ovaries, the operation prevents their laying eggs, and makes them avoid the male. These mutilated females live solitarily, avoid herding with others, and are useful only to bring up the offspring of others.

In the same manner, as observers worthy of credit assures us, in women from whom the ovaries have been removed, erotic desire diminishes, the catamenia cease, a beard appears, the mammæ fade away, and the voice becomes rough; in short, the results of that operation in women are generally the reverse of those which occur to men from the operation of castration.

It can scarcely, I think, be better proved that the female character depends on the presence of the ovaries.

*Retardation in the Male, illustrating these Changes.*

If the retardation of puberty in the male is of long continuance, his osseous and muscular parts gradually approach, in their forms, to those of the female, and give a corresponding resemblance to his general figure. He even presents that greater proportional size of the pelvis which characterises woman, and he consequently walks similarly, describing a greater arch around the centre of gravity.

In this case, as usual, the condition of the locomotive system is participated by that of the voice. In some of these persons, the voice is as acute as in woman.

It should be added, that the whole texture of the body is more soft, and that, in these cases, the physical condition appears always to be accompanied by a corresponding moral disposition.

Under these circumstances, stimulating and strengthening food, as well as an active life, travelling and manly exercises, tend to give tone to the organs

*Castration, illustrating these Changes.*

How powerful the irradiation of the reproductive organs must be, is also proved to us by the effects of castration.

The ancients succeeded in depriving men of the procreative faculty, by destroying the testes by means of the long-continued application to the scrotum of the inspissated juice of the hemlock.

We are also told that the priests of Cybele cured mania by means of actual castration:—"Qui ante castrationem maniaci erant, sanam aliquanto mentem ab illo recuperant." Aetius says that some who were tormented with priapism, were castrated by their own hands:—"Novimus quosdam audaciores qui sibi ipsis testes ferro resecarunt." It is well known that Origen mutilated himself, in order that he might no longer have to struggle continually with an erotic temperament.

In modern times, castration has been performed in western Europe, principally in Italy, in order to provide soprani singers for the pope's chapel and the stage of the opera. In Naples, at one time, there were barbers' shops with the sign, "*Quì si castrano ragazzi a buon mercato.*"

In those times, an absurd notion prevailed that the quality of voice thus attained, would, in some measure, depend on the state of the weather at the time of the operation. The occurrence of bad weather was thought extremely prejudicial: hence the anecdote of Paesiello, that when one day, I forget whether at church or theatre, a chorus of eunuchs were uttering discordant sounds, he rose in a rage and cried out to them, "Maledetti da Dio foste voi tutti castrati in cattivo tempo?" at which old Ferdinando exclaimed, "Bravo, bravo, Paesiello!" and the congregation loudly applauded.

In consequence of this operation, not only do the desires disappear, but the general organization is singularly affected.

Eunuchs increase in stature like other men, and even more in proportion; but they have a configuration and habits very analogous to those of women.

In them the bones, which form the prominence of the haunches, are much expanded, and therefore form a pelvis of uncommon capacity; the thigh-bones are less arched than in man; and the knees incline more inward, which proceeds from the greater distance existing between the heads of the thigh-bones, in consequence of which eunuchs, like women, when they walk, render very evident the change of their centre of gravity, marked as it is by the arch which they describe at every step. The curvatures of some bones also change direction. The articulations swell. There are few eunuchs who have the limbs muscular, athletic and well marked: they are generally round, soft and covered with a fine and delicate skin. The muscles

themselves become enfeebled, the strength decreases, and even the pulse loses its elasticity.

To be convinced of the influence which the testes exercise over muscular power and courage in every species of animals, it is sufficient to observe the difference between a ram and a tup, a bull and an ox, a cock and a capon.

The narrowness of the larynx is a remarkable characteristic of the eunuch. All who have examined the larynx of castrati, to discover the reason of their preserving the infantine voice, have acknowledged the truth of this observation. Dupuytren, in dissecting the larynx of a person who had been castrated in infancy, was enabled to satisfy himself of this. He observed that, in this person, the larynx was less, by one-third, than in adults of the same age and stature; that the glottis was much narrower; and that the laryngeal cartilages were little developed; so that all these parts resembled those of a woman or a boy. The change that takes place in the voice of castrati is well known; and nearly the same changes are observable in castrated animals.

The lymphatic glandular system of castrati is generally gorged and inert. The cellular tissue becomes more abundant, more loose, and more replete with fat. It is, indeed, known to be a common practice to castrate animals, in order to fatten them, and to give to their flesh a more delicate taste. Hence the older writers tell us, "Cutis castratorum tenera est instar mulierum et levis," and "Eunuchi omnes habent alvum laxum, levitatem cutis."

I have now to mention some of the most remarkable approximations of castrati to women.

Chlorosis, the peculiar affection of young girls, does not spare the eunuch. Cabanis tells us that he observed this disease in various young men, with this difference, that in them it was of short duration, and disappeared with age, whilst in castrati it remained a long time, nor had age any influence over it.

A fact which is constant, though little observed, is, that castrati are subject to periodical hæmorrhages, which ordinarily proceed from the hæmorrhoidal vessels. In this case, it would seem that the blood necessary to the developement of the reproductive organs and of the beard, and likewise that destined for the secretion of the reproductive liquid, is directed towards the hæmorrhoidal veins, and distends them, so that, being debilitated, they open and throw it out. There is, then, established a hæmorrhoidal flux, which gradually becomes periodical. Ossiander made this observation even in many beardless men; and he also observed that bearded women have no catamenia.

The change which takes place in the moral dispositions of castrati is equally remarkable.

Their understanding in reality appears to suffer from the absence of those impressions which give to the brain of men so much activity, though that activity is excited by sexual impressions. It is, indeed, asserted that this faculty is altered from the moment when the knife cuts them off from nature. Sinibaldi says, that the minds of eunuchs are changed, and be-

come artful and depraved, and that there was never one of first-rate understanding.*

Even the castrati who acquire some celebrity on the stage of the opera, and in the churches of Roman Catholic countries, owe a great part of their merit rather to a good organization of the organs of hearing and of voice, than to their understanding. In general, they infuse even into music, neither feeling nor expression; and it is asserted that not one of them was ever able to compose a decent air.

Huart asserts that even the person endowed with remarkable genius and great ability, when the testes are removed, begins to lose his genius; and he adds, "if any one doubt this, let him consider that out of a thousand eunuchs who have devoted themselves to learning, scarcely one has become learned."†

The castrato is cowardly and incapable of great enterprises. Narses is perhaps the only imposing exception to this rule, by having displayed some talent in war. Cut off as he is from all social relations, he can think only of himself, and becomes an egotist from necessity.

Eunuchs have, moreover, all the defects of feeble beings. Imperious and despotic in good fortune, they become vile slaves under reverses. They are perhaps

---

* Eunuchorum animos mutari, evadere dolosos ac pravos, nec unquam castratum fuisse optimi intellectûs.

† Testatur nobis experientia, ille qui testibus orbatus fuerit, quum ante insigni ingenio multâque habilitate præditus fuerit, posteaquam exacta illi pensilia sunt, ingenium perdere incepit. . . Quod si quis non credit, consideret uti ego quidem pluries feci, e mille spadonibus qui litterarum studiis operam addixere, vix unum aliquem doctum evasisse.

the most degraded class of the human species—"cowardly and deceitful, because they are feeble; envious and wicked, because they are wretched."

The greater number of castrati see women only to slander them. It is, perhaps, a rage on account of their own degradation that renders them fit guardians of the harem: it is not improbable that "they find a satisfaction in opposing the slightest amusements of women, as it is the desire of every feeble and incapable being to see others reduced to his own state of impotence."

The organs of reproduction doubtless dispose of much of the sensibility and nervous action of the cerebro-spinal system. But when this ceases, by the amputation of the former, these nervous influences are, no doubt, dispersed over the other organs. Hence we observe that castrati are subject to a morbid sensibility, become liable to nervous diseases or vapours, as they are called, and, on the slightest mental commotion, fall into deliquium. Often a profound apathy takes possession of them, and they sink into a gloomy and fatal melancholy.

It has, moreover, been observed that, even in the case of early impotence, as well as in certain diseases, which, without producing that state, particularly affect the organs of reproduction, the whole existence is singularly affected; that in men who in the vigour of age become suddenly impotent, although they are otherwise in good health, are much occupied, and habits of moderation cause little regret for the desires which they have lost, yet their disposition becomes gloomy and morose, and their mind appears, ere long,

to be daily enfeebled; and that (which is most remarkable) these conditions of the reproductive system particularly dispose to superstitious terror—a singular effect, says Cabanis, which appears always to follow a very marked degradation of the reproductive organs.

The differences as to the mode and the period of castration, produce much difference in its effects.

When men or animals are subjected to this operation at an early age, they are much more denaturalised than when it is performed after puberty.

In the former case, the cause of the great phenomena which characterise puberty is destroyed, and the members never acquire their beautiful masculine forms; the vocal organs remain in the state of imperfection in which they are found at first; the voice continues harsh and acute; and the beard never grows.

When, on the contrary, castration takes place after the age of puberty, the nature of man is less changed; the larnyx dilates and grows rapidly; the voice assumes its grave and powerful tone; the beard remains; erotic desires continue for a long time; and the external manifestations of masculine power occur.* But reproductive power is lost for ever.

The same is observed in various animals. The characteristic signs of the masculine sex do not appear. An example is furnished by the stag, in which horns grow at the period when he becomes fit for reproduction. If he is castrated before this, he remains

---

* "Et majoris petulantiæ fieri," says Arnobius, "atque omnibus propositis pudoris et verecundiæ frenis in obscœnam prorumpere virilitatem."

for ever deprived of that ornament. But if that operation be performed after the horns have gained their full growth, they neither fall nor are renewed.

It appears, also, that the complete amputation of all external organs of reproduction, destroys the desires associated with them much more completely and more generally than partial amputation.

On this, Mojon, to whom I am indebted for many facts on the subject, makes the following observations, which I leave in the original Italian.

"'E riconosciuto che l'uomo castrato, benchè sterile, è peraltro suscettivo di gustare in parte i piaceri del coito, purchè non gli sieno state amputate tutte le parti esterne della generazione. Ciò che gli rimane non acquista che pochissimo accrescimento, restando presso a poco nello stato in cui era prima dell' operazione. Un fanciullo mutilato all' età di sei anni, si trova a diciotto anni, per ciò che spetta al pene, nella stessa condizione di quella sua prima età. Coloro al contrario che hanno sofferto l'operazione all' epoca della pubertà ed anche più tardi, hanno la verga press'a poco come quella degli altri uomini, e capace di erezione più durevole ed anche più ripetuta che nei non castrati.

"Giovenale rimprovera alle Romane i loro eccessi con gli eunuchi.

> Sunt quos eunuchi imberbes ac mollia semper
> Oscula delectent, et desparatio barbæ,
> Et quod abortivo non est opus.

"Rainaud, nel suo libro De Eunuchis, narra molti esempi di commercio impuro tra donne e uomini mutilati; ed egli si ride della confidenza che molti hanno

in costoro. Andrea De Verdier dice la stessa cosa, appoggiando la sua opinione alle sentenza di Apollonio Tianeo contro un eunuco del re di Babilonia che fu sorpreso a letto nelle braccia d'una favority del re stesso.

"Mi è noto, dice P. Frank, un luogo popolato in cui quattro castrati s'arrischiavano ad imprese che non avrebbero tentate nello stato loro naturale, ed in cui una parte del bel sesso non senza grave scandalo e pregiudizio aveva seco loro stretta tal practica, che il governo non potè più lungamente dissimularla.

"Non potendo soddisfare che al desiderio della carne, alla semplice sensualità, alla lussuria, alla dissolutezza, essendo nell' assoluta impossibiltà di procreare, essi divengono più propri ai delitti che gli uomini perfetti; e sono più ricercati dalle donne depravate, giacchè loro danno il piacere del matrimonio senza ch'esse ne corrano il rischio. Essi emettono con qualche poco di voluttà un umore mucoso che probabilmente è segregato dalla prostata.

"Amurat III. essendosi avveduto che un cavallo castrato copriva una giumenta, fece tagliare ai suoi eunuchi, rientrando nel seraglio, tutte le parti esterne della generazione. Vi è chi pretende che sia da quell' epoca, che, oltre i testicoli, si taglia ancora la verga agli uomini destinati per la custodia de' serragli."

No proofs, then, can be more complete than those which we possess of the omnipotence of the ovarian influence over the character of woman.

*The Catamenia.*

Woman is every month subject to a sanguineous

flow from the matrix, an universal and essential event in the life of the female.

The cause of this is evidently the same with that of her early puberty—the disproportion in which the vital system is, to the locomotive and nervous systems.

Thus, the female becomes possessed of a greater quantity of blood than is required for her individual preservation. Thus, she is enabled, when pregnant, to supply a sufficient quantity for the nourishment of the fœtus. Thus, when suckling, she can afford the vast secretion of milk. And thus, at all other periods, this blood, being voided, furnishes the catamenial flow.

The law which regulates the period of this occurrence, seems to be of extensive influence in nature. The erotic orgasm of quadrupeds and birds occurs about the vernal or the autumnal equinox: but, if its purpose be not attained, it is said to resemble the catamenia in woman, by recurring at about monthly periods.

The first period of the occurrence of the catamenia is the same as that of puberty. But causes of excitement hasten it, and reproduce it when its interruption has been caused by debility.

Its precocious occurrence produces weakness and premature old age.

Any common account of this event is sufficient for our purpose.

The first eruption of this flow is announced by signs denoting fulness of the circulation, and by phenomena accompanying disturbance and even change in the

other functions. There is a general lassitude and anxiety, indefinite pains, or numbness of the loins, arm-pits, pelvis, thighs and fundament. The head becomes heavy, heated and painful; respiration ceases to be as free as usual; and the pulse is full, unsteady and quickened. The mammæ swell, harden and suffer a painful tension. The cutaneous system, particularly the skin of the feet, is frequently the seat of superficial inflammations, slight efflorescences and even pustular blotches. The eyes are generally red, weak and watery; the eye-lids, the lower one especially, assume a brownish tinge, and bleeding at the nose and spitting of blood are by no means uncommon.

The external reproductive organs, for some time swollen, are moistened by a lymphatic humour, at first of a light colour, but in a few days assuming the character of red and vermilion-coloured blood.— The vital excitement then decreases, and a general loosening of the whole economy takes place; the eyes lose their brilliance, become dull and sunken; and the lower eyelid is bounded by a livid circle.

This is followed for some time by a state of feebleness and languor. At last, the uterus, which had fallen a little, rises and resumes its position; it is then fit for conception; everything is again in order; tranquillity is again established; and the object of nature is fulfilled.

Nearly similar symptoms, though generally much less severe, announce the return of the flow. At first, it occurs at irregular periods; and sometimes it does not reappear for several months; but it constantly

tends more and more to assume the periodical character.

The vessels of the whole of the matrix, but principally those of its fundus or bottom, appear to be the immediate sources of the catamenia.

It continues ordinarily from three to six or seven days.

Its quantity is generally from two to three ounces; and, in temperate climates, the most sanguine woman does not discharge more than from eight to twelve ounces.

This quantity varies according to climate. The Lapland and Samoiede women void but a very small quantity; and the Greenland women, scarcely any. The nearer we approach the equator, the more the quantity increases; and, in Italy and the south of Europe, it sometimes reaches twelve ounces. Under the tropics, it is said to rise to twenty ounces; and it sometimes occurs twice in a month.

There are great varieties, in this respect, according to constitution. In general, it is more considerable in dark women of ardent temperament, than in fair women of milder character. It is also more copious in towns, and among sedentary women, and those who indulge in pleasure, than among countrywomen and those whose life is laborious and simple.

The catamenial blood is as pure as that of the general mass; though it is rendered less so in passing through the vagina, owing to the secretions with which it is then mixed. These secretions proceed from small glands at the internal surface of the vagina and of the external parts, glands perfectly analogous to

those which, in female animals, during their œstrum, furnish a secretion so powerfully odorous, as to produce near them, emanations by which the male is attracted.

This evacuation recurs every month with great regularity, except during pregnancy; and it corresponds in some females to the phases of the moon. Many women are subject to it about the time of the new moon. A vast number of cases, no doubt, deviate from that order; and there are women to whom it occurs twice a month.

Generally, this flow does not begin before the maiden is nearly fit to become a wife and a mother.

As it does not occur until woman is capable of reproducing, as she is commonly sterile when it is permanently wanting, and as she becomes so when it finally ceases, it was natural to conclude, that the catamenial blood, withheld during pregnancy, becomes the means of nourishing the fœtus. Hence its occurrence has been regarded as one of the essential conditions of fruitfulness in woman. Yet there have been fruitful women who never were subject to it.

The periodical return of this flow constitutes, from about fifteen to forty-five, a function with which in woman every other is connected. And though pregnancy and suckling suspend this phenomenon, they doubtless do so only by changing its object and direction.

During the whole of this period, the exercise of this function is indispensable to health; and if it be irregular in its returns, or be suppressed, beauty as well as health disappears.

When it finally ceases, woman loses the power of

conceiving. Among northern nations, there are many women who conceive after the age of forty-five or fifty, and men who are capable of begetting at the age of seventy. Among the eastern nations, the reproductive power decreases after thirty. Thenceforward, accordingly, the women of these regions confine themselves to domestic duties and the education of children.

In all cases, when age finally destroys the energy of the reproductive organs and the faculty of conception, greater power is obtained by the rest of the organization; the mind increases in clearness, extent and vivacity; and even woman is more under the influence of reflection than feeling.

With intellect, masculine character is assumed; an additional quantity of hair makes its appearance on the face; and the voice becomes rough. In the same manner, female quadrupeds and birds, after the age for reproduction, acquire the darker fur or plumage of males.

After the time when this flow ceases, the critical age, women may expect to live longer than men.

---

## SECTION IV.

### CHANGES IN THE MENTAL SYSTEM.

*Mode in which the Uterine Influence produces Changes in that System.*

It is well known, that the number of vessels in animal bodies is so much the greater, as they are

nearer the period of their first formation. This, as Cabanis observes, not only bestows great facility in the course of the blood, and the various liquids, and great readiness in the exercise of the dependent functions, but the sentient nervous extremities are thereby placed in a state of remarkable expansion, which increases the means of impression, and gives to every sensation a vividness which it can attain only at that age.

These nerves carry sensibility and action to and from all the organs of the body ; and each organ, by the impression it receives and the functions it performs, influences the whole nervous system. Hence, the effects of a local affection frequently become general.

The more that parts are supplied by nerves derived from different trunks, or from trunks formed by different nerves united, and the more their communications are consequently free and rapid, the more ought their influence to produce phenomena, sudden, varied, and extraordinary.

Now, the nerves of the reproductive organs in both sexes, though not very remarkable as to volume or number, are formed from various other nerves ; they have relations with those of all the viscera of the abdomen ; by means of the great sympathetic nerve, which forms among these a common union, they are connected with the whole nervous system ; and it is by these communications that the matrix is interested in almost all the affections of the female.

The organs of reproduction, then, by their multiplied connexions, their great sensibility, and their extensive functions, ought naturally to react with

power on the nervous centres of life, on the brain, and on all the highly sensible parts with which they are connected; and this reaction ought to be especially remarkable when their functions commence.

At the period of nubility, accordingly, the matrix forms a centre, whence innumerable nervous irradiations issue; and the activity of that vital centre increases daily. Hence the effects which the reproductive organs have upon the whole economy of woman—talents bursting forth suddenly towards the age of puberty—a newly inspired desire of pleasing—emotions of jealousy—not only sexual love, but that of children, and, finally, strange and wayward cerebral impressions, caprices of affection or of antipathy, which submit not to her control.

We are told, however, that those facts which would thus seem to prove the influence of the matrix over erotic desires, and the development of the moral phenomena of puberty, are contradicted by facts of a nature diametrically opposite. Thus, if, on one hand, females have been met with who, throughout life, have exhibited the most perfect indifference, and, after death, have presented no traces of the matrix, yet, on the other hand, women have been known entirely destitute of the reproductive organs in whom passions existed even in an excessive degree.

The error here committed is, in not distinguishing between the matrix and the ovaries, and in considering the former as the fundamental and more important organ.—Wherever erotic passions are present, ovaries will be found: wherever these passions are absent, no ovaries will be discovered.

Thus, all the changes which occur in the feelings and conduct of girls at puberty, are only the consequence of not less remarkable physical changes.

*Consequent State of the Mind previous to Love.*

Under these circumstances, the sports of infancy no longer afford pleasure to girls; and they neglect those companions younger than themselves whose society formerly pleased them. They feel, indeed, a void in the heart, which they strive in vain to fill.

The innocence, candour, frankness and gaiety of childhood continue, indeed, for a time, which varies with temperament and education. Ere long, however, they check their frankness and gaiety; they become timid, reserved, absent and thoughtful; they find pleasure in silence, avoid observation, and hanker after solitude.

The memory, if employed, appears to retrace occurrences which were previously disregarded, but which young women now imagine may assist them in unravelling the seeming mysteries of their condition. Imagination, however, by preventing their ideas from being fixed on any particular point, only increases their trouble, and adds to their embarrassment. They are plunged, therefore, into a state of continued reverie, which, though it has no definite subject, is not without attraction. They sigh, without knowing its object, and feel relief in tears, which are quite unaccountable.

The puberal and catamenial revolution, however, is sometimes complicated by symptoms indicating a sin-

gular derangement of sensibility, and establishes itself with great difficulty.

The maiden then experiences strange inequalities of temper, and unaccountable caprices, feelings of joy, sorrow, or anger, to which she readily yields, and even desire of death, or contemplation of suicide, long before she experiences the disappointments of love.

These phenomena were noticed by Hippocrates, who says—"We then hear women wishing for the worst calamities. They talk of throwing themselves into wells, or hanging themselves, and of seeking a death preferable to their situation. Sometimes, indeed, without being tormented with the idea of spectres, they appear to contemplate death with pleasure. When the attack is over, these patients make vows to Diana, carry their jewels to the temples, and hang their most precious dresses on the walls, deceived by the priests who require these sacrifices of them... I think that, in such an unhappy situation, the most certain remedy is marriage."

In this state of excessive susceptibility, reproof has been observed to drive a girl to despair, and expressions of regard, to inflame her into passion. Everything, therefore, which can irritate and maintain this sensibility, should be carefully removed.

Now, may be observed, not merely the preference which draws one sex towards the other, and is restrained by fear and reserve, but extravagant friendships, and secret confidences between individuals of the same sex. And in this way seemed to be first formed the greater number even of sympathetic and

benevolent dispositions, as well as romantic ideas, and illusions of every description.

Vague passions transport the youth ; and he becomes unbending, fiery and desperate at control. Gentler affections lead the maiden to love. This may render her insane ; and is indeed one of the great causes of insanity. Hence, it is a frequent remark, that madness scarcely ever shows itself in the first period of life.

It is at this period also, that, in young women, sometimes occur great fertility of ideas, and aptitude for the elegant arts, which afterwards give place to mediocrity. The same is sometimes the case with young men.

The age at which we have thus the greatest number of sensations, at which memory is so earnestly employed, in which imagination enjoys the greatest activity, in which new talents are thus excited, is also that in which are collected the greater number of ideas, and in which are perhaps first attempted those higher mental processes which afterwards distinguish the character. Thus, on the activity, the languor, or disorder of the organs of reproduction, would appear, in a great measure, to depend the elevation of genius, the abundance of ideas, the highest achievements of mind, or their utter and eternal absence.

The proof that, in woman, all this is produced by the influence of the ovaries, has already been seen to be, that, when these glands do not exist, when they remain in the torpor of infancy, or when they have been removed, none of these phenomena occur.

The nervous excitement attending the first appear-

ance of the catamenia is partially renewed at each monthly occurrence—sensibility becoming more definite and vivid. And this observation may be extended to the time of pregnancy.

At last, then, the mind of the young woman receives more accurate notions of an affection which is to be the principal affair of her life.

### *Love.*

From the physical state which has now been described, there results in woman a superabundance of sensibility, which seeks, as it were, to diffuse and to communicate itself.

All is then animated in woman. Her eyes acquire an expression previously unknown, and seem, by a sort of electric spark, to light up the amorous flame in every breast formed to sympathy. Her figure displays all the light and simple graces, which man is equally unable and unwilling to resist.

Now, accordingly, the sexes mutually feel a tender and vivid interest in each other. As each is the sole object of the other's desire, they at last see in nature nothing but themselves; extravagant imagination flings over both all possible excellences; they indulge in intoxicating dreams of beauty and perfection; and each becomes, in the conviction of the other, an absolute divinity. Even man thinks thus, although he has before his eyes the very ordinary mother and other relatives of his goddess—the perhaps repulsive beings whom she is destined in a few years to resemble.

One of the symptoms generally occurring to young people, which characterises nascent love, which con-

sumes a valuable portion of life, and which leads to derangements and disorders of every kind, is an indolent and idle melancholy.

The early stage of love is also characterised by a desire which is the cause of moral love—a desire to live in chastity, a feeling that enjoyment would debase the object of love. Each, then, values existence solely for the beloved being, and would cheerfully lose life for the object of idolatry.

While this insanity exists in man, even the name of the beloved person makes the heart beat; in her presence, a torrent of fire seems to fly through the arteries; the voice and the reason are nearly annihilated; self-possession is totally lost. Even when out of the immediate sphere of this influence, every thing takes its hue from this passion, and is called on to aid its progress. The lover, like all who suffer, desires to associate all objects in his interest; and he is ordinarily humane, beneficent and generous, because the want which he experiences, disposes him to feel for others.

The maiden begins to have more rational ideas of the relations of the sexes, and no longer deceives herself as to the position in which she must stand in regard to the other sex. This she is at last taught by love.

She then delights to dwell upon the good qualities with which imagination has invested her lover; he is ever in her mind; to him every thought is referred; he is the hero of all her romances of love; and his image is present in her dreams.

It is worthy of remark that, for the purpose of obtaining strong and vigorous progeny, nature has assigned to strength the preference in the love of the female. Hence all animals become bold and warlike at the season of amorous orgasm. Hence man is proud of his physical power, and woman loves conquerors; as Venus loved the God of War.

Nature fits the sexes for different parts. While the male is thus bold, the female is bashful.

Modesty, therefore, establishes an equilibrium between the superiority of man and the delicacy of woman: and enables woman to ensure thereby for herself a supporter, a defender; and while man thus barters his protection for love, woman, is a match for his power, and the weaker, to a great extent, governs the stronger.

In aid of the physical suitableness of woman, she employs two moral qualities, coquetry and modesty, which, though opposed in their first or immediate effects, contribute to one great end.

Natural coquetry, if the mere desire of pleasing and attracting by innocent artifices may be so called, exists long before the period when love modifies the character. The look of the girl, the sound of her voice, her language, her whole demeanour seem to court the affections.

With increasing opportunity, she learns what is passing in the minds of men, and understands the meaning of every look, word and action. Finally, she in particular perceives attention, distinguishes the look of affection, &c.—invaluable attainments for

her to whom nature has rendered it necessary to seduce and subjugate the stronger by the charms of beauty and grace.

Rousseau correctly perceived the relations of coquetry to the constitution of women, and regarded it as one of the happiest affections. Painting it even among birds, he says, "Step by step the white dove follows her well beloved, and flees from him directly he returns. If he remain inactive, she arouses him with gentle taps of her beak; if he return, she pursues him; if he defend himself, a little flight of six steps attracts him again: the innocence of nature contrives these allurements and this gentle resistance, with an art that the most skilful coquetry can scarcely equal."*

Defects are now concealed; charms are enhanced; and attention is called to them in every way. Dress becomes an important agent; and, at this age, its style is cheaper and in better taste than afterwards. Plain stuffs acquire elegant shapes; and every fold of drapery is calculated to produce the greatest effect.

Some notion even of the agreement, adaptation and distribution of colours is acted upon; and if women cannot assist the complexion by well-managed contrasts and harmonies, they at least produce an agreeable agitation on the organ of sight, fix observation

---

* La blanche colombe va suivant pas à pas son bien aimé, et prend chasse elle-même aussitôt qu'il retourne. Reste-t-il dans l'inaction, de légers coups de bec le réveillent; s'il se retire, elle le poursuit; s'il se défend, un petit vol de six pas l'attire encore; l'innocence de la nature ménage les agaceries et la molle résistance, avec un art qu'aurait à peine la plus habile coquette.

on themselves, avoid every offensive distraction, and render every movement, every attitude graceful.

"Ruinous whims," says Rousseau, "freaks of wealth, diamonds, rich draperies, and the splendour of strange ornaments, are tacit avowals of the outrages of time and the decay of beauty. Being no longer able to appear beautiful, women strive to dazzle; but young girls are too sensible of the value of their privi leges to abuse them in that way."

The importance of coquetry in the constitution of woman has now been seen. She thereby learns to increase her attractions; she cultivates every agreeable art; she derives from dress resources which at once improve and announce her taste; and she studies to acquire the graces. Coquetry also diffuses a general emulation to please, gives to society a cheerful aspect, and contributes much to the attractions of life.

This natural and useful sentiment is abused, however, when it becomes a desire to captivate all men, without attaching to any one—an art habitually practised. And when it is combined with excessive vanity, and supported by wealth, it perverts sensibility, and stifles all the affections and virtues.

Thus perverted, it leads to actions the most ridiculous or blameable. "Who," says Montaigne, "has not heard of the girl at Paris, who had herself skinned, solely to acquire a complexion of fresher hue?" And who, we may add, is ignorant how universally the natural beauty of the shape is sacrificed to the foolish mandates of fashion?

Maidenly differs from matronly form chiefly as to the slenderness or the thickness of the waist. No

wonder, then, that the maiden prefers her proper characteristic! But this is generally carried to an excess as ridiculous as it is frightful. Complete deformity of the figure is earned, only at the cost of deep weals cutting the sides to the quick, a dangerous compression of the chest producing aneurism, curvature of the spine, &c., a pressure upon the mammæ which may cause either swelling and cancer, or withering and absorption, a turning inward of the brim, and that general deformity of the pelvis, which, becoming too narrow to permit the head of the fœtus to pass, may render delivery possible only by the Cæsarian operation, or dividing the symphysis pubis, and separating with the knife the bones of the pelvis.

Modesty is not less peculiar to woman than coquetry. Under the influence of love, the young man exhibits his feelings; the modesty of the girl conceals hers.

By some, it is contended, that modesty is not a natural feeling, but one of social regulation. In our own days, it certainly seemed to be unknown amongst the women of Otaheite: they came naked to the South Sea voyagers when they landed, and offered to them the charms which they exposed, striving, too, to increase their effect by expressive movements and postures. On the contrary, we are told that, in ancient times, owing to the frequency of suicides at Miletus, the magistrates declared that the first female who committed suicide should be exposed naked in the public square; the Milesian women consequently became reconciled to life; and it is thence concluded that modesty is a natural sentiment.

Now, giving equal credence to the ancient story

and to the modern facts, it seems rational to inquire what conditions most remarkably distinguished the two races alluded to. Nothing is more striking in this respect, than that the Otaheiteans were nude, the Milesians clothed; and clothing, as I have shown elsewhere, has generated passions and created offences.

Under the influence of clothing, it is probable, as observed by Roussel, that modesty derives its cause in woman from a certain mistrust in her own merit, and from the fear of finding herself below that very affection which she is capable of exciting, and of which she is the object. This sentiment is more difficult to be overcome in women when they have any imperfection to conceal.

It is natural, at a period when sensibility is excessive, that this sentiment of modesty should reach a high degree of intensity. It is equally natural that, from that time, it should gradually decline.

In relation to herself, modesty restrains the maiden from yielding precipitately to tender feelings, and compels her love to assume that form by which nature has taught her so universally to express it—to present it under the mask of friendship, gratitude, and a thousand other guises.

In relation to the lover, it is remarkable that the first affections are presented to him under the appearance of estrangement. The maiden flies that she may be pursued by him, and his love is kept alive by modesty. It has been observed by all physiologists, that this disposition is not only necessary, but indispensable, for the continuation of the human race.

Thus even modesty is a means of attraction with

which nature inspires all females. But those who declaim against this know nothing of nature. Every separation, every obstacle renders desire only more urgent; and nature appears to have accomplished this in the only way possible among beings endowed with sensibility and locomotion.

Nature, then, leads man to the performance of the reproductive function by the attraction of pleasure.

---

*Addition to Castration in the preceding Section* III.

As an exception to the want of talent in eunuchs, should have been mentioned Aga Mohammed Khan, who may be called the modern Narses. He preceded the late Futteh Ali on the throne of Persia, was remarkable for the cruelty, treachery and guile, which usually characterise his anomalous class, but was also signally distinguished in the annals of his country, as a hero who first fought his way to the throne amidst difficulties apparently insurmountable, and then, in a short but glorious reign, humbled, or at least successfully resisted, the power, and prevented the encroachments, of Russia. His vigilance, in his long career (eighteen years) of blood, previously to and after his ascension to undisputed sway over Persia, is very remarkable. He seems to have had all the energy of an unmutilated man. He was capable of enduring any fatigue, and almost lived on horseback. The chase was his sole amusement.—He murdered his own brother after inviting him to his palace on pretence of kindness, and committed great cruelties on all who provoked his jealousy or his vengeance. He was at length slain by a domestic.

# PART II.

## SEXUAL RELATIONS ARISING FROM THESE CONDITIONS, AND CONNECTED WITH, OR LEADING TO, INTERMARRIAGE.

---

### SECTION I.

#### USEFUL GUIDANCE AND DANGEROUS RESTRAINT.

It has now been seen that, at puberty, life is superabundant; that that superabundance is employed in the reproduction of itself; and that, in doing so, the passions and the will are engaged. Accordingly, the habits contracted at this age are very powerful, and are intimately connected with future health or disease. Hence, at this age, the importance of

*Useful Guidance.*

Every effort ought, of course, to be made so to direct young persons, that they may be least exposed to the evils that now beset them.

Those who are too robust should be occasionally confined to a more meagre diet; and all the exciting substances which accelerate precocity should be care-

fully shunned, such as chocolate, ragoûts, meat suppers, and vinous or spirituous drinks. For the same reason should be avoided retention of urine and constipation, which attract the blood towards the parts whence it is desirable to withhold it.

The habit of cleanliness, practised from the earliest youth, becomes a valuable corrective at puberty.

An important subject of observation is clothing, and the necessity of habituating young people to cold, particularly with regard to the reproductive organs. "Trousers," it is observed, "either very warm, or lined with woollen stuff, are highly improper, both on account of uncleanliness, and consequences which it is desirable to prevent.

Young persons should not be permitted to lie on down beds; nor, if long sedentary, to sit on soft chairs, to which rush, or wooden bottomed ones are greatly preferable. Neither should they be allowed to remain in bed longer than requisite, or to lie down needlessly on couches.

While the languishings of love spring up in soft repose, strong exercise extinguishes tender sentiments, and at the same time produces a revulsion to the other organs. The history of the goddess of hunting is a philosophical allegory, which expresses the great truth, that bodily exercise extinguishes all violent disposition to pleasures. "Otia si tollas, periere cupidinis arcus," is a sentiment that ought never to be forgotten.

Care should even be taken to prevent young persons habitually leaning against anything, so as not to have all their muscles in action.

In lads, activity, so necessary to an equal distribution of the nutritive juices, must be fostered by all the means described by Donald Walker, in the most accurate and perfect work on the subject, entitled, MANLY EXERCISES, in which are described, and illustrated by plates, walking, running, leaping, vaulting, balancing, skating, climbing, swimming, rowing, sailing, riding, driving, &c.

To young women, exercise will be frequently necessary to prevent attachment to fanciful objects, as well as the tendency to dwell on those subjects which it is desirable to avoid. With this view, and eminently to improve personal beauty, the work of the same author, entitled LADIES' EXERCISES, illustrated by numerous plates, is absolutely indispensable. The work is not merely the only thing of the kind worthy of being named, but it is highly original, founded entirely on physiological principles, and strongly approved by the most distinguished members of the medical profession.

The directing of the habits is an important branch of education.

Ignorant mothers know not how frightful those habits are which they first teach by tickling. It is a modification of this, leading only to degrading sensuality, which the effeminate Indians practise under the name of shampooing—a kind of pressing and kneading of the naked body when they come from the bath, which is performed by the delicate hands of females instructed in the operation, and which leaves those subjected to it in a state of voluptuous debility, inconsistent with all manly faculties. This was practised

by the degenerate Romans, among whom women, on quitting the bath, were shampooed by slaves, for the almost avowed purpose, that, by means of the sympathy between the skin and the reproductive organs, certain influences might be excited. And it is the beginning of this art that senseless mothers and servants practice when they tickle children.

It is the duty of such persons, on the contrary, even to prevent children from sitting with their knees crossed, a circumstance particularly injurious, and from playing at such games as riding upon sticks, see-sawing, striding across the edge of a chair, or over the knees.

The back, also, and spinal marrow should never be directly exposed to the fire, as that has a powerful influence on the reproductive system. The best means of warmth, is exercise; and even additional clothing, which may be thrown aside when no longer requisite, is preferable to fires.

As to flowers, their odour causes a shock to the sense of smell, which infuses throughout the body a voluptuous feeling.

In regard to particular pursuits, the guide should choose those best adapted to the young person's taste. Sedentary professions requiring more skill than strength, should be left to women, who would perfectly succeed in them, while a vast number of vigorous men must then be employed in labours more worthy of them.

Cold ablutions diminish the sensibility which must otherwise do mischief; and swimming and exercise in cold water are remarkably useful.

If a young person gives unequivocal signs of excessive sensibility, all books depicting exaggerated sentiments must be withheld. The reading of fashionable novels is sure to falsify the judgment of the young by the most absurd exaggerations, to render their duties distasteful, and even to predispose to disease.

"The classics," observes Friedlander, "can be given them only in extracts, if we are desirous that they should meet with nothing that we deem obscene." If, very unfortunately, such a thing should occur, it must pass unnoticed. Montaigne, speaking of a young girl, says, "She was reading a French book in my presence, and a word, which is the name of a tree, occurred. The lady who acted as governess stopped her short rather sharply, and made her pass over this supposed naughty word. I did not interfere because I would not derange their rules, for I do not interfere with this mode of government: the female police is very mysterious, but it must be left to them. But, if I mistake not, the conversation of twenty footmen would not, in six months, have impressed upon the fancy, the meaning, application, and all the consequences of the sound of these naughty syllables, as strongly as this good lady did by her reprimand and interdiction."

Even the study of the fine arts may render the imagination too active. Of these, drawing is the least objectionable; and music, being the language of passion, is the most dangerous, especially music of the more impassioned and voluptuous nature.

A better means of discouraging the passions, is the cultivation of the intellectual faculties. Great advantage would result, to a young girl, from the study of

history, geography, and the various branches of natural history, pursuits which at once dissipate the passions, and are useful to rural economy, and many of the arts of industry.

For the sake, indeed, of the powerful influence which maternal education has on progeny, all the faculties with which reasoning, calculation, the mechanical and various positive sciences are associated, should be in some degree employed; and, on such subjects, habitual exercise of the memory would usefully engage much valuable time and prevent all injurious use of it.

In fine, every occupation of the mind likely to produce or foster emotions ought to be proscribed.

On the important subject of example, it need scarcely be said, that young persons are sure to observe and interpret any loose joke, or indecent language that coarse-minded people utter before them.

Not less carefully ought the example of improper conduct to be guarded against. Several young persons should never be suffered to sleep together in one bed, nor even in the close vicinity of domestics.

For similar reasons, education in boarding-schools is highly dangerous, especially at this period. Intimacies spring up between pupils nearly of the same age; they repose confidence in each other as to their most secret thoughts; and they endeavour to verify the conjectures they have formed. Meanwhile, some other friend in the confidence of this *tugendbund*, who had returned home and seen the world, visits the unfortunates still remaining at school, when a speedy disclosure takes place of all her discoveries made as

to the subjects they have so often discussed; and to show that her generosity is commensurate with her new importance, she occasionally supplies those works whose amorous pages have been kindly made known to them by the most positive interdiction of the teachers. Hence, the barriers raised up by modesty are surmounted, and depraved habits are contracted.

But, though a boarding-school is a hot-bed of vice to all who have reached puberty, that is far from being the time for introduction to the world and to the other sex; and retirement among elder female relatives is then the wisest mode of life. Theatres should be carefully avoided, particularly representations in which the softer passions are excited, or seductive music is the principal portion.

When, in spite of the best management, a young girl exhibits change or irregularity of character, becomes subject to sighs and tears, of which no cause is apparent, and betakes herself to solitude, then, muscular exercise sufficient to produce slight fatigue, agreeable society, and powerful diversions, are means that must be adopted.

It is equally foolish and dangerous, in parents and others charged with the education of girls, to try to conceal from them all knowledge as to the results of the position in which they are placed by the circumstance of nubility; for girls, in spite of watchful vigilance and every obstacle, are soon enabled, by natural instinct and by unremitting observation, to instruct themselves in those false notions which are most likely to be followed by fatal results.

Love assuredly, such as it is described in the mis-

chievous trash called fashionable novels, or even as artificial society often presents it, is at utter variance with the plan of nature. It is denaturalised and factitiously exalted by the obstacles which it encounters from prejudices relative to birth, rank and fortune, and by the want of employment and of objects of real interest among the easy classes. Without such obstacles, love might produce happiness, instead of delirium, might be the embellisher, not the occupier, the consoler, not the arbiter of life.

To the youth, the argument may well be employed, that it is his interest to restrain his desires, even though he may be capable of reproduction; that he must learn to earn the means of living before he increase the number of those requiring it; and that moreover his sole object in the world is not to find food and procreate his species, without leaving any trace of honourable advancement behind him. Finally, other sentiments may be awakened; ambition, dignity, and the universal respect of his fellow men.

So, also, it is the duty of her guide, when the maiden has reached a certain age, to explain to her the general nature of the sexual relations to which she is destined, to put her upon her guard against the disguises which passion assumes and the stratagems it employs, to place it, on the contrary, before her in the character it must assume in marriage, to make her aware of the modifications that possession produces in the ardour of mankind, and the certainty of its being eventually calm and moderate, and to teach her to control her affections till they are in accordance with

those proprieties upon which the conduct of life is made to depend.

Unluckily, experience too often presents obstacles to unions passionately desired. In such a case, if the maiden cannot be united to the object of her attachment, the nervous system must be weakened, and the muscular system strengthened, by a more active mode of life, by long walks, and as much bodily exercise as possible, beginning always by gentle tasks, and gradually imposing upon herself others that in a greater degree exercise the organs.

There are, however, youths and maidens whose temperaments are, on the contrary, lively, fickle, and incapable of attachment, and with whom, consequently, means of a directly opposite tendency must be employed—all those, in short, which were deprecated in the former case.

### *Dangerous Restraint.*

To prevent the increase of population, mechanical means, such as infibulation, have been employed.

The comedians and tragedians of Greece employed this method to preserve their voice; and Winkelman, in the "Monumenti Inediti," has given us a drawing of a bronze antique representing that condition. Similar was the fibula worn at Rome by the singers, to preserve their voices.

Brown found infibulation practised in Darfour, the operation being performed at the age of eleven or twelve years.

Among the civilized nations of modern times, the same object is kept in view, though means so rude

are not adopted. Laws and injunctions, more or less severe, answer the same purpose. While laws, to prevent too early unions, impose on the maiden the duty of chastity before legal marriage, mothers frame the most austere injunctions, which, for a while, dominate over youthful timidity. She dare not advance a step, utter a word, or cast a look, but at the hazard of severe reproof or of malignant comment. Struggling to guard against herself, she must learn to stifle nature; and at the age of gaiety and happiness, must pass life "in a state of exhibition, in vestments constricting the chest, compressing respiration, impeding the circulation and the movement of the limbs," and producing the frightful diseases already described.

While the condition of a young woman is thus a state of violence against nature, and our manners demand so vigilant a surveillance, it is not very wisely complained that girls are dissembling, nor very wonderful that they escape from this struggle, and that inactivity of them which society demands. The most fatal consequences, indeed, accrue from this, both to the physical and moral state of woman: escape is frequent; ruin inevitable.

Grimm says, "La morale des femmes est toute fondée sur des principes arbitraires; leur honneur n'est pas le vrai honneur; leur décence est une fausse décence; et tout leur mérite, tout la bienséance de leur état, consistent dans la dissimulation et le tra vestissement des sentimens naturels qu'un devoir chimerique leur prescrit de vaincre, et qu'avec tous leur efforts elles ne sauraient aneantir."

The most ungenerous portion of all this is, that,

when the worst consequences ensue from these regulations, their victims alone are blamed; and that even philosophers have endeavoured to show, that, in such cases, woman alone is criminal, because, as they assert, woman has no motive to err. This unjust conclusion renders the discussion of this delicate subject indispensable.

I have already shown that woman has a vital system larger than that of man. I may now add that she has a larger reproductive system. It follows, that their functions are corresponding. It is with these vital and reproductive organs and functions, that the whole life of woman is associated. To know, indeed, the precise degree of their importance to her, and the necessity of their frequent or enduring employment, it is only necessary to observe their relatively greater development. On this ground alone, then, all that is connected with love is far more essential to woman than to man.

This affords the anatomical and physiological foundation of the mere, though true, assertions of the writer of the thesis,—"Estne viro fœmina salacior?" who says, "Oblitam sui mulierem facilius reperias quam salacitatis. Exlex est et ἀλογος in eâ libido quæ statim expleri cupit, nec patitur moros. Astyanassæ sunt quarum lascivia novos concubitûs modos quotidie comminiscitur. Non desunt et Messalinæ, quæ resupinæ jacentes, absorptis multorum ictibus, lassatæ quidem viris, sed non satiatæ recedunt. Nec infrequentes Dionysiæ, quarum in octavâ lascivia surgere messe cœperat, et dulces fingere nequitias. Inclamantes etiam sæpe audiuntur Quartillæ, 'Junonem

meam iratam habeam si unquam me meminerim virginem.' Quid plura?"

But, to advance in this argument—I have also shown that, in reproduction and progeny, the organs of sense and the anterior part of the brain go always along with the vital system; and anatomy shows that these parts are relatively larger in woman than in man. It follows, that, in her, sensibility and its perceptions are greater.

So the author of the thesis says, "Mulieribus datum genialibus in ludis amatoriâ voluptate dissolvi; negatum viris. Horum lætitiæ sequax est dolor, hæresque tristitia; illarum contra gaudiis succedunt nova. Virorum statim tristis languescit amor; mulierum remissionis vix patiens flamma, veneris aliud unde continuò nutriatur pabulum arcessit vorax.—The fable says that the prophet Tiresias lost his sight for having, in the presence of Juno, decided this question in favour of woman.

But I have also shown that the cerebel, or organ of the will, is small in woman; and therefore, though the pleasures of love are more essential to her organization, yet they are less determined, and more easily suffer suspense or renunciation. Neglect of anatomy and physiology has made all writers mistake on this subject, as is done in a following statement, not understood by the writer, and explicable only by the anatomical and physiological fact expressed in the first sentence of this paragraph. "Women constantly retard enjoyment, or prevent it altogether, solely by the influence of the will, acted upon by the most trifling

motive. They even do more: they sometimes renounce it without a murmur."

The statement of these truths, and exposition of the common errors on the subject, render it unnecessary to reply further to the false representations that have been made as to the absence of necessity and the diminished degree of these pleasures in woman.

In the following passage, "It has always appeared to me unreasonable to suppose that nature has bestowed *the most powerful desires* upon that sex which is prevented by its own weakness from seeking to satisfy them according to inclination; that *the most imperious inclination* should be joined to the necessity of waiting and to the pretence of refusal; that the individual in whom a passive state predominates almost constantly should be of *a warmer constitution* than the male who carries in himself a cause of permanent activity,"—in this passage, the error, indicated by the words in italics, is in not seeing that, though in conformity with the larger vital and reproductive system of woman, is the necessity for its frequent or enduring employment, and in conformity with her larger organs of sense and anterior part of the brain (parts, as will be seen, always accompanying the vital and reproductive system,) is the possession of greater sensibility and capacity for pleasure,—yet her smaller cerebel or organ of will renders her less determined in pleasure, and enables her to yield to suspense or renunciation,—in fact, that there is greater necessity for and greater capacity of pleasure, but greater power of yielding to momentary circumstances affecting these,—a fact which is in perfect analogy with the whole of the

female character. But, to yield is one thing; to forego is another. The necessity and the capacity of pleasure, are as clearly established as is the power of yielding to circumstances.

All, however, that has been said on this subject, is interesting chiefly because it exposes the injustice and wickedness of the following conclusion, founded solely on the statements which have just been refuted,— "That man is not so unjust as he is accounted, in requiring from woman that strict fidelity which, in particular circumstances (such as absence,) he is unable to exercise himself."

I have just said, with respect to woman, that, "to yield is one thing; to forego is another: the necessity and the capacity of pleasure, are as clearly established as is the power of yielding to circumstances." It is gratifying that here pathology comes in aid of physiology. Cabanis says, "In general, women, in this respect, support excesses more easily, and privations more difficultly: at least, these privations, when they are not absolutely voluntary, have ordinarily for women, especially in a state of solitude and indolence, inconveniences which they have but rarely for men."

---

## SECTION II.

### UNNATURAL INDULGENCE AND ABSOLUTE CONTINENCE.

As soon as puberty is accomplished, instinct leads

the youth to satisfy desire, and if no object is cast in the way, and he is unchecked by timidity or other considerations, he falls into

*Unnatural Indulgence.*

Of this, it is necessary to trace rapidly the origin and effects as described by the best observers, for those whose duty it is to protect youth from its fatal consequences.

"Surprising artfulness and obstinacy are employed by young people in maintaining secrecy respecting crimes of this description. But a youth may be suspected, when, at the period of puberty, he seeks to remain in solitary places generally alone, more rarely with a particular comrade.

"This vice soon renders him careless of his parents and the persons who have the care of him, as well as indifferent to the sports of his equals; he falls into a distaste for everything except the opportunity of indulgence; all his thoughts are directed to the parts at this period subject to irritation; sensibility, imagination and passion are inflamed; and the secretion of the reproductive liquid augmenting, withdraws a very precious portion from the blood.

"The muscles of the youth consequently become soft; he is idle; his body becomes bent; his gait is sluggish; and he is scarcely able to support himself.—The digestion becomes enfeebled; the breadth, fetid; the intestines, inactive; the excrements, hardened in the rectum and producing additional irritation of the seminal conduits in its vicinity. The circulation, being no longer free, the youth sighs often; the con-

plexion is livid; and the skin, on the forehead especially, is studded with pimples.—The corners of the mouth are lengthened; the nose becomes sharp; the sunken eyes, deprived of brilliance and enclosed in blue circles, are cast down; no look remains of gaiety; the very aspect is criminal. General sensibility becomes excessive, producing tears without cause; perception is weakened, and memory almost destroyed; distraction or absence of mind renders the judgment unfit for any operation; the imagination gives birth only to fantasies and fears without grounds; the slightest allusion to the dominating passion produces motion of the muscles of the face, the flush of shame, or a state of despair; the desires become capricious, and envy rankles in the mind, or there ensues a total disgust. The wretched being finishes by shunning the face of men, and dreading the observation of women; his character is entirely corrupted, or his mind is totally stupified. Involuntary loss of the reproductive liquid at last takes place during the daily motions; and there ensues a total exhaustion, bringing on heaviness of the head, singing in the ears, and frequent faintings, or a sensation as if ants were running from the head down the back, together with pains, convulsive tremblings, and partial paralysis."

Long previous to these severe effects, the losses which have been described arrest the increase of stature, and stop the growth of all the organs, and the developement of all the functions. It is an earlier puberty which renders the southern people shorter than the northern. And a sense of this seems to have prevailed from the remotest times. Amongst the Ger-

mans, according to Julius Cæsar, the act of reproduction was not permitted to adolescents before twenty without incurring infamy; and to this he attributes the stature and strength of that simple people.

An incapability of ever giving life to strong and robust children, is another effect of these losses, which precedes the total ruin of the individual.

Intelligent instructors will know both how to divine the bad habits of their pupils, and how to avoid all excitement of them.

Much attention has recently been paid to the nature of punishments. There are few of them that should not be avoided; but to punish a child by shutting him up alone in a room, is a sad error, if there be any reason to suspect him of bad habits.

Medicinal remedies, astringents, sudorifics, &c., are weakening and injurious in other respects; and mechanical means directly applied to the organs, are likely to draw the attention, and determine the blood, to the part whence it should be diverted.

Moral means consist of good habits previous to puberty, the influence of fear and respect, and that of the nobler feelings predominating over the baser passions.

This assuredly will be more easily accomplished in well-directed private education, than in public schools.

When conviction of the existence of bad habits is acquired, it becomes necessary to speak to the subject of them mildly and rationally respecting his injurious practice.—It is feared that the works on the subject, if they have cured some, have made others acquainted

with vice of this kind. But there can be no danger in placing such works in the hands of children whose conduct has given rise to suspicion.

In such cases, exciting and superabundant food is highly injurious. The diet should be chiefly or altogether vegetable; and no vinous or spirituous drinks should be permitted. The latter are indeed, of themselves, quite sufficient to produce, at any time, the worst habits; and the parent who has suffered their use, has no right to complain either of precocious puberty, or of unnatural indulgences.

As it is well known, that the almost unremitting employment of his muscles diverts the labourer from this vice, whilst shepherds, who watch their flocks in sequestered places, have been generally accused of it, it is evident that if, in youths, the superabundance of nervous power were carried off by exercise, they would be rendered more tranquil and more attentive to instruction, and would consequently make greater progress in knowledge.

When boys suffer nocturnal affections of this kind, involuntarily produced, similar care and treatment are required. All that heats the imagination and is likely to recur in dreams must then be avoided, as should every physical circumstance tending to assist it—suppers, down beds, hot bed-clothing, &c.

Such affections when awake, are the results of confirmed disease, requiring the union of medical treatment with physical and moral education.

The vice which has now been described in boys, appears among girls, and produces similar symptoms.

In general, the victims of this depravity are an-

nounced by their aspect. "The roses fade from the cheeks; the face assumes an appearance of faintness and weakness; the skin becomes rough; the eyes lose their brightness, and a livid circle surrounds them; the lips become colourless; and all the features sink down, and become disordered."

If the depravity be not arrested, general disease and local affections of the organs of reproduction ensue—acrid leucorrhœa, ulcerations of the vulvo-uterine canal, falling and various diseases of the matrix, abortions, and sometimes nymphomania and furor uterinus, terminate life amidst delirium and convulsions.

Sapphic tastes (*κλειτοριαζειν*) form another aberration of love, of which Sappho and the lovers of their own sex were accused by Seneca, St. Augustine, &c. "Her ode, breathing the languor, abandonment, delirium, ecstasy, and convulsions of love, was addressed, not to a lover, but to one of her female companions; and, amongst the fragments of her poetry, are some voluptuous verses addressed to two Grecian girls, her pupils and lovers." As there were many women at Lesbos who adopted the habits of Sappho, the term Lesbian habits was used to express these.—The women of Lesbos also fell into other errors, which gained them the epithet of Fellatrix.

These turpitudes, as if they were natural but unfortunate compensations to women subject to polygamy, are said to be still well known to the Turkish and Syrian women at their baths. And it is not improbable, that this occasioned, in southern countries, the excision of the clitoris.

It is evident that the victims of this depravity de

mand the most active vigilance of mothers, if they desire to preserve either the morals or the health of their daughters. It is evident, also, that the same practices are scarcely less injurious at a more advanced age.

### *Absolute Continence.*

This consists in abstaining, owing generally to religious notions, from the indulgences of love, although the individual feels the strongest desire for them; and, in general, it is attended with the most deplorable results.

In such cases, the effects vary, but they generally are continual priapism, inordinate desires, taciturnity, moroseness, or ferocity, determination of blood to the head, lassitude and disgust at everything abstracting the mind from the prevailing passion, incapability of averting attention from voluptuous images, and partial madness, succeeded by general insanity and terminated by death.

An ecclesiastic, mentioned by Buffon, forwarded him a memoir describing the torments of his celibacy, and the various sensations and ideas experienced by him during an erotic delirium of six months' duration.

"This ecclesiastic, Monsieur M———, presented all the attributes of a sanguine temperament, the premature developement of which commenced at the age of eleven. Paternal despotism, the direction of his studies and affections, superstitious habits, Pythagorean regimen, fastings and macerations, were all em-

ployed to change, to stifle, or rather to mutilate nature.

"At the age of thirty-two, being then bound by a vow of eternal celibacy, he began to feel the action of the reproductive organs in a more lively manner, and his health was injured.

"At this period, he says, in his own account, 'my forced continence produced through all my senses a sensibility, or rather an irritation, I had never before felt.—I fixed my looks on two females, who made so strong an impression on my eyes, and through them on my imagination, that they appeared to me illuminated, and glittering with a fire like electric sparks: I retired speedily, thinking it was an illusion of the devil.

"'Some days afterwards, I suddenly felt a contraction and a violent tension in all my limbs, accompanied by a frightful convulsive movement, similar to that which follows an attack of epilepsy. This state was succeeded by delirium.—My imagination was next assailed with a host of obscene images, suggested by the desires of nature.—These chimeras were soon followed by warlike ardours, in which I seized the four bed-posts, made them into a bundle, and hurled them against my bedroom-door, with such force as to drive it off the hinges.*

"'In the course of my delirium, I drew plans and compartments on the floor of my room; and so exact

* This alternate direction of nervous influence to the brain itself and to the muscles, is very remarkable; and it forms an excellent illustration of the value of exercise in all cases of this kind.

was my eye, and so steady my hand, that, without any instrument, I traced them with perfect accuracy.

"'I was again seized with martial fury, and imagined myself successively Achilles, Cæsar, and Henry the Fourth.—A short time afterwards, I declared I would marry, and I thought I saw before me women of every nation and of every colour.

"'I at first selected a certain number, corresponding with the number of the different nations I had conquered; and it appeared to me that I should marry each of these women according to the rites and customs of her nation. There was one whom I regarded as queen over the rest. This was a young lady I had seen some days before the commencement of my disease.—I was, at this moment, desperately amorous; I expressed my desires aloud in the most energetic manner; yet I had never, in all my life, read any romance or tale of love; I had never embraced, never even saluted, a woman; I spoke, however, very indecently to every one, without reflecting upon my sacred character; and I was quite surprised that my relations found fault with my proposals, and condemned my conduct.

"'This state was followed by a tolerably tranquil sleep, during which I experienced nothing but pleasure.—Returning reason brought all my woes. I reflected upon their cause; I recognized it; and, without daring to combat it, I exclaimed with Job, 'Cur data lux misero?'"

Buffon also cites an instance of an ecclesiastic whom he knew, who, in despair for violating the duties

of his condition so frequently, performed the operation of Origen on himself.

Long before, St. Augustin had said, "Dura sunt prælia castitatis; ubi quotidiana pugna, ibi rara victoria;" and Montaigne observes, that "those of whom St. Augustin speaks have expressed a wonderful notion of temptation and nudity, in making it a question 'whether women at the general judgment will be raised in their own sex, or rather in ours, so that they may not tempt us again in that holy state.'"

St. Jerome describes a still more vivid picture from his own experience. "O! how often have I, when settled in the desert—in that vast solitude, which, burned up by solar heat, affords to monks a horrid habitation—how often have I imagined myself to be, for a moment, in the midst of Roman delights! But I sat alone, because I was filled with bitterness. My deformed members abhorred the sack investing them; and my squalid skin endured the thirst of Ethiopic flesh. Daily tears; daily groans; and if at any time urgent sleep oppressed me in spite of repugnance, I slid my scarcely adhering bones down upon the naked ground. Of food and drink I will not speak. . . I therefore—I, who, for fear of hell, had condemned myself to such imprisonment, the companion only of scorpions and wild beasts, did often, in imagination, find myself amidst the choirs of maidens! Pallid was I with fastings, and, in a frigid body, my mind burned with desires; the flesh being dead before the man, the fires of lust boiled up alone."*

* "O quoties ego ipse, in eremo constitutis, et in illa vasta solitudine, quæ exusta solis adoribus, horridum monachis præbit habitaculum, putabam me

And this is the confession of a father of the Christian Church!—Man! be just to feebler powers!

In other cases, if free from monomania, man falls a victim to acute diseases, apoplexies in particular.

The state of woman, under similar circumstances, is not less severe. If love acquire a determined character in one whose nervous system is at all excitable, the state of virginity, at variance, as after puberty it is, with the impulses and intentions of nature, becomes one of great suffering.

A strong feeling of duty, and the emotion of fear, may lead her for a time to withstand the powerful impulse of nature. But that power is unceasingly operating; imagination is constantly filled with pictures of the happiness for which she longs; desire at last bursts through the restraints of reason. If she then redouble her efforts, and, by unceasing attention and unrelaxing resolve, stifle the voice of nature, this struggle speedily immerses her in languor and melancholy.

Such a state must finally become morbid.

Chlorosis is frequently the first malady that makes its appearance. The catamenia, too, are frequently suppressed, occur at irregular periods, or are compli-

---

Romanisinteresse deliciis. Sedebam solus, quia amaritudine repletus eram Horrebant sacco membra deformia, et squalida cutis situm Æthiopicæ carnis obdurat. Quotidie lachrymæ, quitidie gemitus; et si quando repugnantem somnus imminens oppressisset, nudo humo ossa vix hærentia collidebam. De cibis vero et potu taceo. . . . Ille igitur ego qui, ob gehennæ metum, tali me carcere ipse damnaveram, scorpionum tantum socius et ferrarum, sæpe choris inter eram puellarum. Pallebant ora jejuniis, et mens desideriis æstuabat in frigido corpore, et ante hominem suum, jam carne præmortuâ, sola libidinum incendia bulliebant."

cated by painful symptoms—the consequences of the irritability of the reproductive organs, produced by privation and inactivity.

The stomach frequently becomes unable to retain any substance, however light. The nervous susceptibility often affects the heart; its movements, either by fits or permanently, becoming quick, irregular and strong, and constituting palpitation. Frequently also this nervous predominance is felt throughout the organization; and syncopes form the prelude to what are called vapours. Sometimes, likewise, girls fall into profound melancholy, and abandon themselves to despair.

If marriage be not permitted to terminate this state, injury fatal to life may be its consequence.

In the extravagance of passion, suicide may be perpetrated. More frequently occur a general perversion of sensibility, and all the degrees of hysterism, especially if the maiden has a strong tendency to love, nurtured by good living, an easy sedentary life, the reading of fashionable novels, or exciting conversations with the other sex, while she is still kept under the eyes of a vigilant superintendent.

An attack of hysteria is generally characterized by yawning, stretching, *a variable state of mind*, or extravagant caprices, tears and laughter without cause, fluttering and palpitation with urgent flatulence, rumbling in the belly, *a flow of limpid urine*, a feeling as if a ball (*the globus hystericus*, were rolling about in the abdomen, ascending to the stomach and fauces, and there causing a sense of strangulation, as well as of oppression about the chest, and difficulty of respi-

ration, fainting, loss of sensation, motion and speech, death-like coldness of the extremities or of the body generally; also muscular rigidity, and convulsive movements, the patient twisting the body, striking herself, and tearing the breast; and this followed by *a degree of coma*, stupor and apparent sleep; but consciousness by degrees returning, amidst sobs, sighs and tears.

Hysterical epilepsy may take place, the paroxysms of which are sometimes preceded by dimness of sight, vertiginous confusion, pain of the head, ringing in the ears, flatulence of the stomach and bowels, palpitation of the heart, and occasionally of the aura epileptica, or feeling as if cold air, commencing in some part of the extremities, directed its course up to the head. During the fit, the patient falls upon the ground, and rolls thereon; the muscles of the face are distorted; the tongue is thrust out of the mouth, and often bitten; the eyes turn in their orbits; she cries or shrieks, emitting a foaming saliva; and she struggles with such violence that several persons are required to hold her. The belly is tense and grumbling; there are frequent eructations; and the excretions, particularly the urinary, are passed involuntarily. After a time more or less considerable, the patient gradually recovers, with yawning and sense of lassitude, scarcely answers, and is ignorant of what has occurred to her.

These effects, we are told, have been observed in Canary birds, which if, when separated from their females, they can see them without being able to reach them, sing continually, and never cease till their distress is terminated by an attack of epilepsy.

Other affections, as catalepsies, extasies, &c., frequently depend upon the reproductive organs; and in Roman Catholic countries, in former times, half insane devotees were found among old maids thus affected, and became, in consequence, the fitting instruments of the artful propagators of ridiculous creeds.

In some cases, the dominant passion interferes with the other operations of intellect, and produces insanity. It has been already observed, that no one becomes insane before puberty; and that the period of the greatest reproductive ardour is that of the highest mental excitement.

Accordingly, many young women become insane either from erotic excitement, from the love even of the beings of their own imagination;—for it is justly observed, "Such are the wants of the heart in women, that they are caught by and attach themselves to chimeras, when the reality is wanting to their sensibility."

The worst disease resulting from this cause is nymphomania, or furor uterinus. The women whom celibacy renders most liable to it, have been observed to be of small stature, and to have somewhat bold features, the skin dark, the complexion ruddy, the mammæ quickly developed, the sensibility great, and the catamenia considerable.

The very commencement of puberty is generally the time when the disease of which furor uterinus is the aggravated form, begins to arise out of the temperament just described and from various accidental causes, as loose reading or conversation, obscene paintings or engravings, and bad example arising from close intercourse with dissolute persons.

In persons suffering under this disease, says Dr. M. Good, "there is often, at first, some degree of melancholy, with frequent sighings; but the eyes roll in wanton glances, the cheeks are flushed, the bosom heaves, and every gesture exhibits the lurking desire, and is enkindled by the distressing flame that burns within . . . The disease is strikingly marked by the movements of the body, and the salacious appearance of the countenance, and even the language that proceeds from the lips." They, indeed, use the most lascivious language and gestures, even invite men without distinction, and abuse them if they repel their advances.

The diseases also of the matrix and mammæ occur chiefly amongst unmarried females. Old maids are especially liable to these diseases, because their organs have not fulfilled their functions. Schirrous indurations and cancers often form in these parts, especially at the final cessation of the catamenia. Hydatids also form in the matrix or ovaries, so as to resemble pregnancy.

---

## SECTION III.

### NECESSITY OF INTERMARRIAGE.

Friedlander observes, "It is a very difficult, and a very delicate question to decide, whether there are cases in which it is absolutely necessary to favour the

union of the sexes at a very early age, for the purpose of arresting the evil effects of unnatural indulgences. I think, however, that our country and climate afford very few instances of passions so violent and precocious as to require premature marriages. Suppose an imagination constantly agitated by images of love, and inflamed by absorption of the reproductive liquid, it may still be diverted from sensual ideas, and the effervescence be directed to poetical compositions," &c.

Now, no man is more deeply impressed than this writer with the frequency and the fatal effects of unnatural indulgences; and, that being the case, his estimate of early marriage must be alarming indeed. Its evils, I believe, are only those imposed by an artificial state of society, and the unequal distribution of wealth. And as to poetical composition as a cure, it would evidently be only adding fuel to the fire.

When all the thoughts of the young man begin to be occupied by the desire of pleasure, every hour that passes adds to desire; almost every individual of the opposite sex seems fascinating to him; his heart palpitates when they approach; and a flame seems to fly through all his members. Even during the night, the physical condition of the external organs necessary to reproduction annoys him, and his sleep is often destroyed. Gratification or disease inevitably follows.—Of the young woman, however modified her affections, the same is true.

Marriage ought, then, to succeed the celibacy of earlier life.—Marriage, says Buffon, "is man's natural state after puberty. This is, therefore, the period

when the female, pressed by a new want, and excited to employ her faculties, should renounce that inexperience in love which was becoming in tranquil youth."

Of young men, under these circumstances, Kames, in a manly and philosophic spirit, says more in detail, "I have often been tempted to find fault with Providence in bringing so early to perfection the carnal appetite, while a man, still in early youth, has acquired no degree of prudence nor of self-command. It rages, indeed, the most when young men should be employed in acquiring knowledge, and in fitting themselves for living comfortably in the world. I have set this thought in various lights; but I now perceive that the censure is without foundation. The early ripeness of this appetite proves it to be the intention of Providence, that people should early settle in matrimony. In that state, the appetite is abundantly moderate, and gives no obstruction to education. It never becomes unruly, till one, forgetting the matrimonial tie, wanders from object to object. It is pride and luxury that dictate late marriages; industry never fails to afford the means of living comfortably, provided men confine themselves to the demands of nature."

Taking up the subject at this very point, Dr. Johnson says, "I have been told that late marriages are not eminently happy. This is a question too important to be neglected, and I have often proposed it to those whose accuracy of remark and comprehensiveness of knowledge, made their suffrages worthy of regard. They have generally determined, that it is dangerous for a man and woman to suspend their fate

upon each other, at a time when opinions are fixed, and habits are established; when friendships have been contracted on both sides, when life has been planned into method, and the mind has long enjoyed the contemplation of its own prospects.

"It is scarcely possible that two travelling through the world under the conduct of chance, should have been both directed to the same path, and it will not often happen that either will quit the tract which custom has made pleasing. When the desultory levity of youth has settled into regularity, it is soon succeeded by pride ashamed to yield, or obstinacy delighting to contend. And even though mutual esteem produces mutual desire to please, time itself, as it modifies unchangeably the external mien, determines likewise the direction of the passions, and gives an inflexible rigidity to the manners. Long customs are not easily broken: he that attempts to change the course of his own life, very often labours in vain, and how shall we do that for others which we are seldom able to do for ourselves?"

"Those who marry at an advanced age, will probably escape the encroachments of their children; but, in diminution of this advantage, they will be likely to leave them, ignorant and helpless, to a guardian's mercy: or, if that should not happen, they must at least go out of the world before they see those whom they love best either wise or great.

"From their children, if they have less to fear, they have less also to hope, and they lose, without equivalent, the joys of early love, and the convenience of uniting with manners pliant, and minds susceptible

of new impressions, which might wear away their dissimilitudes by long cohabitation, as soft bodies, by continual attrition, conform their surfaces to each other."

As to young women more especially, it is certain, that the happiest effects must result to those of an erotic temperament, excited by diet, inactivity, and everything that can stimulate desire. When hysterism especially is caused by unsatisfied love, the advice of Hippocrates is as applicable as ever:—"Ego autor sum ut virgines hoc malo (chlorosi) laborantes, quam celerrime cum viris conjugantur, iisqua cohabitent; si enim conceperint, convalescent."

Uterine epilepsy also ceases with marriage. Lanzoni gives the case of a widow of thirty-one, who, after the death of her husband, was subject to attacks of epilepsy twice a month:—"After she had, for some time, followed medical advice without benefit, I advised her to marry a second time. The widow followed my advice, and made choice of a young and loving husband; and the epileptic attacks disappeared and never returned."

In these epileptic convulsions of young women, women neglected, &c., many authors have not hesitated to recommend what is contrary to our notions of propriety. And to those that object, F. Hoffman distinctly says, "I am aware that we ought not to do ill to produce good; but this is my answer: of two evils equally inevitable, it is our duty to choose the least—others will perhaps add, and the least painful."

The same means, we are told, has often cured uterine cholics, and nervous diseases.

It is evident that the cure of nymphomania must consist in marriage.

The fact that such diseases are the result of continence, is nature's declaration that marriage is the sole method of curing them; and Pinel justly exclaims, "What can be done by medical art, which always looks at human nature independently of social institutions, if the immutable laws of fecundity and of reproduction are perverted!"

When, therefore, a young marriageable maiden exhibits symptoms of the approach of any of these diseases, she should, if possible, be united to the object of her affections. Such symptoms then speedily disappear; health and happiness take their place; and there is preserved to her family and to society, a being who may be one of their most amiable and valuable members.

There are indeed young girls, observes a medical writer, "sufficiently artful to counterfeit hysteric epilepsy and other affections for which they have heard marriage recommended as the only remedy, in the hope of being inducted into that state." But, if they employ such a subterfuge, is it not a proof of the intensity of their desires, sufficient to give us cause to fear that, in yielding to the transports of their passion, they may shortly experience in reality the trouble and disorder they have counterfeited for the moment?

Independently of morbid affections which marriage removes, it augments the energy of the sanguineous system; the distended arteries carry warmth and animation throughout the body; the muscles become more vigorous; the walk is freer; the voice firmer·

the demeanour unembarrassed; in short, the sanguine temperament predominates.

Of the greater chances of longevity possessed by married people, sufficient reason may be found in desires at once gratified and rendered moderate, in the activity required for the support of a family, in regularity of occupations, in the certainty of ever having a friend and confidant, in the endearing attentions lavished upon each other, and in mutual succours during every affliction and infirmity.

It must not, however, be forgotten, that manifest as may be the impulses of Nature, and great as may be the desire of complying with her wishes, several causes may oppose these, and neglect of them may still more surely prove fatal to the health or life of the maiden.

Marriage would, for instance, be deeply injurious before the young woman is in a condition to perform its functions. In our climate, young girls who are married before the age of from twenty to twenty-five, are ill adapted to sustain the crisis of pregnancy, delivery and suckling; beauty departs; enfeeblement and nervous affections ensue; and these impede the general growth. The limbs, consequently, are shorter; and, though the body is less affected as to development, the breaking up is greater.

Other insurmountable obstacles to marriage, arising from such choices as ensure misery to the married couple, disease or insanity in children, &c., will be described in the sequel of this work.

# PART III.

## CIRCUMSTANCES RESULTING FROM THE PRECEDING RELATIONS, AND CONNECTED WITH OR PRODUCTIVE OF, PROGENY.

---

### SECTION I.

#### NATURAL PREFERENCE OF THE VARIOUS KINDS OF BEAUTY FOR THE FIRST TIME EXPLAINED.

There is a positive and a relative beauty: in other words, beauty differs not only in the two sexes, and in every individual in each sex, but each individual forms a different estimate of it in relation to himself. Hence, while he confesses the supremacy of a general model of beauty, and grants the superiority of the woman who most nearly approaches it, he, for himself, decides in favour of another woman whose beauty is less regular, but more suitable to his desires.

This curious fact has been often noticed, but never explained.

Madame Necker says, "It is easy to assign a reason why a female appears generally beautiful, but it would be impossible to understand what renders her

more agreeable to one person than to another. How can we explain this unknown connexion between our organs and the object perceived? As well might we inquire why red is preferred to black!"*

Sir Walter Scott advances a little further:—"As unions are often formed betwixt couples differing in complexion and stature, they take place still more frequently betwixt persons totally differing in feelings, in tastes, in pursuits, and in understanding; [functional is never more frequent than structural difference,] and it would not be saying, perhaps, too much, to aver, that two-thirds of the marriages around us have been contracted betwixt persons, who, judging *a priori*, we should have thought had scarce any charms for each other, [because, on this subject, principles have not been sought for.]

"A moral and primary cause might be easily assigned for these anomalies, in the wise dispensations of Providence, that the general balance of wit, wisdom and amiable qualities of all kinds, should be kept up through society at large. For, what a world were it, if the wise were to intermarry only with the wise, the learned with the learned, the amiable with the amiable, nay, even the handsome with the handsome? and, is it not evident, that the degraded castes of the foolish, the ignorant, the brutal, and the deformed

---

* On peut bien dire pourquoi une femme paraît généralement belle, mais il serait impossible de trouver la raison qui la rend plus agréable à personne qu'à une autre. Comment expliquer ce rapport inconnu entre nos organes et l'objet qu'ils aperçoivent? C'est vouloir découvrir pourquoi l'on préfère le rouge au noir.

(comprehending, by the way, far the greater portion of mankind,) must, when condemned to exclusive intercourse with each other, become gradually as much brutalized in person and disposition as so many ourang-outangs? When, therefore, we see the 'gentle joined with the rude,' we may lament the fate of the suffering individual, but we must not the less admire the mysterious disposition of that wise Providence which thus balances the moral good and evil of life,—which secures for a family, unhappy in the dispositions of one parent, a share of better and sweeter blood, transmitted from the other, and preserves to the offspring the affectionate care and protection of at least one of those from whom it is naturally due. [If this were true, then would the dispensation of Providence be counteracted, if the wise man married not a foolish woman, the learned man an ignorant one, the amiable man a brutal one, &c.—all which is absurd.]

"When, indeed, we look a little closer on the causes of those unexpected and ill-suited attachments, we have occasion to acknowledge, that the means by which they are produced do not infer that complete departure from, or inconsistency with, the character of the parties, which we might expect when the result alone is contemplated. The wise purposes which Providence appears to have had in view, by permitting such intermixture of dispositions, tempers and understandings, in the married state, are not accomplished by any mysterious impulse by which, in contradiction to the ordinary laws of nature, men and women are urged to an union with those whom the

world see to be unsuitable to them. The freedom of will is permitted to us in the occurrences of ordinary life, as in our moral conduct; and in the former as well as in the latter case, is often the means of misguiding those who possess it. Thus it usually happens, more especially to the enthusiastic and imaginative, that, having formed a picture of admiration in their own mind, they too often deceive themselves by some faint resemblance of some existing being, whom their fancy as speedily as gratuitously invests with all the attributes necessary to complete the beau ideal of mental perfection. [This view is ingenious, and approaches nearer to truth.] No one, perhaps, even in the happiest marriage, with an object really beloved, ever found all the qualities he expected to possess; but, in far too many cases, he finds he has practised a much higher degree of mental deception, and has erected his airy castle of felicity upon some rainbow, which owed its very existence only to the peculiar state of the atmosphere.

"It is scarce necessary to add, that these observations apply exclusively to what are called love-matches; for when either party fix their attachment upon the substantial comforts of a rental, or a jointure, they cannot be disappointed in the acquisition, although they may be cruelly so in their over-estimation of the happiness it was to afford, or in having too slightly anticipated the disadvantages with which it was to be attended."

The question, however, is—Whence comes the mental picture supposed by Scott? What relation has

it to the organization of the painter of it? What is its respective character?

Rousel somewhat similarly says, "This difference of taste is derived from this, that each has in himself a model with which he compares the objects which strike him; and this model varies according as he is disposed to mix more or less of the moral with the physical of love, or according to the images under which pleasure is presented to us for the first time. The physical impulse may be so powerful that it divests us of all the moral proprieties, to present to us only material objects. Then it may occur that, even in these, we sacrifice elegance to other relations more intimately connected with the vividness of desire, or with the sentiment which we have of its power. On the contrary, those in whom the action of these last causes is more moderate, will seek, in moral considerations, a supplement to the pleasures of nature: the qualities of the mind, announced always by the features, the figure, the deportment, the gestures, the sound of the voice, will make upon them an impression so much the more vivid as they have more analogy with their character."

This only further tells us, that we, in different degrees, prefer physical or moral qualities. But the question is—Why do we prefer them? Besides, there are great varieties in each of these kinds of qualities; and the question again is—Why is each particular quality preferred by a different individual?

The reply demands a different mode of procedure, at well as a more minute and careful investigation.

Preference as to ages may first be considered.

In my work, entitled, "BEAUTY, ILLUSTRATED CHIEFLY BY AN ANALYSIS AND CLASSIFICATION OF BEAUTY IN WOMAN," it has been shown that, though one particular species of beauty will be found at all times to predominate in each individual woman, yet that there is ever a tendency, in the young woman, to beauty of the locomotive system: in the middle-aged woman, to beauty of the vital or nutritive system; and, in the older woman, to beauty of the mental or thinking system.

It is not less remarkable, that men of various ages generally admire precisely those species of beauty which prevail in women at corresponding ages. The young man admires beauty of the locomotive; the middle-aged man, beauty of the vital;—and the older man, beauty of the mental system.

Wieland, in his letters of Aristippus, has pointed out these diversities, though not quite accurately; and, in quoting him, I shall therefore supply the words required to express them more perfectly. The extract is valuable, as showing how far a man without systematic knowledge or accurate nomenclature, had, from feeling and experience, discovered the truth.

"Nature has wisely varied our tastes, as she has varied our features; but, in addition to this natural variety, there is another, the offspring of age, or rather of experience.

"I have observed, that the youth, the full-grown man, and the old man, independently of personal tastes and circumstances, differ in their opinion with regard to the beauty of women.

"The youth is always attracted by a pretty face,

enchanted with pleasing or regular features, [he should have added—and a slender and light figure—locomotive beauty,] and sees no beauty but that. As he knows not enjoyment, he is not aware that a pretty face is the very thing of which a lover is soonest tired; he knows not that this presents fewer resources and incitements to pleasure than any other charm."

Independent of the omission supplied above, there is an error here as to the value of a pretty face. Men who write on such subjects, should be perpetually on their guard against the influence of particular female association over their notions of beauty. Whenever a man fails to appreciate any species of beauty, he should suspect his judgment, and ought to be suspected by others. Herrin Wieland was doubtless the *beau ideal* of this description; and her other good qualities were doubtless sufficient to render a pretty face not indispensable.

"The adult man, who has been often deceived, has learnt, to his cost, that a pretty face should be regarded only as a fine sign that attracts but often deceives the traveller; he knows that which deceives not are the graces; he knows especially that the only thing which never palls, which seems ever fresh, and daily procures new enjoyments, and whose charm never decays, (or at all events very late,) is a soft skin, forms that the eye is never tired of beholding, or the hand of caressing, and which seem to possess the magic power of incessantly awakening in the breast desire which seemed torpid or even extinct, [that is, beauty of the vital system.]

"As to old men, who have long retired from the

worship of the face, [and figure,] but find themselves also compelled to relinquish that of [vital] forms, [including the embonpoint above implied,] they generally find attraction in countenances that bespeak goodness, complaisance and intelligence, [beauty of the mental system,] that is to say, all the qualities that are necessary to them, and all the charms they are still enabled to enjoy."

As, however, woman is more precocious than man, she becomes more advanced in reference to sex, than man at the same age; and consequently, to be duly matched to her husband, the wife should be the younger.

Of this admiration, then, and the consequent preference, modified as it is by age, it is necessary that the foundation should be explained. That foundation appears to be the similarity of objects and interests which are inseparable from similar periods of life, the association of these with a similar intensity of desire, the consequent production of similar sympathy, and the resolve that it shall be permanent.

This admiration and preference of corresponding ages secure, in their turn, those objects and interests without which there could be no happy superstructure; and whenever this law is much violated, it will be found that the pecuniary or other interests of one or both have been preferred to better ones.

Suitable states of the vital system happily accompany this sympathy, admiration and preference as to ages. This is of the greatest consequence as to children, their rearing, maintenance and provision—the great purpose for which these sentiments exist.

Public opinion, however vague, is formed on all these views, however obscurely perceived; and, in its turn, serves to vindicate and confirm them.

It would appear, then, that sympathy, admiration and preference being thus formed, each sex naturally and necessarily seeks next, not for qualities which are its own, but for those of which it is not in possession.

It seeks not these, however, in other species, where not only due adaptation for sexual purposes, but all relations of sympathy are wanting. It seeks them the less even in the varieties of its species, that such adaptation and relation are very defective, as will be shown in the sequel.

No being, then, can desire that of which it is already in possession; and the preference of that which is different from itself is founded on the absolute necessity of difference to all excitement. An animal cannot feel sexual excitement towards itself; it can feel little toward that which is like itself; it must feel most toward that which is most unlike it.

There is a beautiful analogy in this respect in physical nature. The attraction of affinity takes place between opposite or totally different bodies, as acids and alcalis, &c.

This is one of the links by which the sciences, vulgarly distinguished as physical sciences and moral sciences, are in reality closely connected, and constitute one universal science, as I shall show in Outlines of a Natural System of Science, to which all the leisure I have been able to obtain in life has been devoted, and of which the present and other works are but a few leaves. The originality of that work will

not, in any one of its portions, be less than that of the present work in all its fundamental principles. Numerous and fundamental as they thus are, if inaccurate or false, they will be worthless; if true, they must affect the general aspect of science.

Mr. Knight, whose great observing faculties and vast experience, well entitle him to be heard on this subject, attests the effects produced on progeny by the existence in parents of the differences here alluded to. In a letter of the 1st of December last, he says, "I am disposed to think that the most powerful human minds will be found in offspring of parents of different hereditary constitutions. I prefer a male of a different colour from the breed of the female, where that can be obtained; and I think that I have seen fine children produced in more than one instance, where one family has been dark and the other fair. I am sure that I have witnessed the bad effects of marriages between two individuals very similar to each other in character and colour, and springing from ancestry of similar character. Such have appeared to me to be like marriages between brothers and sisters."

Man consequently looks for delicacy, flexibility and gentleness in his mate; woman, for strength, firmness and power. This is, indeed, a natural and happy protection against unnatural and infamous indulgences.

As this involves the consideration of beauty in woman, I again refer to the work on Beauty, of which the title has been given, for more correct notions of

beauty, generally considered, than are commonly entertained.

In the locomotive system, man generally prefers a less stuture; woman a taller. Love from a man towards a masculine woman, would be felt by him as an unnatural association with one of his own sex; and an effeminate man is equally repugnant to woman, whose weakness seeks support in the wants which it feels, or in the dangers which it imagines.

If unluckily an unnatural condition occur—if sexual proportions be reversed, by man being little, and woman tall, even those opposites will be accepted or sought for. An effeminate man is indeed better matched with a masculine woman who sustains the character of which he is incapable. But, for him, it is a despicable position.

In the vital system, the dry seek the humid; the meagre, the plump; the hard, the softer; the rough, the smoother; the warmer, the colder; the dark, the fairer, &c., upon the same principles; and so also, if here any of the more usual sexual qualities are reversed, the opposite ones will be accepted or sought for.

In the mental system, the irritable seek the calm the grave, the gay; the impassioned, the modest; the impetuous, the gentle, &c.; or, in opposite cases, the opposite.

In all, it is not what we possess in ourselves; it is something different, something new, something capable of exciting, which is sought for; and this conforms to the fundamental difference of the sexes

The same principle operates with reference to marriages between persons closely related. Moreover, other sentiments existing from infancy, in consequence of such relationship, tend powerfully to diminish physical love, or to produce the most injurious effects. Incest amongst the Persians, permitted by Zoroaster, produced either diseased or degenerate offspring, or absolute sterility, as we see in breeding in-and-in among animals.

A remarkable illustration of this occurred to the writer, at a time when he was less acquainted than he now is, with the differences of taste in this respect, and with their causes. Observing, in a Ramsgate steam-boat by which he travelled, a gentleman who was characterised, as far as man well can be, by beauty of the vital system—not certainly the most suitable to man, but who was nevertheless so good-looking as to attract general observation, he could not help saying to himself, "If that gentleman has a sister, she is no doubt a delightful creature—her fine flaxen hair,—the sweet and innocent expression of her face,—her soft blue eyes,—the velvet texture of her skin,—the rose and lily of her complexion,—her softly rounded shoulders,"—when his ear was struck by the words, "I admire the women of Kent," and, looking up, he saw they were uttered by the very man whose sister had suggested the preceding train of reflection! "Are they not," said the astonished writer, "in general a little too tall?" "O! not at all," said this rather short gentleman; "I admire a tall woman?" "Are they not," said the writer, "a little too thin?" "Not more so, I think," said this fat gentleman, "than is

essential to elegance!" "Are they not," said the writer, "a little too dark?" "Ah," said this fair gentleman, "I admire a brunette!" "Perhaps," said the writer, confounded and vexed at all this,—"perhaps you also admire the occasionally roughish voices and slight mustaches of their cousins, the French women of the opposite coast?" "That," exclaimed this rather womanly-looking gentleman,—"that is the very thing I am delighted with!" After this, as the writer then thought frightful perversion of ideas, the conversation dropped.

Thus, then, the points of resemblance and agreement as to age, and those of difference and disagreement as to all other qualities, are accounted for.

It will be seen, however, how manifold and powerful are these differences and disagreements as to all sexual qualities; and it consequently will not be wondered, if, in a matter which regards the sexes, the love of such difference and disagreement overcome, under certain circumstances, the consideration of agreement as to age.

It has been seen, that the desire of conformity in age springs out of the first notion of want, love, sympathy, and especially of resolve of permanent possession. If, however, under any circumstances, the idea of permanence is got rid of, even difference of age may obviously be desired. Hence, in temporary attachments, such difference is sometimes actually sought—the elder of either sex seek the young; and the young the elder.

As, during youth, even women who are not absolutely beautiful have some charms, and afford the con-

trasts desired, we see that such women are sought by men in advanced age.—The zeal, however, with which this is desired, has been justly observed to be the measure of decline.

It has already appeared, that the vital system is the most essential to woman, and that, in middle life, there is always a tendency to beauty of that species. This is the cause of another deviation from the general preference just described, by which the young sometimes, and especially those whose irritable minds seek a kind of voluptuous repose, prefer, by an apparent anomaly, women of more advanced age and more developed vital system. Even in this case, however, the preference is but a partial one. It is a passion which expires with its gratification, and which its subject would perhaps blush to acknowledge.

In all that is temporary in love, there are even physical causes of such preferences, which it would not be proper here to discuss. There are also both physical and moral consequences of these preferences, which it would be equally improper to enter upon.

Thus love does not depend on abstract beauty, but on such differences as are consistent with an instinctive feeling of suitableness, which deeply affects us, which first acts upon and agitates the imagination, and that faculty afterwards acts upon and aggrandises. The rapidity of these effects depends on individual temperament, so that sometimes a sudden and violent passion is produced by first sight.

Sometimes an accidental, subordinate and injurious difference, and the association founded upon it, influence this affection; and, by a strange blunder, the

mere accidental circumstance, in after life, is substituted for that with which it was associated. Hence, even Descartes, a man capable of discrimination in other things, said that all squinting women pleased him, because the first woman he had loved had that defect.

From both these causes, the circumstance arises, that we frequently see women, in spite of ugliness and the absence of other commendations, attract and engage in marriage men who might have commanded beauty, accomplishment and fortune.

Certain it is, that love, thus excited by differences, is favourable to fecundity; and those marriages in which it exists, are always more prolific than such as are founded on interest. Hence, while a married couple have been known to be sterile, each, after divorce, has become prolific with an individual of opposite constitution; and it is stated, that Congress was abolished, in the seventeenth century, owing to the circumstance of M. de Langeais, incapable of the duties of marriage with his own wife, being very fruitful with another lady better suited to him.

Thus, while, in love, similarity is required as to the variety of species and as to age, difference is looked for in all other respects, and is necessary not only to its existence, but to all its best effects. Hence the practical observation has been made, that if persons of similar temperament are joined together, as Voltaire and Madame de Chatelet, who could neither quit nor endure each other long, this similitude both produces a series of quarrels, and becomes a remarkable cause of sterility.

The beneficial tendency of this love of difference does not terminate here: it leads to those slight crosses in intermarriage between persons of different organization, which are as essential to the improvement of the races of men as we have found them to be to those of animals.

It is the operation of this principle, an operation which may be morally less desirable, that, acting most powerfully when the passion of love is strongest and the system most vigorous, seeks to exhaust itself in that variety which is to be found even in a succession of objects. Indeed, every moral error or imprudence of this kind originates in a natural law.

---

## SECTION II.

### STATE OF MARRIAGE.

Marriage is the result of the preference which has just been described; and in its first act, the neglect of care, management and patience may produce serious injury. In general, danger is less a few days after the catamenia, in other respects the proper period. Dr. Plazoni describes the case of a young woman in whom the vulvo-uterine canal was ruptured; and Diemerbroek states, that two young Dutch women died of hemorrhage.

It is at this moment, that the Fallopian tubes become active: their fimbriæ clasp the ovaries, forming a tubular communication between these and the ma-

trix; and an ovum, detached by the excitement, enters the open mouth of one of the tubes, and by it is slowly conveyed to the matrix; after which the wound thus made on the surface of the ovary, is closed with a cicatrix, and leaves behind a corpus luteum. It is probably at the moment of spasm by which the ovum is burst from the ovarium, that takes place the general shudder which women of great sensibility feel at conception.

It has been inquired, says Beck, "whether pregnancy may follow defloration? I apprehend that this is to be answered in the affirmative, although the instances are comparatively rare. It is quite common, in cases of seduction, to swear that there has been only a single coitus; and although this may be doubted in some, yet, in others, there is hardly just ground to disbelieve a solemn affirmation. It also has occasionally, I presume, occurred to most physicians, on comparing the term of gestation with the period of marriage, to render it probable that the pregnancy must have happened at the earliest possible term." This, I believe, has been too easily conceded.

The phenomena, above described, are succeeded by a sinking, which is proportioned to the previous excitement, and which endures for a short time. The nervous and muscular systems fall into collapse, and the countenance expresses apathy and wonder. Love, however, by satisfying desire, restores to the vital organs regular action, and to the mind tranquillity, and a tendency to repose.

The first acts of love tend to complete the develope-

ment of the organs of which they are the functions. The sympathetic swelling of glandular parts, especially in the neck and mammæ, is often their consequence. Hence, in ancient times, physicians considered the increased thickness of the neck in young women, as a sign of defloration; and they were wrong only in regarding it as certain.

On the subject of force, I quote the observations of Beck,—changing, however, both in him and some other writers here quoted, all coarse and indelicate terms employed by them.

"I have intimated that doubts exist whether violence can succeed against a grown female, in good health and strength. . . . The opinion of medical jurists is generally very decisive against it. . . . Metzger allows only of three cases in which the crime can be consummated:—where narcotics have been administered,—where several are engaged against the female,—and where a strong man attacks one who is not arrived at the age of puberty.

"It may with justice be supposed, that, in addition to the cases allowed, fear or terror may operate on a helpless female,—she may resist for a long time, and then faint from fatigue, or the dread of instant murder may lead to the abandonment of active resistance."

Dr. A. T. Thomson, in his lectures, agrees in the main with the author I have quoted. He suggests, that, in this effort "with a healthy female of adult age, who is really anxious to preserve chastity unsul lied, the mind of the man must necessarily be so

much abstracted from such effort, in overcoming the resistance offered to him, and in repelling the attacks of the injured person, that independent of corporeal exhaustion, the state of his mind will render it utterly impossible for him ever to effect that which constitutes the criminal intent."

"Can a female," it has been asked, "be thus injured during sleep without her knowledge? . . If the sleep has been caused by powerful narcotics, by intoxication, or if syncope or excessive fatigue be present, it is possible that this may occur; and it ought then to be considered, to all intents, the crime. . . . In natural sleep, I totally disbelieve its possibility with a pure person." . . But "in females accustomed to such intercourse, it has been supposed practicable."

Parents are not, at all times, equally fitted for, or capable of, reproduction. With a view to ensuring this, by increasing ardour, Lycurgus restricted the frequency of its acts.

"The state of society," says Shelley, "in which we exist, is a mixture of feudal savageness and imperfect civilization. It is not even until lately that mankind have admitted that happiness is the sole end of the science of ethics, as of all other sciences."

To some sects, who regard the acts of reproduction as defiling the body, as acts of bestiality, Montaigne says, "Are we not beasts to regard the action by which we exist as beastly?" And a high authority, Tertullian, says, "Natura veneranda est, non erubescenda. Concubitum libido, non conditio, fœdavit: excessus, non status, est impudicus."

In relation to time, woman is more disposed, and conception more probable, immediately after the occurrence of the catamenia; and, during the twenty-four hours, evening is certainly the most suitable period. Slight fatigue is repaired during sleep, and man awakes better disposed for his duties.

As to frequency, Bacon beautifully says, "the debauches of youth are so many conspiracies against old age." Hence, perhaps, man is, for the most part, shorter lived than woman; and this is the case in relation to the male and female of inferior animals The brief duration of male life is especially remarkable amongst insects, which sometimes perish in the reproductive act, and, as has been observed, leave their whole life to their posterity. So, amongst dicœcious plants, although the female flowers first, the male fades after he has ejected his fertilising pollen. Throughout nature, the female sex appear to survive for the purpose of nourishing the offspring.

Great reserve is, in this respect, required of feeble persons with soft fibres, and greater or less sensibility.

The usual effect of excess in the female is inflammation of the reproductive organs, producing deranged catamenia, hemorrhages and leucorrhæa. But such inflammations extend, and attack the whole body of the matrix; and, by being frequently re-excited, they eventually produce vaginal ulcerations, uterine disorganization, and consequent sterility.

Excesses, it is probable, also affect the tissue of the mammary glands, and tend to produce cancer; for we know the great sympathy of the matrix and mammæ, and it is stated, that females labouring under that dis-

ease, and indulging in pleasure, have experienced a striking increase of suffering.

In cases of such excess, the food is ill digested; absorption is imperfectly performed; and great meagreness is the consequence. The action of the heart, being frequently increased to violent pulsation, the other organs are subjected to a degree of excitement which readily becomes a state of disease. Both from that cause and from the disorder directly produced in their circulation by the act of reproduction, the lungs become liable to inflammation. These united give rise to aneurism, hæmoptisis, pneumonia, phthisis.

The organs of sense share in the derangement which arises from this cause. The eyes become weak, unable to endure the light, and are sometimes tormented by sparks and other objects dancing before them. Hearing gradually fails, and the ear is sometimes affected by a buzzing sensation. General nervous affections, or faintness and languor are also its results.

The brain, in the earlier stage of these indulgences, may be excited into the state of erotomania. In general, the shocks given to, and the consequent disorder of the brain, produce loss of attention and of memory; the slightest occurrence causes tumult in the mind; the faculty of thinking is almost entirely lost; and a state of stupidity and mental degradation ensues. Exaggerated sensibility, pitiable terrors, and a pusillanimous character are the consequences of this, in a great number of sufferers.

Their muscular powers are speedily enfeebled; they can scarcely drag themselves along; and the

slightest exertion fatigues them. Paralytic or spasmodic dispositions, sometimes epilepsy, gradually affect them. Hoffman and Tissot relate cases of females much addicted to indulgences, who experienced epileptic attacks whenever they complied with their desires.

Finally, a life, which is burthensome to all who are interested in them, and painful to themselves, is closed by a death which leaves their memory an object only of contempt or disgust.

From all this it is evident, that persons labouring under disease should abstain from such indulgences, which frequently produce relapse, and sometimes sudden death. Old men, in particular, are often attacked by apoplexies, amidst their enjoyments. Yet the pleasures of love causes none of these affections when used with moderation.

Continence is commonly enjoined women whilst suckling, and generally it seems necessary, for indul gence has often caused cholics and other disorders to the infant. But there are also cases in which lactation excites erotic impressions, or in which, on the contrary, such impressions render the lacteal secretion more active.

It is when all the evils that have been described are guarded against, and when the love of the parents is most active, that reproduction and the developement of the germ is best ensured. Hence it has been observed, that even licentious women, who have no children in consequence of the excess which enervates them, become fruitful when driven to abstinence either by seclusion or by a regular marriage.

Beck asks, "Does pregnancy ever follow violence?" On this question, a great diversity of opinion has existed.

"It was formerly supposed that a certain degree of enjoyment was necessary in order to cause conception; and, accordingly, the presence of pregnancy was deemed to exclude the idea of force.

"Late writers, however, urge that the functions of the uterine system are, in a great degree, independent of the will; and that there may be physical constraint on [involuntary excitement of] those organs sufficient to induce the required state, although the will itself is not consenting.

"We do not know what is necessary to cause conception; but if we reason from analogy, we shall certainly find cases where females have conceived while under the influence of narcotics, of intoxication, and even of asphyxia, and, consequently, without knowing or partaking of the enjoyment that is insisted on."

"It is not, perhaps, altogether impossible," says Dr. Good, "that impregnation should take place in the case of violence, or where there is a great repugnance on the part of the female; for there may be so high a tone of constitutional orgasm, as to be beyond the control of the individual who is thus forced, and not to be repressed even by a virtuous recoil, or a sense of horror at the time. But, this is a possible, rather than an actual case; and though the remark may be sufficient to suspend a charge of criminality, the infamy can be completely wiped away only by collateral circumstances.—In ordinary instances, rude, brutal

force is never found to succeed against the consent of the injured person."

To me, it appears that, on this subject, the assertions of women are of no weight; and I have not yet seen the physiological reasons which at all satisfy me, that an act which is partially voluntary, and appears to be always accompanied with enjoyment, can be performed under horror and disgust. Under the influence of narcotics, intoxication, or asphyxia, volition is inactive: under horror and disgust, it is powerfully active and directly opposed to the result in question. The effects which take place in dreams are never attended by horror and disgust. Similarly, the smell of inviting and desirable food will cause saliva to flow into the mouth in spite of any ordinary effort of the will to restrain it; but the smell of food exciting horror and disgust will produce no such effect. Assafœtida or garum undoubtedly excited the salivary glands of the filthy Romans: they would not excite those of the cleanlier English. I, therefore, believe the opinions which prevail on this subject in our courts of justice to be utterly wrong. What cruel injustice they may have perpetrated!

The faculty of Leipsic decided "dormientem in sella virginem insciam defiorari posse."—Valentini, sneering at the ridiculous decision, says, "Non omnes dormiunt, qui clauses et conniventes habent oculos!" the only answer it deserves.

As to the period of gestation, Dr. Beck is of opinion, that if a mature child be born before the seventh month after connection, it ought to be considered illigitimate.

In this country, the allowed term for gestation is nine calendar months or forty weeks; but, as generally there is difficulty in determining the exact day between any two catamenial periods, it is usual to count the forty weeks from the middle of their interval, or, in other words, to allow forty-two weeks, or two hundred and ninety-four days, from the last catamenia; and within a few days before or after the expiration of this term, the labour may be expected.—By the Code Napoleon, the legitimacy of a child, born three hundred days after a dissolution of marriage, may be questioned.—The Prussian civil code, however, declares that an infant, born three hundred and two days after the death of the husband, shall be considered legitimate. Cases protracted beyond this period are explained only by accoucheurs of exceeding benevolence, and in favour of persons of great private or public respect.

Most of the other subjects connected with marriage are discussed at length in my work, entitled, "WOMAN PHYSIOLOGICALLY CONSIDERED AS TO MIND, MORALS, MARRIAGE, MATRIMONIAL SLAVERY, INFIDELITY AND DIVORCE."

---

## SECTION III.

### FORMS AND QUALITIES PROPAGATED.

"PLINY remarks," says Camper, "that nature is by no means regular in the procreation of the human

race: so that parents rarely give birth to children that resemble themselves. Persons who are well formed have misshapen children; whilst those of deformed parents are well made. Mothers also give birth to children that sometimes resemble themselves, sometimes the father, and sometimes resemble neither one nor the other."

This assertion is more worthy of Pliny than of Camper: its latter part is entirely untrue. I will venture to say, that there never was a child that did not strikingly resemble both its real parents, if resemblance was looked for where it ought to be; as I shall point out in the sequel. But such assertions show the actual state of knowledge on this subject.

Meanwhile, as Mr. Lawrence has collected some facts which show that forms and qualities sometimes are propagated, I avail myself of them and a few others to illustrate that point.

Proof of the effect which may be produced in consequence of the hereditary nature of great stature, is to be found in a fact related by Dr. R. Forster. The guards of the late King Frederick William of Prussia, and likewise those of the present monarch, who are all of an uncommon size, have been quartered at Potsdam for fifty years past. A great number of the present inhabitants of that place are of very high stature, which is more especially striking in the numerous gigantic figures of women. This certainly is owing to the connexions and intermarriages of the tall men with the females of that town.

Haller observes that his own family had been distinguished by tallness of stature for three generations,

without excepting one out of numerous grandsons descended from one grandfather.

Individuals are occasionally produced with supernumerary members on the hands or feet, or on both; and from these, whether males or females, the organic peculiarity frequently passes to their children. This does not constantly happen, because they intermarry with persons of the ordinary form. Pliny has mentioned examples of six-fingered persons among the Romans: such individuals received the additional name of sedigitus or sedigita. C. Horatius had two daughters with this peculiarity. Reaumur speaks of a family in which a similar structure existed for three generations, being transmitted both in the male and female lines. Sir Anthony Carlisle has recorded the particulars of a family, in which he traced supernumerary toes and fingers for four generations. They were introduced by a female, who had six fingers on each hand, and six toes on each foot. From her marriage with a man naturally formed, were produced ten children with a supernumerary member on each limb, and an eleventh, in which the peculiarity existed in both feet and one hand, the other hand being naturally formed. The latter married a man of the ordinary formation: they had four children, of which three had one or two limbs natural, and the rest with the supernumerary parts, while the fourth had six fingers on each hand, and as many toes on each foot. The latter married a woman naturally formed, and had issue by her, eight children, four with the usual structure, and the same number with supernumerary fingers or toes. Two of them were twins, of

which one was naturally formed, the other six-fingered and six-toed.

At Leyton, a little village in Essex, about five miles eastward of London, lives at present Thomas Spackman, a thatcher and hay-binder. He has twelve toes, six on each foot; and a few years since he had ten fingers, five on each hand, beside thumbs, but, by accident at work, the small finger on the left hand was torn off, leaving full evidence, however, by the stump left, where the extra member had been. The additional toes, like the odd finger, are not articulated, although in all other respects of natural formation: they are without tendons, and merely connected, it seems, by slight ligaments. His great-grandfather and the whole of his ancestors have been noted for the production of these additional members. He himself has several children with the same additional parts; the only exception being in a daughter of the age of twelve years, who has twelve toes, but hands of the ordinary formation.

Another remarkable example of the occurrence of a singular organic peculiarity, and of its hereditary transmission, was afforded by the English family of porcupine men, who derived that name from the greater part of the body being covered by hard, dark-coloured excresences of a horny nature. The whole surface, excepting the head and face, the palms and soles, was occupied by this unnatural kind of integument. The first account of this family is found in the Philosophical Transactions, and consists of the description of a boy, named Edward Lambert, fourteen years old, born in Suffolk, and exhibited to the Royal

Society in 1731, by Mr. Machin, one of the secretaries. "It was not easy to think of any sort of skin or natural integument that exactly resembled it. Some compared it to the bark of a tree; others thought it looked like seal-skin; others, like the skin of an elephant, or the skin about the legs of a rhinoceros; and some took it to be like a great wart, or number of warts uniting and overspreading the whole body. The bristly parts, which were chiefly about the belly and flanks, looked and rustled like the bristles or quills of a hedgehog, shorn off within an inch of the skin." These productions were hard, callous and insensible. Other children of the same parents were naturally formed.

In a subsequent account, presented to the society twenty-four years afterwards, by Mr. H. Baker, and illustrated with a figure of the hands, this man was said to continue in the same state. He was a good-looking person and enjoyed good health; everything connected with his excretions was natural; and he derived no inconvenience from the state of his skin, except that it would crack and bleed after very hard work. He had now been shown in London under the name of the Porcupine Man. "The coverings," says Mr. Baker, "seemed most nearly to resemble an innumerable company of warts, of a dark-brown colour, and a cylindrical figure, rising to a like height, (an inch, at their full size,) and growing as close as possible to one another, but so stiff and elastic, that when the hand was drawn over they made a rustling noise." They were shed annually, in the autumn or winter, and succeeded by a fresh growth, which at

first were of a paler brown. "He had had the small-pox, and had been twice salivated, in hopes of getting rid of this disagreeable covering; during which disorders the warts came off, and his skin appeared white and smooth, like that of other people; but on his recovery, it soon became as it was before. His health at other times had been very good during his whole life." . . . "He had had six children, all with the same rugged covering as himself; the first appearance whereof in them, as well as in him, came on in about nine weeks after the birth. Only one of them was living, a very pretty boy, eight years of age, whom I saw and examined with his father, and who was exactly in the same condition."

Two brothers, John Lambert, aged twenty-two, and Richard, aged fourteen, who must have been grandsons of the original porcupine man, Edward Lambert, were shown in Germany, and had the cutaneous incrustation already described. A minute account of them was published by Dr. W. G. Tilesius, who mentions that the wife of the elder, at the time he saw him, was in England pregnant.

I may cite a single example to prove, what will to most persons seem unnecessary, namely, that mental defects are propagated as well as corporeal. "We know," says Haller, "a very remarkable instance of two noble females, who got husbands on account of their wealth, although they were nearly idiots, and from whom this mental defect has extended for a century into several families, so that some of all their descendants still continue idiots in the fourth and even in the fifth generation."

Now, if the six-fingered and six-toed could be matched together, and the breed could be preserved pure by excluding all who had not these additional members, there is no doubt that a permanent race might be formed constantly possessing this number of fingers and toes. . . . So also, if the porcupine family had been exiled from human society, and been obliged to take up their abode in some solitary spot or desert island,—by matching with each other, a race would have been produced, more widely different from us in external appearance than the negro.

The gipsies afford an example of a people spread over all Europe for the last four centuries, and nearly confined in marriages, by their peculiar way of life, to their own tribe. In Transylvania, where there is a great number of them, and the race remains pure, their features can consequently be more accurately observed. In every country and climate, however, which they have inhabited, they preserve their distinctive character so perfectly, that they are recognized at a glance, and cannot be confounded with the natives.

The Jews exhibit a striking instance of a peculiar national countenance, so strongly marked in almost every individual, that persons the least used to physiognomical observations detect it instantly, though not easily understood or described. Religion has, in this case, most successfully exerted its power in preventing communion with other races ; and this exclusion of intercourse with all others has preserved the Jewish countenance (and with it, mode of life, dirtiness, and cutaneous disease) so completely in every soil and cli

mate, that a miracle has been thought necessary to account for it.

We see a general similitude in persons of the same blood, and can distinguish one brother by his resemblance to another, or know a son by his likeness to the father or mother, or even to the grandfather or grandmother. All the individuals of some families are characterized by particular lines of countenance; and we frequently observe a peculiar feature continued in a family for many generations. We especially observe the same features and habits descending from one to another in particular families that seldom form alliances with persons of different rank, as amongst kings and nobility. Such are the features of the Guelfs, the Bourbons, those of the reigning house of Austria, in which the thick lip introduced by the marriage of the Emperor Maximilian with Mary of Burgundy, is visible in their descendants to this day, after a lapse of three centuries.

I may conclude this section, then, by stating the great fact, THAT LIKE PRODUCES LIKE, not in generalities (for generalization is an act of the mind,) but in details, modified only by the necessity of adaptation between two beings uniting for the production of a third one, and by subordinate circumstances affecting them.

# PART IV.

## NEWLY DISCOVERED NATURAL LAWS REGULATING THE RESEMBLANCE OF PROGENY TO PARENTS.

---

### SECTION I.

#### LAWS OF RESEMBLANCE.

We are told by Dr. Pritchard, that, "The children of the same parents, though often bearing a general resemblance, yet exhibit always some difference, and frequently a considerable diversity in these respects." To account for this apparently capricious variety, is not what we attempt. That *there must be a sufficient reason why each individual figure should assume its own precise character*, rather than any other, is not to be doubted, but *the causes which predetermine it, seem to be beyond the reach of human sagacity*, or at least they will never be discovered, until the details of general physiology, and the theory of generation in particular, shall be much better understood, than they seem likely ever to be.—Such assertions have probably preceded all new observations, however simple. That

they are discouraging and mischievous, is evident. That they are untrue, I shall endeavour to show in the sequel.

An imperfect outline of this Section appeared in the London Medical and Surgical Journal, for 25, May, 1833. It was reprinted with additions, in March, 1837, as a pamphlet, with the title, "Influence of Natural Beauty, and its Defects, on Offspring; and Law Regulating the Resemblance of Progeny to Parents; circulated (privately) in order to obtain information from those who have the means of observing, in furtherance of a work on this subject."

Some facts are now to be described, which are certainly amongst the most curious and interesting of those which appear to have escaped the notice of philosophic observers.

This is the more surprising, as it requires but little analytical power to detect them,—as, when observed, they appear to be of the simplest description,—and as the regularity of their sequence is such that they appear to tend to general laws.

*These laws regard the mode in which the organization of parents affects that of children, or regulates the organs which each parent respectively bestows—the mode in which like produces like.*

Among animals, the mere effects of these laws have been observed to take place; but the laws themselves, on which these defects depend, have in no case been defined; nor, consequently, have they been applied to, or observed to operate among, mankind.

So little have these laws been thought of among breeders, that my correspondent * * *, in a letter of

the 21, March, 1837, says, "I doubt much whether the breeders of domestic animals can give you any information: the points of shape to which you refer are considered by them so entirely matters of indifference, that they never attend to them at all." And, in one to Dr. Birkbeck, of the 4, February, he says, "I should doubt whether the experiments which have been made with the view of improving the breeds of domestic animals can bear any very close analogy to the effects of intermarriages among mankind." Knowing, however, the uniformity and simplicity of natural operations, the value of comparative anatomy, and the strict dependence of physiological action on anatomical structure, it was impossible to be discouraged.

These laws were discovered by observation turned to the subject, in the conviction that some such laws must exist. As, however, they ascend to, and have their origin in, the structure and functions of the body, it is evident that, in an attempt to communicate a knowledge of them to others, a very brief view of such structure and functions—the proper objects of anatomy and physiology—will facilitate their explanation. That brief view, which is itself original, is given under the title of PRELIMINARY, at the beginning of the work; and *the reader is entreated to make himself master of it, in order to facilitate his understanding the whole of the sequel.* The task is but a short one.

By some physiologists, the influence which intermarriages exert over the forms of mankind, has been overrated. Mr. Lawrence says, "Connexions in marriage will generally be formed on the idea of human beauty in any country; an influence this, which will

gradually approximate the countenance towards one common standard. If men, in the affair of marriage, were as much under management as some animals are in the exercise of their generative functions, an absolute ruler might accomplish, in his dominions, almost any idea of the human form."

Cabanis more correctly says, "It cannot be doubted that, in the human race, improved as it may be by a long physical and moral culture, particular traits will still distinguish individuals, as they distinguish the individuals among inferior animals which we have so highly improved."

Cabanis was not aware that he might have asserted much more than this. I have, I believe, established the truth that, *in the propagation of organs from parents to children, organization is nearly indestructible;* for it may often be seen that neither nourishment entirely derived from the mother, nor climate, nor education, diminishes an original resemblance to the father.

Each parent, nevertheless, communicates a distinct series of organs; and the only modifications which the organs communicated by either parent undergo, are chiefly, if not altogether, such as are necessary to harmony of action with those communicated by the other parent, and such as are produced by difference of sex

## I. Law of Selection,

WHERE BOTH PARENTS ARE OF THE SAME VARIETY.

### 1.—*Organs Communicated by One Parent—the Anterior Series.*

In this case, ONE PARENT COMMUNICATES THE ANTERIOR PART OF THE HEAD,* THE OSSEOUS OR BONY PART OF THE FACE, THE FORMS OF THE ORGANS OF SENSE, (the external ear, under lip, lower part of the nose, and eyebrows being often modified,) AND THE WHOLE OF THE INTERNAL NUTRITIVE SYSTEM (the contents of the trunk, or the thoracic and abdominal viscera, and consequently the form of the trunk itself, in so far as that depends upon its contents.)

The resemblance to that parent is consequently found in the forehead and the bony parts of the face, as the orbits, cheek-bones, jaws, chin and teeth, as well as the shape of the organs of sense, and the tone of the voice.

### 2.—*Organs Communicated by the Other Parent—the Posterior Series.*

THE OTHER PARENT COMMUNICATES THE POSTERIOR PART OF THE HEAD,† THE CEREBEL SITUATED WITHIN THE SKULL IMMEDIATELY ABOVE ITS JUNCTION WITH THE BACK OF THE NECK, AND THE WHOLE OF THE LO-

---

* And, I believe, the upper middle part also.

† And, I believe, the lower middle part also.

COMOTIVE SYSTEM (the bones ligaments and muscles or fleshy parts.)

The resemblance to that parent is consequently found in the back head, the few more moveable parts of the face, as the external ear, under lip, lower part of the nose, eyebrows, and the external forms of the body, in so far as they depend on the muscles, as well as the form of the limbs, even to the fingers, toes, nails.*

*Explanation of the Accompaniment of Particular Organs, in each of these two Series.*

It is clear that the whole *nutritive system*, chiefly contained within the trunk, is naturally connected with the *senses of taste and smell*, which are the guides to the supply of its wants as to food and drink; and therefore the senses contained in the face (and consequently the observing faculties dependent on these senses and contained in the forchead) ought to accompany the nutritive system.

It is equally clear, that the whole *locomotive system*, is naturally connected with the *cerebel or organ of will*, on impulses from which all the motions of that

* Several circumstances indicate that, with this series of organs, go the skin and its appendages. These have evidently much affinity with the osseous system. Not only does the skin become horny from pressure, but hair, bristles, spines, scales, nails and horns are its productions, (the bony and the skinny system often uniting in horns:) and in many inferior animals, as the crustacea, it becomes shelly and serves the purpose of bones. If moreover it be true that the offspring of a black man and a white woman are darker than those of a black woman by a white, this must be because, in a cross, the male gives the locomotive system, and because the skin and its colour go along with it.

system depend; and therefore the backhead containing both the organ of will and the posterior masses of brain—the seats of desire or aversion by which will is excited, ought to accompany the locomotive system, not merely in the greater masses of the figure, but even in the muscles of the face.

NOTE FOR THE PHYSIOLOGIST.—This invariable accompaniment of the CEREBEL by the locomotive system, gives further confirmation of the great truth, that volition, or the power which actuates the locomotive system, is the function of the cerebel; as first pointed out by me in "Preliminary Lectures," published in 1808, the year before it was noticed by Rolando. It also shows the error of those who, falsely supposing the *posterior* columns of the spinal cord to be those of *sensation*, are driven, like Sir. C. Bell, Dr. Pritchard, M. Foville, &c., to regard the cerebel, from which these columns proceed, as an "organ of sensation!" Thus Dr. M. Good asserts that "the nervous filaments of the muscles are of two kinds, *sensific* and motific, the *former* proceeding from the *cerebellum*, or the *posterior trunk* of the spinal chord to which it gives rise, and the latter from the cerebrum, or the anterior trunk of the same double chord." But there neither is, nor can be, any other organ of sensation than those of the senses. *Sensation* is not repeated in the encephalon; and it becomes *perception* in the cerebrum, not in the cerebel. That the latter is the organ of volition or will, is proved, moreover, by every observation; and it follows that the posterior columns are columns of volition.—The assertion, that the ANTERIOR COLUMNS are those of volition, is no more proved

by muscular motion ensuing when they are irritated, —than the nerves of the skin or of the tips of the fingers, are proved to be nerves of volition, because when pricked, these parts are instantly withdrawn. Sensation, conscious or unconscious, must precede all animal motion. Neglect of this truth led Bell and Magendie to invert the doctrine, that "the ANTERIOR columns are those of *sensation*, and the *posterior* those of *volition*," first published by me in "Archives of Science" in 1809, long before these men dreamt of such a thing; as reference to that work and to theirs will prove. They and their followers are now in the awkward position of finding that the posterior columns, falsely supposed by them to be those of *sensation*, are connected with the cerebel, which no ingenuity of theirs will ever show not to be the organ of *volition! This foolish position will soon set the matter right*—But I will fully expose this in an "Introduction to the Nervous System," in which also I will notice Dr. Fletcher's numerous and liberal criticisms on my work of the "Nervous System;" as well as the *new discovery* of Mr. Solly! *vouched to be so* by Mr. Owen and Mr. Mayo!! and *received as such* by the Royal Society!!!

*Either Parent may give either Series.*

As to the communication of organs from parents to progeny, our knowledge has hitherto been indefinite and vague; and my correspondent * * * * (21, March*) says, generally, "The male and female ap-

* Henceforward the dates of communications are thus briefly indicated.

pear to have, on the average, an equal influence upon the form of the progeny. Some males transmit their likeness to their produce more than others, while some females breed similar animals, though put to a variety of males. I am, of course, not speaking of cross breeds."

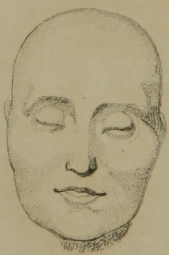
Mr. Knight (16, April) rather more definitively says, "Respecting the influence, comparatively, of the male parent and the female one, that of both is very nicely balanced, where both parents are of the *same variety*, and *similar in size and habit to each other*."

It is a fact established by my observations, that, in animals of the same variety, *either the male or the female parent* may give *either series of organs* as above arranged—that is *either* forehead and organs of sense, together with the vital and nutritive organs, *or* backhead, together with the locomotive organs, as will forthwith appear.

### *Slight Illustrations.*

These, though imperfect, (for I have had no opportunity of personally examining their subjects,) are selected on account of their being extensively known, and therefore readily satisfying the minds of most persons as to the truth of the law which has just been enunciated.

The QUEEN, as daughter of the Duke and Duchess of Kent, resembles her MOTHER generally in the *anterior series* of organs, (see page 142,) and her FATHER generally in the *posterior series* of organs. (see page 142.) This is sufficiently indicated in Plate I., where



the slightest comparison will show that the Queen has the forehead of her mother, which is much superior in perpendicularity and capacity to that of her father; and that, on the contrary, she has his lower features, the nose and mouth in particular. Those two points indicate all the other organs which are associated in each respective series, as will further appear.

Engravings representing the heads of NAPOLEON, MARIA LOUISA, and their SON, at an early period, present the precisely opposite case, in which the FATHER gives the *anterior series* of organs, and the MOTHER the *posterior series* of organs.—Plate II. shows the son to have the high forehead of the father, and the thicker lips of the mother. That the son has the forehead of the father is proved, not only by its capacity, but by the horizontal line which, in both, it forms over the orbits and root of the nose, so totally different from that of the mother; and also by actual measurement. The original masks, both that of Napoleon, taken after death by Dr. Antomarchi at St. Helena, and that of his son, taken after death at Vienna, being in possession of Mr. F. Graves, of Pall Mall, he has most liberally permitted Mr. F. Howard to take sketches from them, and has also permitted me to take their dimensions. In both, the space from the depression immediately above and before the tragus of the ear, on one side, to the same point on the other, is nearly the same, whether the measure be carried over the surface which is immediately above the frontal sinuses in the father, and has the corresponding direction in the son, or whether it be carried two inches and a half higher upon the forehead. In the

first situation, its length in Napoleon is eleven inches and six-eighths, and in his son one-eighth more; and in the last situation, its length in Napoleon is twelve inches and five-eighths, and in his son two-eighths more. That the son has the developed and sensual lips of the mother, all good portraits show; and the mask also shows that he has her wide backhead, on which that developement depends. The diameter of Napoleon's head immediately above the ear appears to be five inches and seven-eighths; and that of his son is six inches and three-eighths. Thus the son's head vastly enlarges behind; and this, reacting on the forehead, slightly enlarges that, according to a rule which will forthwith be mentioned. The narrower, longer, and more intensely acting head of Napoleon is quite a contrast to that of his son, which never would have frightened the antiquated royalty and aristocracy of Europe, even if he had not, like his father, recruited their ranks.

Thus, these slight illustrations not only show that *each parent* communicates a *distinct series* of organs, but that *either parent* may communicate *either series*.

### *Various Corroborations, both as to Man and Animals.*

To show that practical people have been struck with the accompaniment of *some* of the organs, I first restate the facts mentioned in the dedication; for dedications are sometimes neglected by readers.

I had no sooner announced to Mr. Knight this law, and brought before him a family exemplifying its operation, when the vast experience and observation

which has long placed him at the head of scientific breeders, enabled him to state to me a practical circumstance both as to man and animals, which at once corroborates every portion of the law.

He stated that if, in woman, he were shown merely a face, short and round, full in the region of the forehead, and having what are commonly called chubby cheeks, but contracted and fine in the nose and mouth, he would unhesitatingly predict the trunk to be wide and capacious, and the limbs to taper thence to their extremities: and so unfailing was this indication also in regard to inferior animals, that if, in adjudging a prize, there were brought before him an apparently well-fed animal of opposite form, or having a long and slender head, he would suspect it to be crammed for show, and, as such, should be disposed to reject it.*

In this, his vast experience discovered a practical fact independent of all theory—a fact constituting an unerring guide in the most important decisions of husbandry—a fact of immense extent and bearing in its various relations.

His ready prediction of the capacity of the trunk from a view merely of the forehead and face—these anterior parts, is a proof of so much of the law as states that, with the form of the forehead and face, goes that of the nutritive organs contained in the trunk, for to these its capacity is adapted.

Regarded, moreover, even thus far, it leaves it as

* Mr. Knight (22, May,) says, "The same remark respecting long and slender heads and faces, applies alike to horses, sheep, hogs, &c."

probable, that the remainder of the law is equally well founded, namely, that, with the form of the backhead and cerebel—these posterior parts, goes that of the locomotive organs composing the rest of the body.

His beautiful observation, however, does much more than render this remainder of the law a mere probability.—I have shown in this work, that, with the dimensions of the backhead and cerebel, go those of the locomotive system, and consequently those of the more muscular and moveable parts of the face, the mouth and nose. The shortness and fineness, therefore, of the mouth and nose, mentioned in his observation, being concomitant effects of the same cause with the tapering limbs, become as sure an indication, not merely of such limbs, but of the small backhead and cerebel, as the short and round face with full forehead, were of the wide and capacious trunk. Thus, that observation confirms also the remainder of the law.

In a letter subsequent to that time, (22, May,) Mr. Knight says, "Respecting the connexion between short faces and plump bodies, amongst our cultivated animals, as you thought the fact important in support of some of your opinions, I think it will be well to cite the human species as an example; for no one can doubt that girls with short broad faces have more plump bodies, than those with slender oval faces, aquiline noses, &c.

"A dog having a long slender head and nose, with the body of a bull-dog, would be a strange looking animal, nothing similar to which has, I believe, ever

existed, and such a form of animal could not be obtained unless by long successive attention, through a great many generations, if it could at all be obtained, and, if it could be obtained, it would not be as hardy, constitutionally, as the ordinary bull-dog. Equal difficulty would occur in forming a breed of dogs with the body of the greyhound and the head of the bull-dog."

Mr. Knight, however, observes, that, among domesticated animals, he "never witnessed any difference in the influence of the male or of the female parent upon the forms of the heads of the offspring." The obvious reason of this is, that in horses, cattle and sheep, the form of the backhead and cerebel is hid by the great transverse ridge of the occipital bone, to which the large muscles which raise the head are attached; by these muscles themselves; and by the elastic ligament (ligamentum nuchæ,) which, without voluntary effort, assists the muscles in maintaining the position of the neck: in man, on the contrary, owing to his upright position, the head is greatly supported by resting on the vertebral column; large ridges, muscles and ligaments are not required; and the projection caused by the backhead and cerebel is perfectly obvious. Horses, cattle and sheep, therefore, show only the forehead and face; and their whole head consequently seems to go, undivided, along with the vital organs, in the trunk of the body.

Concealed, however, though the backhead is, in these animals, we have proof of its various developements, in the various developements of the muscular system, with which the former must always corres

pond, and which at all events show what each parent communicates.

I should here observe that, in order to express the similarity between progeny and one of their parents, breeders often say "they have the same general shape or character." Now, as this general shape or character is always caused by the skeleton and locomotive system generally, I have often, to avoid all difficulty, asked merely "Which parent gives the general shape or character?" Being thus informed as to which parent gives the locomotive system or posterior series of organs generally, and knowing that the other parent always gives the vital system or anterior series of organs generally, the reply to that question answers every purpose.

Those of whom inquiries are made, are thus saved the trouble of attending to the anterior series of organs, which are less easily distinguished by all who begin such observations. Still, it is well to explain at least that the form of the face and the relative capacity of the trunk indicate those of the sensitive and vital systems given by the parent who does not give the shape.

Enlightened persons readily see this. Thus, to prevent mistake, my correspondent * * * (11, January,) using his own terms, says, "I consider 'locomotive' to imply shape—bone and muscle, and 'vital' to imply the organs on which strength or weakness of constitution, disposition to fatten, &c., depend."*

* That is the intestines, heart, blood-vessels—in short, all the tubular organs, as explained in the Preliminary.

Accordingly, in addressing to that correspondent the important question which is now under consideration—"When the male and female parent are of the same breed, does it not appear that either may give the locomotive system, the general shape or character to the progeny?"—his answer (and it is a very important one) was "YES. But the colour usually depends upon the male."

To show further that either parent among domesticated animals, may give either series of organs, I may quote the account of the ancon sheep.

An ewe produced a male lamb of singular proportion and appearance. His offspring, by other ewes, had, in many instances, the same characters with himself. These were shortness of the limbs* and length of the body, so that the breed was called the otter breed, from being compared to that animal. The fore-limbs were also crooked, so as to give them in one part the appearance of an elbow, and hence the name ancon (from αγκων) was given to this kind of sheep. They were propagated in consequence of being less able to jump over fences. "They can neither run nor jump like other sheep. They are more infirm in their organic construction as well as more awkward in their gait, having their fore-legs always crooked, and their feet turned inwards when they walk.

"When both parents are of the otter or ancon breed, their descendants inherit their peculiar appearance and proportions of form. I have heard but of

* Sir Everard Home found that the bone of the fore-leg in one of these sheep was larger, but no so long as that of a much smaller Welsh sheep.

one questionable case of a contrary nature.—When an ancon ewe is impregnated by a common ram, the increase resembles wholly *either* the ewe *or* the ram.* The increase of a common ewe, impregnated by an ancon ram, follows entirely [in regard to shape of course] the one or the other, without blending any of the distinguishing and essential peculiarities of both.

"*Frequent instances have happened where common ewes have had twins by ancon rams; when one exhibited the complete marks and features of the ewe, the other of the ram.* The contrast has been rendered singularly striking when one short-legged and one long-legged lamb, produced at a birth, have been seen sucking the dam at the same time."

As the short and crooked legs, or those of opposite form, here indicate the parent giving the locomotive system, it is evident that one of the twins derived it from one parent, and the other twin from the other parent,—the parent not giving it, doubtless communicating, in each case, the vital or nutritive system.

### *Mode of verifying this Law, by examining Parents and Children.*

Every observer has the power of verifying these facts in nature.

With this view, the following scheme of the more or less dependent organs may be drawn out in two

---

* These last assertions, if not applied to shape alone, are evidently the results of imperfect observation. There are no instances of that kind in nature.

columns, over one of which may be written the word 'Mother,' and over the other the word 'Father.'

A copy of this scheme may be used in examining each child; and the organs of the father and mother respectively, which the child does not possess, may be crossed out, so that, in the two columns, each part in general remains but one named.

NAME OR INITIALS OF CHILD.

| PARTS LIKE THOSE OF THE MOTHER. | PARTS LIKE THOSE OF THE FATHER. |
|---|---|
| Forehead. | Forehead. |
| Upper Middle Part of Head. | Upper Middle Part of Head. |
| Bony Parts of Face. | Bony Parts of Face. |
| Teeth. | Teeth. |
| Digestive System, &c. | Digestive System, &c. |
| Form of Eyes. | Form of Eyes. |
| *Eyebrows.* | *Eyebrows.* |
| *Middle of Nose.* | *Middle of Nose.* |
| *Point of Nose.* | *Point of Nose* |
| *Upper Lip.* | *Upper Lip.* |
| *Under Lip.* | *Under Lip.* |
| *Ears.* | *Ears.* |
| Backhead. | Backhead. |
| Under Middle Part of Head.* | Under Middle Part of Head |
| Glabel or Frontal Sinuses. | Glabel or Frontal Sinuses. |
| Chest. | Chest. |
| Limbs. | Limbs. |
| Fingers, Toes, Nails. | Fingers, Toes, Nails. |

N. B. The parts of which the names are printed in italics are variable by the cerebel or organ of the will influencing the muscles more or less connected with them.

In examining a family, it is right to prefer the pa-

* That is, over the ears and towards the temples.

rents,—to understand first the organization of the mother in all the points mentioned in the columns; 2ndly, to understand that of the father in these points; 3rdly, to compare each of these points in one parent with the corresponding one in the other; 4thly, to mark particularly the greatest differences between them—making allowance for the modifications always caused by difference of sex and age; 5thly, to compare each corresponding point in the parent and child who appear to be the likest to each other, making the same allowance; 6thly, to look in the other parent for the points which do not correspond in the first, still making that allowance; 7thly, to bear in mind the influence which the more or less powerful action of each organ produces in another; 8thly to examine the other children in the same way; 9thly, not to be surprised if disagreements which are irreconcilable with the father's organization should sometimes occur.

As a GENERAL GUIDE IN SUCH OBSERVATIONS, it may be here noticed, that when the forehead and, considered generally, the face viewed in front, resemble one parent, the whole head viewed in profile will furnish the points of resemblance to the other parent, namely the backhead, the ear, the under lip, &c. The *front view* best displays the *observing faculties;* the *profile view*, the *active ones*.

Plates III. and IV. exhibit these resemblances more in detail than in the previous illustrations. They exhibit a father, mother and two sons, both in front and profile; and, if carefully examined in both these views, they show one son to have the forehead of the father and the mouth of the mother, while the other son has

the forehead of the mother with the mouth of the father; the other parts connected with these respectively, in all points corresponding.

*Further Explanation of the Influence of the Posterior Series of Organs upon the Anterior Ones, and vice versa.*

In the parent who gives the anterior series of organs—the forehead, osseous face, eyes, &c., there is always a tendency to give even the parts which are marked as variable in the preceding table—the eye brows, lower part of the nose, mouth, &c., because these belong to the organs of sense, which, as strictly such, and not as influenced by muscular action, are a most important portion of the anterior series. This tendency of these variable parts to conform to the more permanent anterior organs, may, indeed, be seen in almost every instance; and some of them are often altogether conformable.

As, however, these variable parts belong not merely to the organs of sense as such, but have also muscles entering into their composition, and are so far organs, not of sense or impression, but of expression, their forms become altered by this cause. Hence alone their variability, and the fact that their forms are often partly tracable to the parent giving the anterior organs, and partly to the parent giving the posterior ones.

It does not follow, however, that when one of these variable parts is thus influenced by the action of the cerebel, or organ of the will, all are so influenced. The cerebel consists of various parts, called lobes, of which

each appears to exert a specific action; and in that way it probably is, that one or two of the variable parts may be modified by it, while the rest conform to those of the parent giving the anterior organs. Thus either the eyebrows, or the lower part of the nose, or the under lip, may alone be altered.

Plates V. and VI. illustrate the influences now described. They exhibit a father, mother and two daughters, both in front and in profile; and, like the last plates, they show one child to have the forehead of the father, and the other to have the forehead of the mother. But, as the nose of the father is strongly marked, it is communicated to both children; and as the mouth of the mother is more developed, it is similarly communicated, as is well seen in the profiles.—These heads, moreover, show another interesting circumstance, namely, that the larger backhead of the mother causes an increased development of the head and of the forehead in particular, in one daughter; while the smaller backhead of the father causes a diminished development of the head and of the forehead in particular, in the other daughter. Hence one of these heads is vastly larger than the other. So powerful is the reaction of the backhead upon the forehead, as will afterwards be further shown.

This is the place to mention that, under all these changes, certain organs seem to go together, or to correspond in their forms. Thus I have often observed thick lips to be accompanied by thick or turned-in edges of the ears: the negro has both of these parts very thick; the monkey, both very thin. The forms of the nose and eyes appear also in some degree to

correspond. Nor are these correspondences unaccountable, since I have shown, in my work on THE NERVOUS SYSTEM, that the nose and eyes are more especially connected with emotion; and the mouth and ears, with passion.

As the cerebel thus exerts an influence over the moveable parts of the anterior series of organs, so one of the anterior organs influences the action of the muscles.

It is remarkable, that the parent who gives the locomotive system does not give the carriage and the manner of walking. These are always given by the other parent, who gives the organs of sense. Sensation would appear to be always the regulator of motion; and it appears to be the eyes in particular, which execute that function.

A very simple proof of this is obtained by shutting the eyes while we stand erect: the body is immediately, felt to vacillate and to be in perpetual danger of losing its balance, or rather to require distinct efforts to recover it; whereas, the moment the eyes are again opened, neither does vacillation occur, nor is correction necessary. It is worthy of remark that, when the eyes are closed, the same vacillation or loss of muscular control is the precursor of sleep.

### *Cause of the Division of the Nervous or Thinking System.*

It is remarkable that, in the propagation of resemblance from parents to progeny, the thinking organs should be divided;—one parent giving one portion,

namely, those of sensation and observation,—and the other parent giving the other portion, namely, those of passion and volition,—while the intermediate middle part is also divided. Thus, to restate the law in another and briefer form, THE THINKING ORGANS ARE, IN EQUAL AND DISTINCT PORTIONS, DERIVED FROM BOTH PARENTS; WHILE ONE GIVES THE WHOLE OF THE NUTRITIVE, AND THE OTHER THE WHOLE OF THE LOCOMOTIVE ORGANS.

A little reflection explains the cause of this peculiar DIVISION OF THE THINKING SYSTEM, as well as this dependence of the nutritive and locomotive systems.

It is evident that, in all the *voluntary* acts of animals, the *thinking system* must take the lead, and that, in the act of reproduction, they are also functions of that system—passion and volition, which must excite the *locomotive system* to fulfil the purposes of the *nutritive system*. Hence, in reproduction, the apparent predominance of the thinking system.

It is also evident that, in all voluntary acts in which two sexes are engaged, two thinking systems are involved; and, as the first portion of the thinking system, sensation and observation, is passive or dependent on impression, and the last portion, passion and volition, active and exciting to locomotion, it is evident that, in the act of reproduction, one or other sex will always be relatively passive, and the other relatively active.—Hence the progeny will receive, from one parent, the organization on which, in the thinking system, sensation and observation depend, and from the other, that on which passion and volition depend; for the very term reproduction implies the communi

cation of similar organs and functions, and therefore of the most energetic and characteristic ones.

*Thus the communication of mind, and of its most distinguishing or peculiar characteristics to progeny, evidently depends on mind, and the relative predominance of its two great divisions in parents; and, on each of these again, depend the locomotive system and the vital, respectively.*

As to the connection of mental faculties with external forms, I may observe that, with the forms of the organs of sense and the forehead, appear to go the qualities which characterise not only the sense of sight, smell, taste, &c., but the observing, imitating, acquiring and other faculties; and that, with the backhead and cerebel, appear to go the passions, acts of the will, appetites, &c.

### *Hypothesis as to the Increased Energy of that System.*

There is certainly some reason to suppose that whatever increases the ardour of passion invigorates the progeny.

It is a popular notion "that natural children," as they are called, have often more genius or ability than those who should, I suppose, be called artificial ones; and this is ascribed to the circumstance, that they are commonly produced by a more active as well as ardent love, and that the invention of their parents, being continually employed in concealing their passion from those who might condemn it, in deceiving jealousy, and in triumphing over obstacles, they naturally transmit to their progeny a portion of the talents to

which they thus owe their existence. It is, at the same time, probable, that their superiority must, in many instances, be attributed partly to the mental exertion that their want of support imposes upon them even from early years.

Such were the origin and education of several of the ancient heroes, said consequently to be the offspring of gods—Hercules, Theseus, Achilles, Romulus, and, in modern times, of Galileo, Erasmus, and a multitude of great men. For the same reason, younger brothers, being unprovided for, are more generally distinguished by ability.

### *The Directions of its Functions Hereditary.*

Galen says, "Manners depend on temperaments;" and it is generally felt that habits and pursuits long followed in families, develope the organs which they employ.

It has even been observed, that the child of a civilized European will acquire knowledge more readily than the offspring of an American savage; while it is known that such offspring, though brought up from a very early age in the colleges of the United States, exhibit an almost irresistible desire to return to the forests, and recommence the wandering life. On the other hand, we are told that, in the voyage up the Missouri by Clarke and Lewis, one of the company was the son of an Indian woman, who had married a Frenchman, and that this half Indian acquired the power of tracing animals through the trackless wood to any extent,—which his companions could not acquire.

It is also known that the whelps of well-trained dogs are, almost at birth, more fitted for sporting purposes than others. The most extraordinary and curious observations of this kind have been made by Mr. Knight, who, in a paper read to the Royal Society at one of its last meetings, showed, that the communicated powers were not of a vague or general kind, but that any particular art or trick acquired by these animals, was readily practised by their progeny, without the slightest instruction.

It was impossible to hear that interesting paper read, without being deeply impressed by it. Accordingly, in taking a long walk afterwards, for the purpose of reflecting on the subject, it forcibly struck me, that the better education of women was of much greater importance to their progeny than is commonly imagined; and, in calling on Sir Anthony Carlisle, on my return, to speak of the paper and its suggestions, he mentioned to me a very striking corroboration of this conclusion.

He observed that, many years since, an old schoolmaster had told him, that, in the course of his personal experience, he had observed a remarkable difference in the capacities of children for learning, which was connected with the education and aptitudes of their parents; that the children of people accustomed to arithmetic learned figures quicker than those of differently educated persons, while the children of classic scholars more easily learned Latin and Greek; and that, notwithstanding a few striking exceptions, the natural dulness of children born of uneducated parents was proverbial

Writing afterwards to Mr. Knight as to what appeared to be the striking and important applicabilities of his paper, he, in his reply, (23, November,) and in a subsequent letter, (21, December,) favoured me with the following illustrative remarks:—

"I, seventy years ago, heard an old schoolmaster remark, in speaking of my late brother's great facility of learning languages,* that, 'in fifty years' experience, he had never seen a child of wholly illiterate parentage and ancestry (such being at that time very abundant,) who could learn languages;' meaning, of course, Latin and Greek.

"Being with a friend, about thirty years ago, shooting grouse upon a Welsh mountain, we were joined by a native of the country, who exhibited, with the manners and character of a buffoon, very great powers of combining ideas, and who possessed a good deal of a kind of irregular and uninstructed wit. I pointed out to my friend the difference between him and the other peasants, and observed that, on inquiry he would prove to be the son of an educated male parent. It proved, upon inquiring, that he was a gentleman's bastard.

"Being in my parish church, about ten years ago, a little girl, in repeating her catechism, got through her part in less than half the time that her companions did, and without missing, or hesitating about, a single word. She was wholly unknown to me; but

---

*The distinguished Mr. Payne Knight is here alluded to.

I whispered to Mrs. Knight, 'That girl is a gentleman's natural daughter;' and so she proved to be.

"The following circumstance, which is at least very singular, leads me to suspect that the kind of language used by any people through many successive generations, might change and modify the organs of speech, though not to an extent cognizable by the anatomist. A celebrated French civil engineer, M. Polonceau, visited me some years ago, bringing with him a young French gentleman, who spoke English eloquently, and perfectly like an Englishman, though he had been in England only two years, and, as he assured me, knew nothing of the language previously, nor had ever heard it spoken. I asked him whether he could pronounce the English name Thistlethwaite, and he instantly pronounced it most distinctly and perfectly. The next day, when talking of other matters, he said that he had some Irish relations; and it appeared that his grandmother, on the female side, whom he had never seen, was an Irishwoman. Hence arose, I do not at all doubt, his power of so readily pronouncing the word I had prescribed. A French gentleman at Paris boasted to me that he could pronounce correctly any English word. I proposed Thistlethwaite to him, when, instead of trying, he exclaimed, 'Ah, barbare!'"—By the by, the *barbarism* is in the inability to pronounce the English *th*,—the *Greek* Θ!

"I believe," adds Mr. Knight, in a most interesting anecdote, "that most of the experiments in breeding, which have been accurately made and accurately reported, have been made either by Sir John Sebright or

by myself; and it is somewhat singular that we both descend from the same grandfather, his mother having been a daughter of my father's brother. We were, however, unacquainted in early life, and neither of us was influenced in any degree by the other in our pursuits.

"It is, I think, important that the minds of the ancestry should have been exercised in some way; and I think the hereditary powers will generally be found best calculated to do that which the parents, through successive generations, have done. The offspring of a family of American or Australian savages, would more readily acquire the power of tracing the steps of an animal in a trackless forest, than the child of an educated English family would do. The employment of weaving, where the threads are made to cross each other, so as to present the forms and colours of flowers, would, I conceive, prepare the mind of the offspring even for studying mathematics, &c."

Mr. Knight's observation (22, May) remarkably corroborates this first law, even as to the distribution of the mind of parents to progeny. He observes, that "when the male and female parent are of the same species and *same variety*, each parent has an *equal influence* upon the offspring as to temper, sagacity, &c., and in giving hereditary propensities.

### *Explanation of the Differences in the Features of Children, who yet resemble the same Parent.*

It is obviously because these two fundamental distinctions of mind and sex thus depend upon totally

different causes, that they are found to be variously combined and intermixed in progeny.

Hence arise THE FOUR SIMPLEST COMBINATIONS OF CHARACTER in the children of one family:—the paternal organs of sensations and observation with the male sex,—the maternal organs of sensation and observation with the female sex,—the paternal organs of passion, volition, &c., with the male sex,—the maternal organs of passion, volition, &c., with the female sex.

When, moreover, it is considered how much of modification is caused by the combination of functions, as in the case of different sexes with similar features, it will easily be seen to what variety of aspect, in the same family, this must lead.

But it is necessary I should explain the causes of the more minute differences which we observe in the features of the children who present these general resemblances to the same parent.

For some previous vague remarks, then, I would substitute a more definite doctrine; and that doctrine as to the details of resemblance is even essential to establish the sufficiency of this first law in its most minute applications.

A lady one day said to me, "In my own children, I see an illustration of the general truth of your law: some of them resemble me in the forehead, osseous face, organs of sense, &c., and their father in backhead and figure; but why do those who resemble me in face differ somewhat from each other in particular organs of sense and features?"

The question was rational and clever. A regard

for propriety prevented my giving an explicit answer: I could only say, "Observe that all these differences in features are mere modifications of your own,—such modifications as you yourself might assume under the influence of different emotions,—such modifications as you actually have assumed, and therefore have, in these very instances, communicated."

To explain this most important and interesting point more methodically and in detail.—The reader has seen that organization and function are communicated from parents to progeny; he knows that each distinct organization must produce function equally distinct; he knows that function always reacts on or ganization, as is shown by the improved forms which well-directed exercise produces on one hand, and by the deteriorations which labour causes on the other; he has seen that the practice of performing certain acts in parents, gives a distinct tendency to the performance of these acts in progeny; he knows, in short, that organization and function in the parent, are the real and only causes of organization and function in the child. Can he then doubt that the peculiar state of the organization, and the peculiar exercise of every function, at the moment of orgasm, must exert the *most* powerful, the *most* undivided influence over the organization and function of the delicate, susceptible and plastic *ens*, then and by these very acts, called into existence?

The act then by which a new being is called into existence is far more momentous, even in its most minute details, than has yet been imagined. It has been, and it will further be seen that, when in one

parent, sensibility exceeds volition in a greater degree than in the other, that parent communicates the anterior series of organs—the organs of sense, the anterior part of the brain, and the vital system. On the contrary, when in one parent, volition exceeds sensibility in a greater degree than in the other, that parent communicates the posterior series of organs—the cerebel and the muscular system.*

Nor can the matter stop here: if the organization and function of the parent are the real and only causes of the organization and function of the child, then must they be so, not in generalities, (for these are mere acts of the mind,) but in the minutest details. The state and the act of each organ of sense in the parent conferring these, must stamp the character of each in the progeny—nay, their expression in the parent must more or less become their character in the progeny, for the influence is then that of a moment, it cannot be extended, and that which is temporary in one must become more or less permanent in the other. We can no longer wonder, then, that several children having the organs of sense either of the mother or of the father, should differ as to each of these and as to every feature, according to the general activity and

* But it may easily be that, in one parent, both sensation and volition shall exceed in intensity these functions in the other parent? Yes: but then one of these functions—either sensation or volition—will, more than the other, exceed the corresponding function of the other parent; that predominant function will consequently be given by the parent exercising it; in him, the subordinate function will accordingly be neutralised, for he cannot give a function and its opposite, and the feebler function will therefore remain to be given by the other parent.

the particular action of each at the moment of creative power.

The senses connected with intellect, the eye and the ear, or those connected chiefly with life, may be employed. In softened light, the delighted eye may gaze over beautiful contours and colours; or, these excluded, the ear may drink in the soft and sweet music of the voice; or, in darkness and silence, the touch may wander over forms.—But the reader must illustrate for himself the mode in which each sense may be exclusively called into action.

Can it be supposed, then, to matter little whether the new being be the product and the personification of intellectual, or of mere sensual pleasure! or whether that pleasure be one of gentle emotion, or of passion!

According, then, to the state and action of these organs in the parent, must each be feeble, moderate, or greatly developed, faintly outlined, delicate, or coarse, in the progeny. Ampler elements of modification and diversity even of the same organs cannot exist. And these observations apply to every organ, as well as to those of the senses.

Thus, I think, are explained all the diversities in the forms of progeny.

I must here remark, that while the parents give character and capability of expression, the events of life, pleasurable or painful impressions, and gentle or violent passions, greatly modify expression. In comparing the heads of progeny with parents, the latter is of subordinate consequence.

*Importance of this Law.*

Now, as on the size, form and proportion of the various organs, depend their functions, THE IMPORTANCE OF THE FIRST LAW, is immense, whether we regard intermarriages, and that immunity from mental or bodily disease which, when well directed, they may insure,—or the education of children in conformity with their faculties,—or the employment of men in society,—or advantageous breeding among domesticated animals.

To illustrate the importance of this law as regards *intermarriages among mankind*, and especially as regards insanity among the opulent classes, the causes of that disease which are perpetually operating, and those of mental debility, may first be noticed. I do this from a previous and little known work of my own.

Genius, which is whetted by adversity, soon becomes blunt, in the bosom of ease; and mediocrity of talent, when so circumstanced, becomes absolute imbecility. Men entitled, by the mere accident of birth, to a monopoly of honours and indulgences, need make no effort to obtain them. Such trouble is unnecessary; and not one in ten thousand bestows it. Intellectual power, therefore, is gradually lost, and the man is at last utterly debased.

All history, accordingly, shows that those princes, nobles, &c., who have gained the admiration of mankind, have almost always either been the first of their race who reached that rank of society, or have suffered from an adverse forture, which elevated rank can-

not always prevent; and that, as uniformly, the children of these persons, who were born to honours, affluence and indulgence, have been far their inferiors in intellectual attainment.

As to ancient times, we know that some of the greatest men in Greece were of the obscurest origin, and that foreign female slaves gave birth to many of them. A Carian was the mother of Themistocles; a Scythian was that of Demosthenes: and a Thracian gave birth to Iphicrates and Timotheus! On the other hand, it is certain, that the children of Socrates and of Pericles were destined to stupidity and obscurity!

De Pauw has stated, that many observations respecting Spain and Portugal attest, that the noble families there are constantly the most stupid; and he observes that those of other countries would be added, if examined with equal attention. Indeed, we every day see, that the descendants of the most illustrious men present, in almost every instance, the most pitiable degeneracy of character.

The absence of freedom in intermarriages contributes greatly to enhance these causes of degeneracy; for if weak people intermarry, it can lead only to an accumulation and increase of weakness and worthlessness.

This cause affects even nations, when they cease to intermarry with their neighbours. Of this, the most remarkable examples are the castes of India, the Gipseys, and the Jews. The cause and the consequent degradation are alike common to all of these.

It has now been seen that where one parent communicates to a child the form of the face generally and the forehead, the other will be found to communicate the form of the posterior part of the head; and, while the child has the observing faculties of the former, it will be found to have the reasoning faculties and the passions of the latter.

A moment's reflection will show, therefore, that the proportion which exists between these parts in the heads of parents, is nearly decisive of the character of their progeny; and that, if these parts be feeble in both parents, they must also be so in the offspring. And hence the perpetually increasing degeneracy of aristocratic families, in whom none of the intellectual organs are improved and strengthened by incessant action, but, on the contrary, dwindle away, as do all bodily organs, by entire inactivity.

As to kings in particular, their intellectual faculties are so low, as always to border on fatuity.

That fatuity has, in all ages, been the disease of hereditary royalty and ancient dynasty, the most superficial observer must allow. This is a truth of such magnitude and importance, that, to the interests of political philosophy, its discussion is due, unfettered by all temporary and trivial considerations. If the fact be doubted by any of my readers, I may point out to them the cases of George III., Paul of Russia, the late sovereigns of Denmark and Portugal, the deposed King of Sweden, &c.—a fourth or fifth of the kings then occupying the thrones of Europe! and consequently a proportion of mental disease far greater than can be exemplified in any rank of society.

I would not scoff at human misery, either mental or corporeal; nothing can possibly be more abhorrent to my feelings; I mention this subject in pity, not in scorn. But if, on consideration, it appear that there is any truth in the allegation—nay, if it be found that even mental imbecility, or merely a degree of intellectual feebleness, or indeed anything like a want of the fair proportion of mind seen in other ranks, is at all characteristic of that which some deem the highest rank in society—then do we owe the sober discussion of that question at once to the interests of that rank, and to those of philosophical inquiry.

It appears that nature has conferred no good on man unqualified by ill. It even appears, that the greatest good is generally chequered by the greatest ills, and that the highest rank in society, if good it can be called, is invested with the most appalling dangers. Even a moment's assumption of that rank seems to bring with it attendant evils. That light heads should be easily turned, is not wonderful; but that that of Bonaparte, for example's sake, which contained much more brain than that of any European king, and more intellectual power than all of them—that such a head should have been turned by the possession of power, is a striking illustration of the preceding remark.

When Napoleon's senators abandoned him and his fortunes, and in a memorable document complained of his despotism, he acknowledged it as candidly, as he ascribed it justly, to the spell of their incessant flatteries. Here, then, we approach the very cause

of that fatuity from which it is so difficult to separate kingly power: a state unnaturally elevated above all fellow men,—the anticipated supply of every want which that state commands,—the foretaste of every pleasure ere it is desired,—the consequent inutility of every mental effort,—the ennui which must ensue,—the pride, fastidiousness, and morbid irritability in which the mind is consequently plunged,—the influence of these upon attendants,—the scarcely evitable reaction of their minds in every supple and conciliating device, in every artful and debasing flattery,—the absence of all sincerity,—the absolute proscription of simple and manly truth,—the adoption of gaudy pageantry, which occupies the eye and ear, but touches not the heart or the mind,—the heartlessness, the coldness, the worthlessness of such a state. Such is the precise succession of those circumstances which, sooner or later, annihilate mind in hereditary royalty and ancient dynasty.

From this degradation of mind may escape the founder of a dynasty, who is agitated by plans of succession, or acts of usurpation, or schemes of conquest; and so also may the prince on whom misfortune frowns; but it is true, that in general the very next successor of such a prince is an imbecile, precisely because the achievements of his predecessors seem to have rendered it unnecessary for him to think.

In order satisfactorily to explain the corporeal and physiognomical changes that the circumstances in which they are placed produce in princes, we must observe, that the more any of the organs of the body are employed, the more they are developed in size.

Thus, with regard to the muscles or organs of acting incessant use greatly enlarges the limbs of porters, the calves of dancing-masters, the arms of sailors, the wrists of postilions, all the muscles of one side in fencers, &c.; and long continued inaction causes them to become feeble, and to dwindle away. Just so with regard to the brain, or organ of thinking—incessant use causes its expansion; and inaction either retards its growth, or produces its diminution; and, in the latter case, though the whole head may not seem to grow less, the skull becomes thicker: hence perhaps the circumstance, that the skulls of fatuitous persons, who die in the hospitals, are often found to be remarkably thick.

Now, as it appears, that the very necessity of thinking is abridged in princes, by the circumstances in which they are placed, and as, generally speaking, in proportion to these circumstances, the brain is unemployed,—its slight developement, or its actual diminution in such persons, is explained by the preceding statement. When we add to this the consideration, not only that all organization, whether improved or degenerated, is communicated to children, but that, in this case, the degraded organization is every hour still further degraded by the operation of the same circumstances on the child which operated on the father, we cannot wonder at the peculiar characteristics of the kingly countenance, namely, a low and retreating forehead, and expanded organs of sense,—a diminution of the organs of thinking, and an increase of the organs of mere sensual enjoyment. Accordingly, I find, that the older the dynasty, and the more legitimate the race, if the head be viewed in profile, the more

does the forehead retreat from the root of the nose, and the more do the nose and the other parts of the face advance from the same point. See the faces of all the branches of the Bourbons. Their countenances generally are truly royal.

Professor Camper has shown, that among inferior animals, the face advances and the forehead retreats, as the species diminishes in intellect. From this law there are some exceptions, which are, however, very easily accounted for; but, generally considered, it is equally true and important. Thus, the forehead of the monkey is more depressed than that of the negro; that of the dog, more depressed than that of the monkey; that of the horse, more depressed than that of the dog; that of the bird, more depressed than that of the horse; and that of the fish, more depressed than that of the bird. The reason of all this is, that the brain or organ of thinking diminishes, and the organs of sense proportionally increase, as we descend among animals. So well were the Greeks aware of the importance of this law—of the brain diminishing with the diminution of intellectual power, that, in their immortal sculptures, they have given even an unnatural expansion to the head, and especially to the forehead, in order to confer the most august character on their heroes, demi-gods and gods.

Now, to this practice, it is probable that the Greeks were led, both by that exquisite taste which has distinguished them from all other nations, and by a practical observation of the heads of the hereditary, and consequently intellectually degraded, Asiatic despots, whom they foiled in all their attempts at invasion.

To this doctrine, Camper was led by the strictest philosophical induction. Thus philosophy, observation and taste, at once support the doctrine I have inculcated, as to the intellectual and physiognomical character of princes.—If, however, the reader prefer demonstration to proof, he has only for a moment to consider the conduct, and to glance at the portraits, of the most ancient dynasties in Europe.

We have hitherto considered only the effect of circumstances on the intellectual and physiognomical character of princes. Let us now consider that of intermarriage. The principle of improving the breed of animals by crossing, is now fully appreciated. This principle applies to man as well as to inferior animals; and, carried still further, it explains the reason of the horror which all men, except princes, feel at the intermarriage of near relations.

But what has been the practice of all princely families on this subject? They have generally intermarried only with persons of similar rank—or similarly depraved education—of similarly degenerated intellectual and physiognomical character. Moreover, as these families have already often intermarried, their further intermarriages can introduce few new qualities—can propagate only the old and degraded ones, which are common to the whole.

The preceding observations are applicable not only to princes, but in some measure also to those other ranks in society, which, participating with them in ease and absence of the necessity for thought, participate also in the danger with which such rank and condition are always surrounded. In them, also, the

organ of thought being less employed, its volume gradually diminishes, and the muscles of the face being less frequently agitated by any energy of mind, it assumes a calm and cold placidity, a feminine softness and smoothness. Such persons lose the intellectual vigour which characterizes men, and which is more remarkable in northern than in southern nations, and acquire sometimes that sensibility, delicacy and taste, which characterize women, and which are more generally remarkable in southern than in northern nations. In short, men degenerate under the same circumstances which are favourable to female beauty, just as women become masculine and coarse, under the circumstances which are essential to the generation and excitement of intellectual power and energy in the male.

The preceding observations are also in some degree applicable to nations at certain periods, as well as to the highest ranks of society.—When a state has reached a certain degree of civilization, and its people, concentrating themselves in vast towns and cities, have attained the utmost limits of opulence and luxury, the public mind becomes proportionally stagnant from the absence of excitement,—artful subtlety is substituted for more masculine energy, delicate flattery for nobler sincerity, obliging falsehood for godlike truth; and these feeble and degrading habits are dignified with the name of politeness! Speedily, indolence, incapacity and insincerity, become the test of rank; and manly vigour, intellectual power and generous candour, become the marks of vulgarity. Nay, while even an erect, firm, or rapid walk, is thought to indi-

cate the plebeian, a feeble and unmanly gait, or rather a vermin-like crawl, is deemed the sure indication of the man of fashion; and while a distinct and articulate voice is thought the proof of low birth and degraded manners, a brutal drawl—an inarticulate, offensive and disgusting voice (which seems rather to issue from what physicians call the primæ viæ, than from a mouth) is deemed the sure criterion of illustrious origin and high accomplishment. These last are but the exterior signs of weakness and worthlessness; but they are not unimportant.

The result of all this is, that when nations are thus degraded, they are the more readily enslaved by their neighbours; when the higher ranks are thus degenerate, the more active vulgar take their places in society; and when princes are thus incapable, their monarchies are subverted.

It is evidently by attending to this first law—the law of selection, or the law of crossing, which has next to be described, that these fatal consequences to individuals, to families and to nations, can alone be avoided.

A knowledge of this law would, moreover, prevent intermarriage between two individuals, themselves perfectly sane, but who would probably produce insane progeny.—Thus, though, in one parent, the forehead and the observing, imitating and other faculties were very defective, and though, in the other parent, the backhead and the exciting faculties, the passions and the will, were equally defective; yet the former, owing to the developement of the middle and posterior part of the brain, and the latter, owing to the develope-

ment of its middle and anterior part, might still be sane, or even possessed of superior abilities.—But if this law be admitted, true as it assuredly is, it follows that each parent may communicate either the anterior or the posterior organs; that, in this case, the offspring may receive the very defective forehead and observing faculties of one parent, and the very defective backhead and motive faculties of the other; and that the idiocy of such offspring would be the inevitable result. Living proofs of this fact are found wherever there are idiotic or weak-minded children.

In this case, indeed, the chances of sanity and insanity are equal, because the well-developed anterior part of the head in one parent, and the well-developed posterior part of the head in the other, are as likely to be propagated together, as are the ill-developed backhead of the former, and the ill-developed forehead of the latter.—But the case may be either worse, or better, than this; for if in one parent, there be but one of the portions of the head well developed, and in the other, neither portion, then there is but one chance of sanity against three of insanity or defect; and if, on the contrary, in one parent, there be both portions of the head well developed, and in the other one portion, then there are three chances of sanity against one of defect.—The general mode of correcting defects of the thinking system, by means of intermarriage, is thus rendered evident.

That of correcting defects of the locomotive system, or of the nutritive system, is similar.—Thus, the shorter body, longer limbs, and meagre frame of some of our own northern races may, in progeny, be cor

rected by intermarriage with the longer bodied, shorter-limbed, and more fully formed races of our south-eastern counties. And, vice versâ, excess in these latter forms may, in progeny, be corrected by intermarriage with the former.

As organization is thus propagated in halves—the whole of the anterior series of organs (sensitive and vital) always going together, and the whole of the posterior series (voluntary and locomotive) similarly going together—the reader will see the error of the common hypothesis of blood. According to that hypothesis, the sire and dam equally impart blood to the progeny: the filly consequently produced by an Arabian horse and a cart-mare has one-half Arabian blood; the filly produced by the first one and an Arabian has three-fourths Arabian blood; the filly produced by the second one and an Arabian has seven-eights Arabian blood; and the filly produced by the third one and an Arabian has fifteen-sixteenths Arabian blood!

Blood is certainly very easily divided; and it serves the purpose of this hypothesis very well. But why is blood the material pitched upon? Chyle or urine would have served the purpose just as well; and it would express just as much to say, the filly or the colt is three-fourths chyle or three-fourths urine, as three-fourths blood: all these are liquids contained in the tubular organs of the vital system, and go in mass along with that system wherever it goes—they are merely its perpetually varying contents. The fact is, that blood is a groom's term, invented by ignorant fellows who wanted to look knowing; and, from these

high authorities, it has been borrowed, to the end of obscuring the whole history and truth of breeding.

But I shall be told, "We do not mean real blood; blood does not mean blood here; it must not be taken in its literal sense" [the common subterfuge in everything of men who have no precise ideas, who do not know what they mean, but who would fain make others think they really mean something, and that worth knowing!] "we mean a kind of a general influence, which is divisible exactly like blood, and which the term blood is very well calculated to express."—Ask them if the thing they mean has not a name of its own, because wrong names excite wrong ideas; or tell them that, if they cannot remember the name, they perhaps can describe the thing; and they reply by saying, nothing or nonsense. It is, indeed, a mere name, an abstract term, that serves their purpose best.

To the reader, however, the folly of this hypothesis is evident, since he has seen that, not the inorganic contents of the vital organs, nor any fraction of these, but the whole vital system is at once communicated by one parent, and the whole locomotive system by the other.

This shows the absurdity of repeated crossings with the Arab horse or any other animal; for the only effect which even the first of these repetitions can possibly produce is, by a new half of organization, to supersede either the half given by the original stock, or that given by the first Arab, while the second repetition may supersede what was given by the remaining parent—thus destroying all that was given by both the original parents; and every two additional ones

may similarly supersede the organization of all those who preceded them. So that all that is gained by this, is a perpetual exchange and fluctuation, and consequently deterioration as likely as improvement.

## II. Law of Crossing,

### where each parent is of a different variety.

By cross-breeding, says Mr. Knight (21, December,) "that is, by breeding from a male and female of a different family, though of a variety of the same family, the Hereford breed of cattle for example, we always seek, in the male and in the family of the male, something which is defective in the female, or in the family of the female: but where both male and female are free from defect, or even where no tendency to a defect is seen, I think, and I believe others generally agree with me, that vigour is given to the offspring to a greater extent than when both parents are nearly related."—Here a somewhat extended sense is given to crossing; so that it seems to trench on what Sir John Sebright terms selection.

The second law, namely that of Crossing, operates where *each parent* is of a *different breed*, and when, supposing both to be of equal age and vigour, the *male* gives the *backhead and locomotive organs*, and *the female* the *face and nutritive organs*.

The facts which suggested to me this law, were those which I shall forthwith quote, as observed by Mr. Cline, Mr. Knight and Sir Anthony Carlisle.

The cause that, in crosses, the male gives the cerebel and locomotive system, is both striking and beautiful.—If no being can desire that of which it is

already in possession—if, on the contrary, it must desire most that which differs most (if not incompatible,) it cannot be wondered, that in crosses, where the desired difference is greatest, the male, in whom desire is most ardent, should stamp the systems by which he exercises desire, the voluntary and locomotive, upon the progeny.

Mr. Theobald of Stockwell, an extensive breeder, informs me that he has always thought that strong volition and great ardour on the part of the male stamps his form* on progeny, a direct and singular corroboration of the cause just assigned.

It derives support also from the observation of Dr. Pritchard, that "*Mixed breeds* are very often produced superior in almost all their physical qualities to the parent races, and particularly with so much *vigour of propagation*, that they often gain ground upon the older varieties, and gradually supersede them. This one property of greater fecundity is often the particular reason for the selection, and the circumstance which induces agriculturists and the breeders of cattle to adopt new races in preference to the old ones."

So much for the cause of the law.—The facts proving it are abundant.

One of the most remarkable crossess among the human species, is that between the European and the African negro; its effects being easily seen in consequence of the striking characteristics of the two varieties.

---

*General form* depending, as already explained, chiefly on *the skeleton*, which is *the basis of the locomotive system.*

If, in this cross, the European is the male parent, he communicates the backhead and the general figure: neither the bones of the thighs nor those of the legs are bent as in the negro, nor are the heels long, nor the calfs high; while the under lip and the point of the nose are considerably less, and quite European in character. The African mother, on the contrary, is seen in the narrow and retreating forehead, the high cheek-bones, the large eyes, the long upper lip, and all the remaining parts of the face. This is well seen in Plate VII, figures 1 and 2.

Another remarkable cross is that between the African negro and the native American.

In this cross, the African is generally the male parent; and he communicates the backhead and general figure. The bones of the legs and those of the thighs are bent, the heels are long, and the calfs high; while the lips and the point of the nose are similarly of African character. The Indian mother, on the contrary, is seen especially in the face being broader without any hollow under the cheek-bones, and in the face being flatter, without any projection of the teeth and jaws containing them. The flatness of these, and the prominence of the lips laid upon them, mark the curious combination of the African and the Indian. This is well seen in Plate VII, figures 3 and 4.

Thus, in human crosses, the male gives the locomotive system; the female, the vital one.

Alluding to less remarkable crosses than these, Mr Knight says, (21, December) "In the human subject, cross-breeding would, I do not doubt, be productive of good effect, if made between individuals and families

which had, through generations, been engaged in occupations of wholly different kinds.

Of the power of the horse to communicate, in a cross, his skeleton, and therefore his locomotive system generally, or in other words his general shape and character, Mr. Knight gives an interesting example (16, April, &c.)

"I have obtained offspring," he says, "from Norwegian pony mares and the London dray-horse, of which the legs are preternaturally short, and the *shoulders* and *body* preternaturally *deep*, and the *animal* of course preternaturally *strong*. I felt my way cautiously in making such experiments, fearing that I might subject the unfortunate females to a very painful death; but I found the size of the fœtus to be governed by the size and breed of the female parent. —I repeated the opposite experiment with opposite results.

"Where the size of the breeds differs much, the influence of the male parent and that of the female one upon the form of the offspring (particularly of those animals, of which nature intended the offspring to accompany the parent in flight at an early age) differ very widely; the female parent in such cases governing the *length* of the legs almost wholly; at the birth, I think wholly; but when the male belongs to a family of much larger size, the *joints* and *hoofs* are *larger*, and therefore occupy more space."

And again, "The offspring of my Norwegian mares, *as always happens in similar cases*, had legs as short as their mother's at birth; but the *male parent*, the dray-horse, caused these *legs* to grow *greatly stronger*, and

their *joints* and *bodies*, generally *much larger*, although the legs remained short."

Thus, in equine crosses, the male gives the locomotive system, the female the vital one.

As to mules, Mr. Knight (22, May) says, "The fact that, in mule quadrupeds, the male parent over-rules the female in giving form to the offspring, is placed beyond the reach of controversy; and I feel confident that the opinion I give in the paper above mentioned, [upon the hereditary instinctive propensities of animals,] that the male over-rules to the same extent, or greater extent, in giving the disposition, and mind of the offspring, is equally well founded."

From Mr. Knight's expresssion, "the male over-rules, to the *same extent*, or *greater extent*," it is evident that he does not entirely over-rule. I was therefore desirous of seeing what organs, in such crosses, remained less affected by the male parent. At Carshalton, I found a team of three mules, the property of Mr. Whatney. They were evidently ass-mules, or mules of which the ass is the male parent; having low fore-quarters, pointed hind-quarters, long docks, high narrow hooves, and a sort of squeal, instead of bray or neigh. All were remarkable for obstinacy, incapacity of backing, dislike to drink from a trough, liking for straw and coarse food, and propensity to roll. Two of these were Barbary mules, and had shorter ears, more open eyes, and more the head of the horse. One was a Spanish mule, and had longer ears, less open eyes, and less the head of the horse, as well as a more ass-like body. All had more vivacity, sensibility and quickness of motion than the ass; and all were

females. But, though these animals had the general form of the ass, their organs of sense (and probably also their vital system) showed several characters of the horse.

I found also that Messrs. Reynolds and Lee, at Garrat Mills, had a fine specimen of the horse-mule, with the general form of the horse, as striking as Mr. Whatney's had of the ass—shoulders I think higher, fine equine neck, head also equine, eyes and nostrils rather open, and hooves shorter than those of the ass-mule and convex anteriorly (the posterior ones especially.) So also as to mind: his action was like that of the horse; he would back, drink from a trough, was an excellent hunter, &c. Thus the general form of the horse-mule resembles the horse; but his organs of sense (and probably also his vital system) show several characters of the ass.

As to kine, Mr. Cline, speaking of crosses, says, "The characters of both parents are observed in their offspring; *but that of the male more frequently predominates*. This may be illustrated in the breeding of horned animals; among which there are many varieties of sheep, and some of cattle that are hornless.

"If a *hornless ram* be put to horned ewes, almost *all the lambs will be hornless*, partaking of the *character* of the *male* more than of the female parent. . . In some counties, as Norfolk, Wiltshire, and Dorsetshire, most of the sheep have horns. In Norfolk, the horns may be got rid of, by crossing with Ryeland rams; which would also improve the form of the chest, and the quality of the wool. In Wiltshire and Dorset-

shire, the same improvement might be made, by crossing the sheep with South Down rams.

"An offspring without horns might be obtained from the Devonshire cattle, by crossing with hornless bulls of the Galloway breed; which would also improve the form of the chest—in which the Devonshire cattle are often deficient."

My Correspondent * * *, in a letter of the 11, January, in answer to the question, "In crosses, where the male and female parents are of different breeds, does it not appear that the male, if young and vigourous, always gives that system, general shape and character?"—says, "I have not much actual experience as to crossing different breeds. Mr. Charles Colling put a *short-horned bull* to a [hornless] Galloway cow: the cross was successful, and exists at present in *most of the improved short-horned cattle.* I never heard of any of the produce being without horns, and I never saw one who could be distinguished from a pure short-horned beast. Mr. Vansittart used a well-bred *short-horned bull* to well-bred Hereford cows: the produce had all the appearance of *short-horned cattle.* I used a well-bred *Hereford bull* to common short-horned cows: *all the produce* had the appearance of *Herefords.* I remember Sir Charles Knightley having a very *good hunter* got by a *thorough-bred stallion* out of a *cart-mare:* he had the appearance of a cart-horse, but *the powers and speed of a well-bred horse*, excepting that he could not go fast up hill. I have a *mare* got by a *thorough-bred horse* out of a *cart-mare:* she takes very much *after her sire.* My opinion is, that where two animals are put together, in the breeding of one

of which pains have been taken for some successive generations to produce any given shape or quality, and in the breeding of the other of which no such pains have been taken, the produce will follow the characteristics of the former, whether it be male or female; that is, to use the common farming language, a well-bred animal will mark his or her produce more than an ill-bred one." The reason is obvious—in the best bred animal, the voluntary and locomotive powers will always be most intense.

Thus, in crosses of cattle as well as of horses, the male, except where feebler, or of inferior voluntary and locomotive power, gives the locomotive system; the female, the vital one.

As to dogs, the breeders state that, in a cross between the bull-dog and terrier, if the bull-dog is the father, the progeny have the shape (which implies the skeleton, and therefore the locomotive system in general) of the bull-dog; and if the terrier is the father, they have the shape of the terrier.

Mr. Helps, of the Bayswater-road, an experienced breeder, informs me that even when the dog is merely as young and vigourous as the bitch, this is the case; that it is more conspicuously so the younger and more vigourous the dog; but that if the dog be old and enfeebled, and the bitch young and vigourous the reverse takes place; and that this is true of all crosses of dogs. He adds that, under the same circumstances, the male sex predominates; or the female.

G. Lee, Esq. Garrat Mills, had lately a cross between a terrier dog and a greyhound bitch, all of

which presented the shape of the father in a remarkable manner.

Thus, in crosses of dogs, the male gives the locomotive system; the female, the vital one.

Respecting birds, the breeders state, that, in a cross between the male goldfinch and female canary, the shape and the skeleton of the mule produced is always that of the male.

Mr. Blake, John-street, says that, in every cross he has observed among birds, the male gives the beak, head, and all the bony parts that can be distinguished.

Mr. Nash, of Windmill-street, a breeder of the greatest intelligence as well as experience, also states that, in crosses, as in that between the male goldfinch and female canary, the male not only gives the beak and scull to the mule, as observed by Mr. Blake, but, in this instance, the longer neck, the wider chest, the longer sternum and the longer legs; and that, in this case, some of these (the sternum especially) are longer than in the male bird. The cause of this evidently is, that in a mule all growth contributes only to individual life; and, as to the sternum, we know that it is always shortest in the female, to facilitate the producing and laying of eggs; and it is evidently longer in mules, because they are incapable of the due performance of any reproductive process.

For the same reason, "the ox of the Hereford breed," as Mr. Knight observes, "is much larger than the size of the cow would promise."

The translator of Bechstein says, "A bullfinch and female canary once produced five young ones, which died on a journey, which they could not bear. Their

*large beak*, and the blackish down with which they were covered, showed that they were *more like their father* than their mother."

"A male goldfinch," says Bechstein, "is paired with one or two female canaries, which succeeds better than by placing a male canary with a female goldfinch; the former being more amorous.

"Mules between the canary and the siskin.—If the mother be a green canary, the males will resemble [in colour] a female siskin; but, if she is white or yellow, their colours are lighter, yet without differing greatly from those of *the siskin, which they always resemble in shape*.

"Mules between a canary and a green bird, or a citril finch.—If the hen canary is neither white nor yellow, the mules differ little from the common grey or green canary, except in being more slender, and having *the beak shorter and thicker*."

Mr. Knight (4, December) says, "I was engaged in an attempt (which failed, though a similar experiment had been in one case successful) to obtain offspring from the peacock and Turkey hen, when the wife of a cottager informed me, that a farmer resident within a few miles of me, had a bird bred between the common hen and a wood-pigeon. Upon further inquiry, I found that a chicken, which had been deserted by its mother, and a young wood-pigeon, had been reared together, the wood-pigeon constantly paying his addresses as to one of his own species. Many eggs were laid by the hen, but one only hatched; and this afforded the bird in question. It was a hen in every respect, except that the base of *its beak* was quite

naked, soft and turgid, *like that of a wood-pigeon*, that the feathers rose upright from the base of the beak, and that *the head of the bird strongly presented the character of a wood-pigeon.* I attributed this peculiar form, &c. to mere accident; but I am now disposed to doubt."

He also says (23, November,) "I thought that I saw a prevalence of the *male parent* in the *disposition and habits* of the *mule birds* bred between the common and musk duck."

Thus, in crosses of birds, the male gives the locomotive system; the female, the vital.

As to fish, Sir Anthony Carlisle's statement shows, that, in the mule between the male trout and female salmon, the size (and therefore the skeleton) is given by the male, as appears from the following letter.

"Langham Place, Nov. 20, 1837.

"My dear Sir,

"More than thirty years since, the breeding of trout was tried by impregnating their ova in confined water-cages made to protect the young against their natural enemies.

"As I had some share in these experiments, I undertook to try to breed those mule fishes, known to be a produce between male trouts and salmon roe, or the reverse. I accordingly procured a quart jug full of ripe salmon roe from the freshest fish just arrived at Billingsgate, in the month of January; and I proceeded with them directly to Carshalton, where they were carefully deposited by a man who waded into the stream, and raked the gravel in the trout spawning gravel heaps.

"In the month of April, a new sort of fish appeared, for the first time, in that river, which proved to be the mules, called skeggers, in the Thames, smelts, in the north of England rivers, and gravel-last-springs, in many of the western and southern counties. They were, in this case, very abundant; and apparently their numbers corresponded with the salmon spawn deposited in the trout gravel hills.

"These mules never appear but where salmon invade the breeding gravel-hills of trout; and, in my experiment, the impregnators were necessarily male trouts, because salmon never pass the mills upon the Wandle. The influence of the male trout in this instance was therefore unquestionable.

"*These mules partook of the character of trout more than of salmon.* They had bright red spots on their sides; but the black colour was shaded downward in bars, like those of the perch. *The tails were not forked like those of the salmon,* as I have seen them in the Thames skeggers, (from which I infer the male salmon, in that case, to have been the impregnators.) They grew to *the length of the male parent* [therefore had a similar skeleton,] and to the weight of a quarter of a pound, and they disappeared before autumn.

"I am, my dear sir, yours,

"ANTHONY CARLISLE.*

To Alexander Walker, Esq."

---

* "The natural history of the mule between the male trout and the salmon," says Mr. Knight, "is, I suspect, very little known, after the first nine months of that animal's life. Instead of going off to the sea with the first spring floods, they remain till autumn, when they go off, and nothing more is, I believe, known respecting them. They are almost wholly males."

This giving of the osseous system, skeleton, horns, &c. in all these cases, shows that the whole locomotive system (for the ligaments and muscles go with the bones) is given, in crosses, by the male; and, from the general law, it follows, that the vital and nutritive system is given by the female.

There is now a great hypothetical or theoretical point in which I would presume to dissent from Mr. Knight, Sir John Sebright and * * *: it regards the distinction made as to *permanent hereditary character and habits* (that is, character and habits unvarying as communicated to progeny,) and such as are not so.

"In giving such changes of form," says Mr. Knight (21, December,) "the influence of the male and female parents have been, as far as I have observed (and I have paid a good deal of attention to that point,) equal, *provided the habits of each in their ancestry had been equally unvarying.*"

Now, I believe that there is no more want of adherence of the two series of organs, vital and locomotive, in any one case than in another—or in other words, that all combinations are equally variable, or equally permanent. The whole difference is, that, in keeping to the same variety, we combine series so similar, that they seem to be the same, and then we call them permanent; whereas, in crossing, we at first generally combine series so unlike that every difference is apparent, and we afterwards use their progeny promiscuously and undiscriminatingly.

The new animal will then seem less permanent, only because, in a union between animals constructed of two very different series of organs, these organs,

after dividing in their immediate progeny, will recombine in the produce of these, and re-form the precise combinations of the parents who were crossed.—But this re-formation may also be prevented, as shall be shown in the sequel.

First, however, it is necessary to see the whole strength of the argument on the other side, enforced by examples, of which there is an abundance.

"If I were to breed," says Mr. Knight (29, December) "from a female of this kind with a male of similar origin [cross-breeds from a Hereford bull and Alderney cow,] neither of them of course possessing permanent hereditary character, the offspring would be extremely dissimilar to each other; some would appear nearly pure Herefords, and some nearly pure Alderneys; and if such mixed breed were to become the stock of a farm, some apparently perfect Herefords, and some perfect Alderneys, however begotten, would be produced during a long succeeding period.

"Although," says Sir John Sebright, "I believe the occasional intermixture of different families to be necessary, I do not, by any means, approve of mixing two distinct breeds, with the view of uniting the valuable properties of both: this experiment has been frequently tried by others, as well as myself, but has, I believe, never succeeded. The first cross frequently produces a tolerable animal, but it is a breed that cannot be continued.

"If it were possible, by a cross between the new Leicestershire and Merino breeds of sheep, to produce an animal uniting the excellencies of both, that is, the carcass of the one with the fleece of the other,

even such an animal, so produced, would be of little value to the breeder; a race of the same description could not be perpetuated; and no dependence could be placed upon the produce of such animals; they would be mongrels, some like the new Leicester, some like the Merino, and most of them with the faults of both."

Having put to my correspondent * * * the following question, "What reason is there to suppose that a cross between the new Leicesters and the Merinos could not be perpetuated, that is, a cross combining their best qualities?" I received the following answer (11, January:) "It is not impossible that such a cross might be established; but I think the probable result of the attempt would be, that the tendency to fatten and to become fit for the butcher at an early age, which the Leicesters now possess, would be lost, while the fineness and beauty of the Merino wool would be much worsened. A man may take one cross without much permanent mischief; but if he attempts to produce a cross breed, it usually happens that the progeny possess the faults of both the parent breeds, instead of their merits. Besides this, he cannot look forward, with anything like certainty, to what any young animal will be: some would be like Merinos; some like Leicesters; and I should think almost a century must elapse before the most skilful management could produce animals having the characteristics of well-breed sheep."

Now, while the cross between the Hereford and Alderney is a reasonable one, that between the Leicester and Merino is not so, because the carcass and the

wool go together with the locomotive system, and whichever animal should give one, would in reality give both. I had myself wrongly imagined that the wool depended on the vital system, when I put the preceding question to my correspondent * * *; and even now I retain that statement of the case, because, *supposing* the carcass to depend on the locomotive system and the wool on the vital system, it illustrates the object in view, as well as the real and practicable case of the Hereford and the Alderney. In fact, such difficulties admit of the most satisfactory explanation, as well as of the easiest rectification, according to the laws already announced.

First, as to explanation.

A and B, who are more or less perfectly crossed, may have very different vital and locomotive systems: of their immediate progeny, C may have the vital system of A and the locomotive system of B; and D may, on the contrary, have the locomotive system of A and the vital system of B (for in a feeble or imperfect cross, such variation may occur:) and, of the progeny of these last, E may have from C the vital system of A, and from D the locomotive system of A, and F may have from C the locomotive system of B, and from D the vital system of B. Thus A and B may be re-formed in the third generation.—In all this, the differences will be evident; the results of the cross will appear to be variable; and want of permanence will be imputed to it.*

* If the vital and locomotive systems of A and B had not been very different, but very similar, this change, however real, would not have been apparent, and permanence would have been ascribed to the breed.

This is an illustration of the very cases spoken of as occurring in the preceding paragraphs. They would arise from this, that the locomotive system of the Hereford bull existing in one, would be as often added to the vital system of the Hereford existing in another, as these organs of the Alderney cow would be united—so that both would be re-formed.

On this explanation, * * * (23, February, 1838) says, "If your theory was correct, it would be a reasonable mode of accounting for the difficulty of preserving a cross breed."

Secondly, as to rectification.

The first good result of crossing may certainly be maintained, by taking care that the crosses are strong and perfect, and that the male parents, having the locomotive system required, shall also dominate by youth, vigour, &c. By this means, male and female progeny may be procured, each having not only the precise locomotive system, but the precise vital one required; and these can produce none but progeny of the character desired.

Or if, under the less favourable circumstances of feeble or imperfect crosses, few should have the locomotive and vital system required, and others the reverse, these last ought not to be employed, but others still obtained having these systems similar to the first; for these also could produce none but progeny of the character desired.

It is, therefore, from not understanding the distinct propagation of the two series of organs, and the mode of preventing their re-combination which the law of crossing affords, that the unsuitable produce of any

cross is bred from. Assuredly, if when two or more of the cross breeds are obtained, each having similar locomotive and vital systems, and these systems, precisely such as are required, these alone can be propagated by them—they cannot give what they do not possess—the faulty parts, being cast out of this combination, they cannot, *by its means*, be reproduced in any repetition of it.*

But it is remarkable, that Sir John Sebright's language implies the truth of the doctrine I have now delivered, without his being aware of it.—He says as above quoted, "The first cross frequently produces a tolerable animal, but it is a breed that cannot be continued."

So also Mr. Knight (21, February, 1838) says, "Cross-bred animals of the first generation are *generally* good, provided the breed of the male be not of smaller size than that of the female; but not otherwise according to my experience."

Now, seeing that the operations of nature are simple and never capricious, why does it *frequently*, or *generally*, produce a tolerable animal?—Because, if the cross is a feeble or imperfect one, the male, dependent only on relative energy, may give either locomotive or vital system, and not the precise one desired; and so may the female. In one case, therefore, the cross will be a tolerable one; and, in another, it will be an intolerable one. But the breeder having no notion that these two systems never go together from

* If this is not correct, what becomes of the old axiom "like produces like?" for here would be *like* producing *unlike* in an extraordinary degree.

one parent, and having no idea of the entire difference which subsists between them, is incapable of distin guishing them.

And why is it a breed that cannot be continued?—Because, precisely as I have described above, the breeder next puts together two products of the firs. cross, without this due distinction; and the conse quence is that, precisely also as I have above described, he re-forms both the original breeds.

But the fact is, that able breeders have, either by accident, or by keener observation, often accomplished all that they desired in this way.

Mr. Wilkinson says, "I shall inquire, whether a cross from two distinct breeds can be obtained and continued, so as to unite, in almost an equal proportion, the properties of both; and I am fully of opinion that this can be accomplished . . . I have seen the latter effected between the long and short-horned cattle."

It certainly seems surprising that breeders, having, in any case, seen a cross perfectly successful and eminently beneficial, should not have been led to inquire more closely and carefully into the circumstances under which it occurred. As similar causes always produce similar effects; so similar conditions in crossing will always produce similar progeny, whether one cross or ten crosses be made.

Mr. Knight (29, December) observes, that "The offspring of the cross-bred animal, if a thorough bred Hereford bull were the parent, would scarcely be distinguished from a true Hereford, on account of the male having, and the cross-bred female not having,

young females bred well enough, whilst young, at least."

Now, as no being can desire that of which it is already in possession,—as, in animals bred in-and-in, there is little or no difference, little or nothing to be desired,—as no being can feel sexual excitement towards itself, and little toward that which is like itself,—as organs unexcited do not act,—it is not to be wondered that, in in-and-in, the male no longer stamps his voluntary and ocomotive systems upon the progeny.

In mentioning to Mr. Rash (the intelligent dealer in birds already spoken of as to crossing,) the circumstances, that even in crossing, a feeble male lost the power of giving form to the progeny which was thus imparted by the female, and that Sir John Sebright had observed the loss of generative power in breeding in-and-in; and, on further stating to him my expectation that, in progeny produced by breeding in-and-in, the male chiefly would be debilitated, because, in his vigour, he possesses voluntary power in the highest degree, and organs exercised in excess are most liable to debility, &c.;—this intelligent man corroborated my views by stating that the last birds produced by any pair always resemble the female; that wherever in-and-in breeding exists, this resemblance is extremely remarkable; that, among bantam fowls, the cocks lose their chief characteristic, the hackle and streamers, and more resemble the hens; that more hens also than cocks are produced, &c. See Plate VIII., in which figure 1 represents the cock; figure 2, the hen;

and figure 3, the cock approaching the hen in appear. ance.

As it is in the close in-and-in practised by the breeders of these fowls and of pigeons,—an in-and-in, where both parents are of the same family in its nar. rowest sense, that the injurious effects of in-and-in breeding are best demonstrated, I avail myself of these examples both to corroborate this law and to show the errors which careless breeders are apt to commit in their representation of facts.

To a breeder, was put the following question. "If bantams are bred in-and-in, what effects happen to the plumage of the cocks and hens?" The breeder's answer was, "None to the plumage: all our fancy bantams throw chicks black and yellow, or white and black."—To this Mr. Nash's reply was, "Chicks white and black are what breeders term foul birds. The person answering your question is therefore not aware of what are deemed essential qualities in the bird."

The next question put was, "Do the long tail feath ers of high-bred cock bantams grow as in other cocks?" The breeder's answer was, "The fancy bantams have no rump hackle, or what are called streamers in the tail. Cocks and hens resemble each other in plumage and all other respects. By chance, a long-feathered bird is bred with rump hackle and streamers in the tail."—Mr. Nash's reply was, "It is not wonderful that a breeder having such progenitors, should have such a progeny as described in the answer to your question. No cock bantam is perfect who has not the rump hackle and streamers."

The last question was, "Are there more hens than cocks in such in-and-in broods?" The breeder's answer was, "This is uncertain: there are sometimes more cocks; at other times more hens."—Mr. Nash's reply was, "In the closest and strictest in-and-in, the hens always predominate;" and he pointed out cases in proof.

These remarks will show the necessity of care in all such inquiries.

It appears surprising that nearly perfect animals, breeding in-and-in, should cause degeneration. But the loss of excitement explains it.—*The reproductive power is enfeebled; and upon that, the whole organization of the animal depends.* HENCE NEARLY PERFECT BEINGS WOULD INEVITABLY DEGENERATE.

I formerly stated that *organization is nearly indestructible;* and, from that, *it follows that the faulty organization of the whole human race cannot easily or soon be got rid of*, though individuals and families may, and, in proportion to their knowledge, will improve. Improvement of their race will be the prerogative of the highest minds, and will be more eagerly sought for than ever was the improvement of the inferior animal breeds.

I have now shown that, in the nearly perfect animals, who must therefore be proportionally similar in all respects, loss of excitement would ensue, the reproductive power, on which the whole organization depends, would be enfeebled, and therefore nearly perfect beings would inevitably degenerate.

I little dreamed of this when, in early life, I listened

to the earnest and eloquent arguments of Godwin, in behalf of the perfectibility of man!

In considering in-and-in breeding in its intimate nature, it is evident that, if close and strict, it abandons that method of difference between the two conjoined beings, which I have shown to be necessary to excitement and reproductive power, and adopts the method (not of similarity—for that I have shown to be essential to the production of any breed, but) of *quasi* identity.

To explain this, let us take one of the strictest examples; the reader only bearing in mind—that the hypothesis of blood is nonsense—that organization takes its place—that that organization is propagated in masses—that these masses are two in number, namely, the anterior and the posterior series of organs—and that consequently, organization is propagated in halves.

Let the example be that in which, of the animals subjected to in-and-in breeding, the father breeds with the daughter, and again with the grand-daughter. Now, it is certain that the father gives half his organization to the daughter, (suppose the anterior series of organs,) and so far they are identical; but, in breeding with that daughter, he may give the other half of his organization to the grand-daughter, (namely, the posterior series of organs,) and as the grand-daughter will then have both his series of organs—the former from the mother and the latter from himself, it is evident that there exists between the male and his grand-daughter a *quasi* identity.

I say nothing of the moral antipathy which this would produce in intelligent beings, because morals have their foundation in physics, and we have nothing here to do with beings of such perceptions. I dwell only on the identity being so perfect as utterly to destroy all the differences which are essential to excitement and reproductive power, the loss of which thus characterises in-and-in breeding.

The case of brother and sister breeding together is nothing to this. For if the brother has the anterior organs of the mother and the posterior of the father, while the sister has the anterior organs of the father and the posterior organs of the mother, or vice versa, there is scarcely any resemblance between them! and if, on the contrary, both have the same series of organs from the same parents, then they are merely similar, and neither, as in the case of grand-father and grand-daughter, *quasi* identical. In the former case, no organ has been communicated from one to another: in the latter case, every organ has been so communicated.

Now let us see how far the common doctrine errs in this respect, by quoting the words of one of its ablest followers—Sir John Sebright.

"Mr. Meynel's fox-hounds are likewise quoted as an instance of the success of this practice; [in-and-in breeding,] but, upon speaking to that gentleman upon the subject, I found that he did not attach the meaning that I do, to the term in-and-in. He said that he frequently bred from the father and the daughter, and the mother and the son. This is not what I consider as breeding in-and-in; for the daughter is only half of

the same blood as the father, [that is, she is to the extent of one half, identical with him!] and will *probably* partake, in a great degree, of the properties of the mother. [She *certainly* will just to the same extent.]

"Mr. Meynel sometimes breeds from brother and sister; this is certainly what may be called a little close, [I have, in the third paragraph preceding, shown that they may either be entirely different or very similar—that, to adopt the vulgar phraseology, they may either have no common blood, or the whole of it!] but should they both be very good, and particularly, should the same defects not predominate in both, but the perfections of the one promise to correct in the produce the imperfections of the other, I do not think it objectionable. [Now, if the one can thus correct the other, they must have the anterior and posterior organs from different parents; and it is precisely by putting together such pairs that the parents, —Herefords and Alderneys, &c. are re-formed as Sir John himself complains!] Much further than this, the system of breeding from the same family cannot, in my opinion, be pursued with safety." [But Sir John soon recommends a proceeding, which carries it much further.]

Speaking of producing variety in a breed, he says, "If the original male and female were of different families, by breeding from the mother and the son, and again from the male produce and the mother, and from the father and the daughter in the same way, two families sufficiently distinct might be obtained; for the son is only half of the father's blood, and the

produce from the mother and the son will be six parts of the mother and two of the father." [There is no such thing as six parts of blood, or properly of organization, in the production of progeny—the son, as already shown, will have half the mother's organization, and the grandson may have the whole, but can have no quarters.]

I must not here pass over the circumstance, that there is, on the part of a distinguished individual, my correspondent, * * *, a difference of opinion as to the effects of in-and-in breeding. In a letter of the 11th January, he writes as follows, in reply to the questions prefixed.

"In in-and-in breeding, where the male and female are of the same family, does it not appear, that the female always gives the general shape and character to the progeny?"—Answer: "As far as my experience goes, certainly not. My herd of cattle is all of the same family, and I should be inclined to say that, with the exception of the produce of some very few cows, the produce generally are like their sires. The same applies to my flock of sheep, and I have bred from rams from the same flock in Leicestershire, for fourteen years, which flock has not had a cross since the year 1799."

It is very evident, that * * * does not use the term in-and-in in its common meaning. In-and-in applied to cattle, sheep, &c. in its closest application, is, as observed, where the father breeds with the daughter, and again with the grand-daughter; or the mother with the son and again with the grand-son. In the first of these cases, the father gives half of his

organization (say the locomotive system,) to the daughter; and, while this is imparted by her to the grand-daughter, he gives to the latter the other half of his organization. (Namely, the vital system.) Thus the father and the grand daughter are *quasi* identical in organization; and, in breeding with her, he may be said actually to breed with himself. And such is the case with the mother and her male progeny. It is from such cases that the worst consequences ensue, nor can it be wondered at.

The herd and flock of * * * originated in a cross; and the object is not to destroy that successful cross by a new one, but to maintain it. Both herd and flock are numerous, spread over a considerable surface, and liable to all the variations which Mr. Knight and Sir John Sebright describe. The operation, therefore, which the latter terms selection, and which is as far from in-and-in as it is from a new cross, is all that is necessary to maintain the good effects of the original cross.

"In in-and-in, does the generative power fail first or chiefly in the male?"—Answer: "I have not found that it fails in either. In in-and-in breeding, the breeder must be careful not to use animals with bad constitutions in their families, or he will double the evil; but if he avoids this, I have never perceived any objection to it."

This is not to be wondered at in an in-and-in so loose or remote as this—amounting in reality to a mere case of selection after a cross.

"In in-and-in, is it the female form and sex chiefly that are imparted to the progeny?"—"This is answer-

ed as to form, above. As to sex, my herd of cattle are in-and-in bred, and, for the two years preceding the present, I have bred two bull calves at least to one cow. The exact numbers are, in 1835, 1836 and 1837, 172 calves, of which 66 were females."

In a case of selection so obvious, and from the magnitude of the herd so likely to be efficient, this also is natural.

"You will perceive that my experience leads me to differ very much with some very great authorities. I may therefore probably be wrong; but it is better that I should tell you my own opinion, such as it is, than that I should only repeat the opinions of others. I differ, I know, very much from most people about the mischief of in-and-in breeding. But I know that all the great improvements which have been made in our breeds of domestic animals by Bakewell, Culley and Colling, and I have no doubt also by Elman, have been effected originally by breeding in-and-in, and I believe, by attending to the precaution I have referred to in my answer to one of your questions [not to use animals with bad constitutions in their families,] it may be safely continued, and with much greater certainty of producing animals of the shape and qualities desired, than can be effected in any other way."

As already stated, the difference here expressed is only an apparent one.

On this difference as to in-and-in breeding, I have only to add that, on explaining to * * * the sense in which I use that term, he replied (23, February, 1838) "You are perfectly right in supposing that I did not

understand the term breeding in-and-in so strictly as you do."

Thus crosses have originated most of our good breeds; and selection has long maintained them. A cross is the operation of a moment comparatively, and, its ends attained, the breeder's object is not to repeat it, but to maintain it; selection, which effects this, may and should be the operation of many years.

The reader, then, has now seen under what circumstances the *female* has been observed to give *character* to progeny—that, in in-and-in, closely and strictly enforced, it is the *female form* and *sex* chiefly that are imparted to progeny.

But it is also evident, that in-and-in, closely and strictly enforced, is worthless in breeding, because it is accompanied by enfeeblement, loss of reproductive power, &c.

The female, however, may also give her locomotive system, character or shape to progeny, simply by being relatively more vigorous; and this was probably the foundation of the ancient practice seeing that Virgil says,

> "Seu quis, Olympiacæ miratus præmia palmæ,
> Pascit Equos, seu quis fortes ad arata Juvencos,
> Corpora præcipue matrum legat."

The great improvement of the Turks in appearance, is probably not merely the result of their intermarriages with the women of Tschercassia, Georgia, &c. but of the fact that polygamy, by enfeebling the male, permits the female to stamp her form more generally upon the progeny.

Vast disadvantage, however, must attend this method, since it implies the relative debility of the male parent. Hence, probably the Turks are a degenerate race. And hence certainly, the general superiority of modern horse-breeding, which places its trust chiefly in the male parent; for, as I have shown, *when both sexes are in their highest vigour and perfection, it is the male that predominates in giving the locomotive system, character or shape to progeny, and it is preferable that the female should give that system, the vital, which in her is always most developed.* This is *the philosophical basis hitherto unassigned* of the superiority of the modern practice.

---

In thus concluding the first three laws, I must observe, that I have rested my inferences on no hypothetical views, but on the following facts:—

1st. I have shown, by the most indisputable evidence, that, in selection from the same variety, the father sometimes gives the locomotive system and backhead, and the mother the vital system and forehead; (which is generally preferable, because it is in these systems respectively that each excels) as well as that the mother sometimes gives the locomotive system and backhead, and the father the vital system and forehead.

Here, then, in regard to a subsequent question of Mr. Knight, as to the communication of life,—if life be the function of the vital system, it may be given by either parent, though I should think that dependent

on the preceding volition which arouses the first sensation.—But be that as it may—here are indisputable proofs of the parents communicating their organization in two totally opposite successions and combinations, which faithful drawings render evident to every one.

2ndly. I have shown that, in strong crosses, if the male parent be merely as young and vigorous as the female, the male always gives the locomotive system, the female, the vital system; (which is also as it should be, for the reason above assigned) and this is exemplified from the mulatto and sambo down to the goldfinch and canary mule, or the skegger, as drawings also show.

3rdly. I have shown that, in in-and-in breeding, long continued, the female gives the locomotive system, the male, the vital system; (which is attended with the disadvantage above explained) as is shown in bantams, &c.

Thus we have, I will not say life, for that is merely a general term, but the two series of organs on which both life and locomotion respectively depend, in two opposite successions and combinations—variab'y in beings of the same variety, and invariably both in different varieties, (crosses) and when closely and long restricted to one family (in-and-in.)

In this, I trust to nothing but facts, which can be represented on paper, and the truth of which the eyes will declare without even troubling the judgment.

## IV. Law of Sex.

There is another great distinction to be accounted for, namely the distinction of sex. This is as closely connected with the nutritive, as the distinction of mind is with the thinking system.

The consideration of life in some of its relations, is here a necessary preliminary; and as I have the most profound respect for the experiments and opinions of Mr. Knight (expressed in letters, 24, November, and 1 and 29, December,) they may not be passed over unnoticed.

"I have ascertained," he says, "by many experiments, some of them perfectly decisive of the question, that a plant may have two, and I believe many more male parents . . . that is, each is in part the parent of the offspring." He adds, "When I have introduced the pollen of a coloured pea and of a white pea into the blossom of a white pea, I have found some of the peas of the same pod to afford white, and some coloured offspring; but whether any of these were of common parentage, I am not prepared to say.

"I proceed to state an experiment made upon dogs, which appears to me of considerable weight. The experiment, however, as I saw little utility to be derived from it, was only once made: I have rarely engaged in any experiment where I did not expect to derive some immediately useful information.—I had a female spaniel, a perfectly canine Messalina, which, contrary to what is common amongst animals of that species, was no more disposed to grant favours to one suitor than to another. I first put to her one dog, a terrier,

with broken, rough, strong, grey hair, and I instantly afterwards introduced a springing spaniel, whose colour was white, with dark liver-coloured spots of large width. The female was of a light liver-colour.—Many puppies were the produce of the experiment; the greater part of which appeared to be obviously the offspring of the terrier; [the male parent, according to my preceding law of crossing] but two appeared to be perfect spaniels very similar in colour and character to their *supposed* male parent. These were reared; but as they grew, they gradually acquired more and more of the mongrel character; their temper was not that of spaniels, and they were quite worthless. They had, in short, terrier blood to some extent in their veins . . . The circumstance of each dog having apparently affected the character of all the offspring, is scarcely consistent with the hypothesis which assumes the first organized point to be [in any case] given by the male, as two males cannot *jointly* give it. I am, therefore, much disposed to believe that the male only modifies that which was previously formed.

"I am wedded to the opinion, that nature acts with uniformity in the way in which life, or the power of acquiring an independent existence, is given to the first organized point, or, as I may better express it the first organization. I cannot believe that life is sometimes given by the male, and sometimes by the female parent. In everything which has come under my observation in experiments upon plants, nature, in all cases (subject to infinite variety of structure) has accomplished all its objects by the most simple means. The seed-vessel is in some cases very distinct from

the point to which the pollen is applied. In the colchicum autumnale, the distance is not less than twelve inches, and the long thread is very slender. A glutinous fluid is emitted, into which the globules of pollen fall and explode; this fluid is re-absorbed by the plant; and the seed acquires its proper organization and powers. The transmission of an organized body through the long slender thread above described, appears an awkward process, dissimilar to those usually employed by nature; and I conceive that when a plant or animal is the offspring of two male parents, the female parent *must* give the first organized body. I cannot avoid believing that this is done in the eggs of birds and spawn of fish and insects. The liquid of the male silkworm operates upon the eggs after being laid."

With these views, of the first organization being given by the female, and life being given by the male, Mr. Knight very beautifully says, "Were I to be born again, I should wish to descend, as I do on my mother's side, from a healthy race, whose station in society had been through many generations, a little above that of peasants, and from a father whose mind, as that of his ancestry, had been much exercised in arguments of various kinds."

First, then, it appears to me that the making of life an essence, a thing *per se*, a sort of unnecessary second soul, is not in the spirit of advancing philosophy. It is in the same spirit, indeed, that some speak of the matter of electricity, the matter of galvanism; but I think I refuted that notion, above twenty years ago, in Thomson's Annals of Philosophy, by showing

that these are merely the actions of well-known elements—those namely of atmospheric air and of water.

Life is not a thing, but merely a general term, expressing the aggregate of the actions of the tubular organs of plants and animals. In reproduction, therefore, there is nothing to be given exclusively either by the male or the female. The first act of life in the new being is apparently the result of the mutual relation and influence of the otherwise inactive things or molecules given by each. One molecule with opposite poles *may* attract the corresponding poles of another; a ring *may* thus be formed; and ring added to ring *may* form a tube, &c. &c. &c. But, to shun hypotheses, whatever these inactive things or molecules may be, a globule of pollen, or a drop of albumen, it is evident that the more *passive* one, whether of the male or female, will be more readily associated with *sensation* than volition, because the former of these necessarily implies impression received by it *from* something else, and that the more *active* one will be more readily associated with *volition*, because that as necessarily implies motion communicated by it *to* something else. And as life is inseparable from sensation (hence the vital organs, the viscera of the trunk, go with the organs of sense;) so is motion inseparable from volition (hence the locomotive organs, the muscles, &c. go with the organ of volition, the cerebel.) Life is, therefore, the result, not of solitary, but of mutual action; and power, and perhaps precedence, in whatever parent it may occur, communicates that motion which impresses and gives sensation, or in other words, originates life.

On this subject, a general consideration of the embryo seeds of plants and ova of animals may mislead. We are apt to think there is something more in these comparatively large bodies than in one globule of pollen, or in a seminal aura or vermicule; but this is not at all probable. The former is larger and of obvious and definite form, because it contains not only the female reproductive atom, but the matter that nourishes both atoms, the cotyledon, or yolk, and, in some cases, the liquid in which they swim, &c. The globule of pollen of the colchicum autumnale, or a molecule from the exploded globule, is probably as large and as efficient as the female molecule with which it combines. It will prevent mistake on that head, to compare the mass of the hen's egg with its *punctum saliens*, which comprises molecules both of the male and the female.

The supposition of two male parents may possibly be a source of error on this subject.—If the case of the white and the coloured peas be one of the most distinct proofs that a plant may have two male parents, that statement must, I imagine, be made with great modification; for it seems only to prove that any pea in the same pod may have a distinct male parent, and Mr. Knight, indeed, "doubts if any one was of common parentage."—As to the case of the terrier and spaniel, the probability seems to be that all the puppies were the progeny of the terrier; that the majority resembled the male parent, according to the law of crossing which I have announced; and that two resembled the female parent, receiving from her, not from the springing spaniel, their charac-

ter and colour. These had the terrier's temper, because they derived the least apparent portion of their organization, the vital system, from him; and if those, like the terrier in general character, had been reared, they would, to similar extent, have been found to resemble the spaniel mother, because they also derived the least apparent portion of their organization, the vital system, from her. If the spaniel looking puppies had even perfectly resembled in colour the springing spaniel, that would be easily explicable without the supposition of two fathers, by the mere influence of the springing spaniel's colour on the mother's imagination (as half granted in the following paragraph by Mr. Knight himself;) for there are various proofs that the colour of a dog may so operate upon the imagination of a bitch in the state of œstrum as to influence the colour of her progeny, he himself being carefully secluded from all sexual connexion with her.

Mr. Knight, however, has some doubts at least as to the double male parentage of animals; for (16, April) he says, "The result of some experiments which I made many years ago satisfied me that an animal offspring might have two male parents; but the influence of the quagga, in the case of Lord Morton's mares, has to some extent excited doubts."*

So far, therefore, the first organized point must still be given by one male parent—must be one and indivisible; and thus power and perhaps precedence, in whatever parent it may occur, communicates that

* In fact, the interference of male parents is impossible: nature has carefully provided against it.

motion which impresses and gives sensation, or originates life.

Even superfœtation, or the production of distinct offspring by a second male parent, "Cassan," says Beck, "considers possible only, 1, where there is a perfect double uterus; 2, where there is a pre-existing extra-uterine pregnancy; and 3, when there is a new conception before the fecundating germ has occupied the cavity of the uterus. The experiments of Haller, Hunter and Haighton, and more recently of Home, John Burns and Magendie, prove that the ovum sometimes does not descend into the matrix until eight, fifteen, or even twenty days after fecundation."

But let us look to the facts on this subject.

"A case," says Beck, "mentioned by Buffon, has been often quoted by the enemies and advocates of superfœtation. A female at Charleston, in South Carolina, was delivered, in 1714, of twins within a very short time of each other. One was found to be black, and the other white. This variety of colour led to an investigation; and the female confessed, that on a particular day, immediately after her husband had left his bed, a negro entered her room, and, by threatening to murder her if she did not consent, had connexion with her."

Now it is well known, that the offspring of a black and a white may be either black, or white, or mixed, or even spotted. It is therefore evident that, in this case, both children may have been the progeny of the negro.

"Dr. Moseley," says Beck, "mentions the following as occurring within his time, at Shortwood estate,

in the island of Jamaica. "A negro woman brought forth two children at a birth, both of a size; one of which was a negro, and the other a mulatto. On being interrogated upon the occasion of their dissimilitude, she said she perfectly well knew the cause of it, which was, that a white man belonging to the estate came to her hut one morning before she was up, and she had connexion with him almost instantly after her black husband had quitted her."—Here, both were probably the children of the white man.

"The following is, I believe, the most remarkable case yet recorded. 'It was communicated to me,' says Dr. Walsh, 'by the Sargenté Mor of the St. Jose gold-district (Brazil.) A creole woman, with whom he was acquainted, in the neighbourhood, had three children at a birth, of three different colours, white, brown, and black, with all the features of the respective classes.'"

If by "brown" here were meant tawny or the usual mulatto colour, a negro might have produced the whole. But if, "the respective classes," is meant to imply a European, an Indian, and an African father! it is a great absurdity.

"It is urged," says Beck, "that shortly after conception, the os tincæ, as well as the internal apertures of the fallopian tubes, are closed by the deposition of a thick tenacious mucus. The membrana decidua is also formed early, and lines the uterus, and thus co-operates with the mucus, in obliterating the openings into its cavity.

"When [in a more advanced stage] the gravid uterus enlarges, the fallopian tubes lie parallel to its

sides, instead of running in a transverse direction to the ovaria, as in the unimpregnated state. If then an embryo be generated, the tubes could not embrace the ovum, and it would remain in the ovarium, or fall into the abdomen, and thus constitute an extra uterine conception.

"But again, it is said that, even if we allow the practicability of the new embryo reaching the uteris, its arrival would be destructive to the fœtus already present. The functions which have already been performed for the first conception have now to be repeated, and an additional decidua and placenta are to be formed.

"An appeal, however, is made to cases, where, as we have already stated, two or more children of different sizes, and apparently of different ages, are born nearly at the same time, or at a longer interval.

"It will be observed that, in one class of instances, the lesser child is represented as dead and decayed, and its size is much smaller than the accompanying birth. Now, in these, it is suggested that twins have been conceived, and that the embarrassed situation of one child in the matrix may have prevented its developement, checked its nutrition, and thus caused its death. The other, on the contrary, lives and grows, presses on the dead one, which becomes flattened, or wholly or partly putrified; and in this condition, both may be expelled at the same time, or one may be detained for some time after the other.—It is evident that this explanation puts aside the idea of superfœtation.

"There yet remain some cases which require ex-

planation. It has been attempted to give this, by supposing that a double uterus was present. This is far from being as rare as was at one time supposed."

The next preliminary circumstance to be noticed is Mr. Knight's supposed paramount influence of the female parent over sex.

"The female parent's influence upon the sex of the offspring in cows," says he (1, December,) "and I have reason to believe, in the females of our other domesticated quadrupeds, is so strong [and if in them, of course, in woman,] that it may, I think, be pronounced nearly positive; but I doubt its being quite independent of external causes, operating, however, upon the female alone."

In the Philosophical Transactions, 1809, Mr. Knight says, "In several species of domesticated animals (I believe in all,) particular females are found to produce a majority of their offspring of the same sex; and I have proved repeatedly, that, by dividing a herd of thirty cows into three equal parts, I could calculate with confidence upon a large majority of females from one part, of males from another, and upon nearly an equal number of males and females from the remainder. I frequently endeavoured to change the habits by changing the male, without success."

In a letter of the 22d of May, Mr. Knight says, "I saw my relation Sir John Sebright, who has made, at different periods, a great variety of experiments upon breeding animals; and he informed me that he had latterly made many experiments with the object of testing of my opinion, that the female parent gives

the sex to the offspring, and that the results of his experiments wholly agree with mine."

Mr. Blaine says, "some dogs, some stallions, and some bulls, are remarked for getting a greater number of males than females; while others are the parents of more females than males."—This might be supposed to imply predominance on either side.

As to mankind, he observes, that, "in King's Langley church, are the effigies of seven successive daughters born to a man by his first wife, and of seven sons born to him by a second wife, in succession."—This also might be supposed to imply predominance on either side.

In a letter from Sir Anthony Carlisle, he says, "I am intimate with a family in which the father and mother had only two children, a son and a daughter, who each married into families not related to either party, and have had fifteen daughters without one son—viz. eight by the son, and seven by the daughter."—This might be thought to look as if daughter-begetting were a prerogative of the family.

In the Philosophical Transactions, 1787, mention is made of a gentleman who was the youngest of forty sons, all produced in succession, from three different wives, by one father, in Ireland.—Here, assuredly, son-begetting seems to be a prerogative of the father.

Mr. Knight himself exempts mules from the maternal influence, which he supposes to operate in other cases. He says (1, December,) "Respecting mule ducks, though the eggs would have produced nearly an equal number of male and female offspring, if the common drake had been the parent, the eggs produc-

ed six out of seven (sometimes less) of male offspring, when the musk drake was the parent. I observed the same occurrence in mule birds, the offspring of a male goldfinch, and the female canary bird."—Now, as I regard mules as only a cross *in excess*, this is perfectly conformable with my views.

As to the influence of external causes, it is very likely to affect the relative abundance or energy of their means of reproduction on whichever parent it directly operates.

In support of that influence as operating directly on the female parent, Mr. Knight (23, November, and 1 and 4, December) says, "I have stated a case in the Philosophical Transactions, in which two cows brought all female offspring, one fourteen in fifteen years, and the other fifteen in sixteen years, though I annually changed the bull. Both, however, produced one male each, and that in the same year; and I confidently expected, when the one produced a male, that the other would, as she did."—To me this case does not prove that the female was the parent influenced.

"Huber discovered that, if the period of the queen-bee's impregnation was retarded, all the eggs afforded male offspring; and that the eggs last laid by the queen-bee produced male offspring only. All the last laid eggs of the queen-wasp afford either male, or efficient female, offspring, that is, females capable of living through winter after receiving the male, and of laying eggs in the following spring. Bees, moreover, can take any egg, which would have produced a labouring bee, and make an efficient queen of it, provided the egg be not more than three days old."

It must be observed that, in the retarded impregnation of the queen-bee, her reproductive functions are not more retarded than are those of the males; and the male progeny might therefore be supposed to arise from either cause. The statement, that, even in ordinary cases, the last laid eggs, or the second laying, produce male offspring only, leaves it equally uncertain which is affected.

"I have, in the Philosophical Transactions, stated the fact of cucumber and melon-plants affording all male blossom, if vegetation be accelerated by heat, and all female, from the same points, if the progress of vegetation be retarded by cold.—Nature, in vegetable life, deals more in transmutation than in primary distinct formations. A leaf-bud becomes a flower-bud, and the blossom of the apple is formed out of five embryo leaves, the points of which form the eye of the apple. Every bunch of grapes is a tendril first, and may be made to act as such. I have witnessed all the changes in this and other cases of similar kinds."

These are indisputable proofs of the power of external influences; but it is necessary to be careful in reasoning from such phenomena in the lower beings, as in them reproduction is more exposed to external influence; an important part of the reproductive process being in some of them performed externally. It seems to me most probable that *in the higher animals*, these influences act only *at the moment of reproduction*, as well as that they may act *on either parent*. Hence the power which has been already noticed, apparently either of female or male over sex. They probably affect the nutritive system, by increasing the abun-

dance of sexual secretion, in the male or female parent.

Among the Greeks, Empedocles, Epicurus, and various other physiologists, in the doctrine of epigenesis, endeavoured to show that parents respectively contribute reproductive fluids which co-operate in generation, and stamp the fœtus male or female, as either is more copious.

Such was the opinion of many of the ancients; and Lucretius says,

> "Et muliebre oritur patrio de semine seclum;
> Maternoque mares exsistunt corpore cretei.
> Semper enim partus duplici de semine constat:
> Atque, utri simile est magnis id, quodcumque creatur,
> Ejus habet plus parte equâ, quod cernere possis,
> Sive virûm suboles, sive est mullebris origo."

This certainly would accord with a statement often made, that the male, having in youth and old age, less power over the produce of conception than at the period of his force or of his greatest manhood, the female at those times obtains the preponderance, the result being that more girls are then born; whilst, on the contrary, the proportion of boys is greater during the time that man is in his flourishing period of life.

It would accord also with the fact, that, in polygamous nations, more female than male children are produced.

It would accord likewise with the report of most breeders, that, when the male is most vigorous, most males are produced.

It would accord, moreover, with the conclusion drawn from some experiments lately made in France

on sheep, by which it appears that sex depends, in some measure, on the comparative vigour of the parents.

Even, in hybrid plants, Koelreuter says, he has produced or diminished paternal resemblance by increasing the quantity of impregnating dust.

Now, all of these facts appear to be valuable; but previous to an accurate appreciation of them, or deriving from them all the aid they are capable of giving in determining the law of sex, it is necessary to state an important fact which has been hitherto unobserved, and which indeed could not be observed so long as it was not known, that one parent gave to progeny the vital system, and the other, the locomotive system.

It is this, that though, in the same variety, the male parent may give the vital system to progeny, yet it may have the female sex; and, though the female parent may give the vital system, it may have the male sex.

This is a remarkable fact, because the organs of sex and reproduction are mere appendages to the vital system. Like the rest of that system, they are tubular organs, which transmit or transmute liquids, and which act by a pulsating or peristaltic motion. The testes and ovaria, in fact, are glands—an important portion of those which properly constitute the third order of vital organs.

It seems strange, then, that the parent giving the vital system, should not invarariably give the sex. It looks, at first, as if one portion of the vital system, could be dislocated from another; and there appears

no reason for anything so contrary to prevailing analogy.

There is here, however, no irregularity; and the parent giving the vital system, primarily at least, gives the reproductive one.

To explain this, let me observe, that all vital and locomotive action has been observed to depend on nervous action.—Locomotive action generally depends upon conscious sensation and volition; for which purposes the sensitive fibres ascend to the brain, and the voluntary fibres descend from the cerebel. But the sensations of the vital system, being generally unconscious ones, and its motions generally involuntary, it obtains a new and totally distinct nervous system of its own, which is called the sympathetic system—its nerves of unconscious sensation arising from all points of the vital organs, and terminating in small knots or little brains, called ganglia, situated about the central parts of the trunk, generally near to the spine, and its nerves of involuntary motion proceeding from these little brains, and terminating in the same points of the vital organs.

Now, as all the parts of the vital system are under the immediate control of this new and distinct nervous apparatus, having its own ascending and descending fibres, which regulate its own receivings and givings, (just as the receivings and givings of the general system, its sensitive and voluntary actions, were regulated by its ascending and descending fibres,) it will be seen to be the interference of this new apparatus that causes the seeming independence of sex on the vital system. The communication of female sex which

receives, and that of male sex which gives, are now respectively as much dependent on the nerves which proceed to the ganglia, and those which proceed from them, as sensation and volition are respectively dependent on the fibres which ascend to the brain, and those which descend from the cerebel.

If there be any doubt as to the strict analogy between the powers of these two nervous systems, let it be observed, that, as general action is dependent on the greater nervous system, vital action in dependent on the less or sympathetic system; that, as the greater nervous system operates by the levers of the locomotive system upon external bodies, the less nervous system operates by the tubes of the vital system upon internal ones, namely, the contents of these tubes; that, as external bodies are the subjects of sensation and volition in the former case, so the contents of these tubes are the subjects of absorption and secretion in the latter; and that, if the less or sympathetic system did not thus regulate absorption and secretion, in lieu and independently of the greater system, it would be useless.

From all this, it will be seen that, according to the particular receiving or giving action—in this case the absorbing or secreting power, of the vital system, it will, independent of that general communication of that system to the new being, and dependent only on its own internal relations, regulated by its own nervous system, confer the receiving or the giving sex. Thus the parent giving the vital system, will also give the sex, whether that differ from its own or not. The

male, accordingly, may give either male or female sex; and the female the same.

In doing this, it would, from all that has been said, appear, that as, in the general character, the predominance of sensation or volition depends on the relative energy of the parent, and mediately perhaps on that of his reproductive liquid,* so in sex, the distinction of male or female depends on the relative quantity of that liquid. On nothing, indeed, can it so rationally depend as on that which is most identical with the being which gives it. When the reproductive liquid of the male, therefore, is most abundant, he, if he give the vital system, will give the male sex, and when least so, the female—a conclusion supported by all we know both among men and animals as to masculine energy and its results. So also when the reproductive liquid of the female is most abundant, she, if she give the vital system, will give the female sex, and when least so, the male—a conclusion which is also supported by the case of women in polygamous nations, and that of female animals when the female parent is relatively strong, when in-and-in breeding takes place, &c.

In both cases, it will be observed, that each sex,

---

* "The employment of the masculine organs being a secretion," says Friedlander, "its results, like those of similar operations, necessarily depend on the sensibility of the active and animated filters that perform them; and if the saliva is more powerful when the secretion is rendered more abundant by hunger or the presence of any desired aliment, if tears are burning when produced by acute sorrow or mechanical irritation, if the saliva becomes venomous in some animals when they are angry, if several other secretions become exalted or changed in their nature when the organs are powerfully excited, can we suppose that the elaboration of the seminal liquid is not subjected to the same laws?"

giving the opposite one when its reproductive means is scantiest, will coincide with the more abundant reproductive means of the opposite sex, so that males will appear to give males, and females, females, even when they do not at all give the vital system on which it depends.

Of this doctrine, there is a remarkable confirmation in the fact, that, when, in boys, it is the father's vital system which is communicated, as observation will easily show, the external reproductive organs, in the child, will be seen obviously to resemble those of the father; but when, in boys, it is the mother's vital system which is communicated, the child's external reproductive organs will be found to have no such resemblance to the father's: they are consequently derived, along with the vital system, exclusively from the mother. This very curious and remarkable fact throws a totally new light on the production of sex.

The law of sex, therefore, appears to be, that *either sex is, along with the general vital system, given by either parent, in dependence only on these internal relations of that system.*

I may here notice two circumstances connected with generation, which are illustrated by cases of twins.

The mental and physiognomical character of progeny seems generally to depend upon a *single impulse*, as there is generally a remarkable unity or resemblance of character in twins.

Dr. Robert Lee, Dr. Sweatman, and Mr. Hallion, inform me that twins are generally alike in physiognomical character, especially if of the same sex.

This observation is also popular.—"Is this," says Mary to Catherine Seyton, in the Abbot, "thy twin-brother as like thee in form and features as formerly?"

Dr. Copland has mentioned to me a case lately in the Middlesex Hospital, of twins of the same sex, both alike, and both having an enlargement of the spleen—by no means a common disease in children.

The sexual character of progeny is less frequently the same—doubtless because the more or less abundant secretion on which it depends, is divisible in various degrees.

Dr. Collins, in his Midwifery, gives a table containing 240 cases of twins, of which 140 were of the same sex and 100 of different sexes. Here, of the same sex, there is a predominance of 40; and it may fairly be said that there is a tendency toward the same sex.

### V. Law of Maternal Nutrition.

A certain degree of likeness generally pervades the countenances of all the children of a family.

At first sight, it would seem that there should be no resemblance between those children who have the father's forehead and mother's backhead, and those who have the father's backhead and the mother's forehead, for they have no part in common.—But such resemblance exists.

On close and frequent observation, it will be seen that this resemblance is always a maternal one, or has a maternal character; and it is doubtless derived from the circumstance that the whole of the children

of a family, are, previous to birth, nurtured by the same mother, and generally suckled by her afterwards.

This resemblance, accordingly, disappears where children have at once the opposite organization and different mothers.

---

## SECTION II.

### CIRCUMSTANCES MODIFYING THESE LAWS.

Some modifications are dependent on age.

It may, in the first place, be observed, that no child greatly resembles its parents at birth; and that the similarity of its features to those of its father or mother, is greatly increased as it increases in growth.

In various states of the developement of functions, a child will even resemble one parent more at one time, and the other at another time.

Every child, however, even at birth, resembles most the parent who gives the forehead and organs of sense, and gradually becomes liker the other parent as it advances in life, because the reaction of the cerebel is then more manifested.

A child is most like the parents after puberty, both because this is the age at which the child begins to resemble the adult, and because the physiognomical character is then fixed.

Some modifications are dependent on sex.

As the backhead is proportionally smaller in woman

than in man, its size, when communicated by the former to a male child, is always exaggerated.

Some modifications are dependent on the influence of the new parts added by the other parent.

If to a given forehead, a more projecting backhead and cerebel be added, the forehead will, in the progeny, be elevated and projected.

The influence of the cerebel in elevating the forehead, is evidently exerted through the cerebellic ring, &c.—as will appear from my work on "The Nervous System."

If, to a given forehead, a broader backhead and cerebel be added, the forehead in the progeny will be broadened—by similar means.

If to a round face, a more projecting backhead and cerebel be added, the face will, in the progeny, be elongated and projected inferiorly.

The influence of the cerebel in lengthening the face, is probably exerted through the facial voluntary nerves.

If to a narrow face, a broader backhead and cerebel be added, the face, in the progeny, will be broadened —by similar means.

The influence of the cerebel over the muscular parts of the face falls under the first law of resemblance, and was there described.

The nose, I should, however, observe, sometimes presents an apparent anomaly. Not only may one parent modify the form of that organ as given by the other, as its more moveable extremity, but, in some instances, the middle part of the nose, by the influence of the new combination of organs, rises, or falls, (1

should rather say, retains through life its infantile form,) so as to deviate from both parents.

There are children, we are told, who do not resemble their father, but their grand-father; and there are nephews who resemble their uncles or aunts.

This fact has been noticed by Lucretius :—

> "Fit quoque ut interdum similies existere avorum
> Possint, et referent proavorum sæpe figuras;
> Propterea quia multa modis primordia multis
> Mista suo celant in corpore sæpe parentes,
> Quæ patribus patres tradunt à stirpe profecta.
> Inde Venus variâ producit sorte figuras,
> Majorumque refert voltus, vocesque, comasque."

The term Atavism has been adopted to describe this appearance, prevailing throughout animal races, and by some supposed to prevail among plants. M. De Candolle, however, does not consider the latter fact as fully established, but thinks it probable from analogy, and as serving, if true, to explain some remarkable appearances.

On this subject, Dr. Pritchard says, "In general the peculiarities of the individual are transmitted to his immediate descendants: in other instances, they have been observed to re-appear in a subsequent generation, after having failed, through the operation of some circumstances quite *inexplicable*, to show themselves in the immediate progeny."

"Nor less *inexplicable*," says Dr. M. Good, "is the generative power of transmitting peculiarities of talents, of form, or of defects in a long line of hereditary descent, and occasionally of suspending the peculiarity through a link or two, or an individual or two, with an apparent capriciousness, and then of exhibiting it

once more in full vigour. The vast influence, which this *recondite*, but active power, possesses, as well over the mind as the body, cannot, at all times, escape the notice of the most inattentive. Not only are wit, beauty and genius, propagable in this manner, but dulness, madness and deformity of every kind."

Mr. Blaine observes, that "if it were not for the irregularities which occasionally occur by mental influence, we might be led to conclude, that a family character was originally imprinted on the reproductive organs, or that the ova or germs of the future race were formed after one common hereditary mould; for it is often observed, not only among dogs, but among other domestic animals, and even in man, that their progeny bear a greater resemblance to the grandam or grand-father than to their immediate parents. . . . This tendency is greatest in the accidental varieties or breeds, in which a few succeeding generations are sufficient to destroy all appearances of variation from the original; but in breeds more nearly approaching the original, as well as such as have been long established, it requires a much longer time wholly to degenerate them. The tendency to resume the original type is, however, inherent in all our domestic animals, and in none more than the dog; and judicious efforts employed to counteract this property form a principal part of the art of successful breeding in rural economy."

The resemblance of a child to its grand-father or grand-mother, or to its uncle or aunt, has in it nothing mysterious; but depends upon one of its parents introducing a tendency to some feature, a thicker or

thinner lip, a longer or shorter nose, and darker or ighter eye, which was lost in the parent more immediately connected with those relatives, and which, now again introduced, calls into action modifications of form and function which in that parent were at least rendered subordinate, and consequently obscure, by other and more dominating ones. As to the tendency among domesticated animals, mentioned by Mr. Blaine, it is a mere re-formation of the original breeds by man without his being aware of it, as has been already explained; and it is very natural that it should be least observed in breeds which are likest the original.

"The ancients," says Camper, "thought that the child was susceptible, solely through the effects of the mother's imagination, of acquiring a likeness to a particular individual at the very moment of conception, although they were not otherwise ignorant of the fact, that fecundation takes place unknown to the parents. The moderns have carried this power of the imagination still further: they have maintained, even obstinately, that the child already conceived may be injured or modified by the mother's imagination, even up to the moment of the birth." . . . "The human race," adds Camper, "would indeed be much to be pitied, if the fate of children depended on the foolish, depraved, and frequently insane imagination of the father or mother."

For the likeness of a child to one who should not have been the father, it would be very fair to admit the reason, that the mother's imagination was occupied with him at the moment of conception, though

it might be ridiculous enough to regard that as a sufficient excuse for the resemblance. But as to the modern notion of the influence of imagination, it is not so destitute of foundation as Camper supposes.

Roussel remarks, that "children have been subject all their lives to convulsions, in consequence of their mothers having been, during pregnancy, struck with terror or some other powerful emotion. Haller, indeed, observed that, from the want of nerves to establish a communication between the mother and the fœtus,—nerves which are the only means by which the movements of the mind can be transmitted, the mother cannot cause the infant to experience the impressions which she feels. But if, by his own acknowledgment, a mother may communicate to her infant the convulsions into which extreme terror has thrown her, it is evident that the mother may communicate her affections to the fœtus without the intermediate assistance of nerves."

Some remarkable instances of the influence of maternal imagination have been observed among female quadrupeds.

An Arabian mare, belonging to the Earl of Morton, which had never been bred from before, after having a mule by a quagga, had, in succession, three foals by a black Arabian horse. The first two of these are described as follows.—They have the character of the Arabian breed as decidedly as can be expected; but, both in their colour, and in the hair of their manes, they have a striking resemblance to the quagga. Their colour is bay, marked more or less like the quagga in a darker tint; and both are distinguished

by the dark line along the ridge of the back, the dark stripes across the forehead, and the dark bars across the back part of the legs. Both their manes are black: that of the filly is short, stiff, and stands upright; that of the colt is long, but so stiff as to arch upwards, and to hang clear of the sides of the neck, in which it resembles the hybrid: this is the more remarkable, as the manes of the Arabian breed hang lank, and closer to the neck, than those of most others.

The explanation of these phenomena by Mr. Mayo is, that the connexion with the male produces a physical impression, not merely upon the ova, which are ripe for impregnation, but upon others likewise, that are at the time immature. As, however, there are ample proofs of the power of the mother's imagination among quadrupeds, especially over colour, this explanation is very improbable.

"Some physiologists," says Mr. Knight (4, December,) "have been disposed to think, that the imagination of parents operates upon the character of the offspring. The strange fact of Lord Morton's mares having continued to produce, in a declining extent, striped horses, is perhaps, to some extent, favourable to such opinions."

In the Quarterly Journal of Agriculture, Mr. Boswell says, "One of the most intelligent breeders I ever met with in Scotland, Mr. Mustard, of Angus, told me that one of his cows chanced to come in season, while pasturing on a field, which was bounded by that of one of his neighbours, out of which an ox jumped, and went with the cow, until she was brought home to the bull. The ox was white, with black

spots, and horned. Mr. Mustard had not a horned beast in his possession, nor one with any white on it. Nevertheless, the produce of the following spring was a black and white calf with horns."

Mr. Blaine says that, "Imprintings which have been received by the mother's mind previous to reproduction, are conveyed to the germs within her, so as to stamp one or more of them with characteristic traits of resemblance to the dog from which the impression was taken, although of a totally different breed from the real father of the progeny. In these instances of sympathetic deviation, the form, size and character are, in most, principally the mother's; but the colour is usually the favourite's, with, perhaps, a few characteristic blendings of external resemblance intermixed.

"It would appear that this mental impression, which is perhaps usually raised at some period of œstrum, always recurs at that period, and is so interwoven with the organization even, as to become a stamp or mould for some if not all of her future progeny; and the existence of this curious anomaly in the productive system is confirmed by acts of not unfrequent occurrence.

"I had a pug bitch whose constant companion was a small and almost white spaniel dog of Lord Rivers' breed, of which she was very fond. When it became necessary to separate her, on account of her œstrum, from this dog, and to confine her with one of her own kind, she pined excessively; and notwithstanding her situation, it was sometime before she would admit of the attentions of the pug dog placed with her. At

length, however, she did so; impregnation followed; and, at the usual period, she brought forth five pug puppies, one of which was elegantly white, and more slender than the others.—The spaniel was soon afterwards given away, but the impression remained; for, at two subsequent litters (which were all she afterwards had,) she presented me with a white young one, which the fanciers know to be a very rare occurrence.

"The late Dr. Hugh Smith used to relate a similar instance which occurred to a favourite female setter that often followed his carriage. On one occasion, when travelling in the country, she became suddenly so enamoured of a mongrel that followed her, that, to separate them, he was forced, or rather his anger irritated him, to shoot the mongrel, and he then proceeded on his journey. The image of this sudden favourite, however, still haunted the bitch, and for some weeks after, she pined excessively, and obstinately refused intimacy with any other dog. At length, she accepted a well-bred setter; but when she whelped, the Doctor was mortified with the sight of a litter which, he perceived, bore evident marks, particularly in colour, of the favoured cur, and they were accordingly destroyed. The same also occurred in all her future puppings: invariably, the breed was tainted by the lasting impression made by the mongrel."

In the Transactions of the Linnæn Society of London, is an account, by Mr. Milne, of a pregnant cat, his own property, the end of whose tail was trodden on with so much violence, as to give the animal intense pain. When she kittened, five young ones appeared, perfect in every other respect except the tail, which

was, in each of them, distorted near the end, and enlarged into a cartilaginous knob.

Of the influence of climate, Sir Anthony Carlisle says, (16, August,) "It has been for some time notorious, and I think recorded in the larger volumes descriptive of the convict colony of Botany Bay, that the children of European parents there are generally born with white hair and fair complexions. Inquiries made by myself assure me, that the children of European descent in the second generation, are almost universally fair and white haired, nothwithstanding the colour and complexion of their parents. This was confirmed by a surgeon who was lately examined at the college, and who had resided seven years at Sidney Town as a medical man.

"The same gentleman stated that the second generation of European descent at Botany Bay, partook of the ugly visages of the aboriginal inhabitants.—I rather suspect that the present descendants of the older North American settlers, begin to resemble in figure the original Indians."

That the long cohabitation and intimacy of two individuals, induces similarity of countenance, I have often observed. It is to be seen chiefly in old married couples, in the most moveable features of the face, and principally about the mouth. It is doubtless the result of sympathetic feeling and similar expression.

Dr. Hancock, the American traveller (15, August,) says, "It has appeared to me that very obvious changes are produced in a few generations, from certain assimilations independently of intermarriage. We find, in negro families which have long dwelt

with those of the whites as domestics, that successive generations become less marked in their African features, in the thick lip and flat nose; and, with skins of a shining black, they gradually acquire the European physiognomy. This is more especially observable amongst the older settlers, and in the smaller islands, such as St. Kitts, Nevis, Montserrat—where there had been but small accessions of native Africans.

"Under such circumstances, we may often distinguish a Dutch negro by the countenance alone. This difference can scarcely be described by words, but frequently we observe that obliquity of the eye so common to the Hollander.—I have never read or heard of any discussion on this subject; but I have long thought it curious and deserving the consideration of anthropologists. I cannot pretend to account for this, and I merely state the facts, which I doubt not you will find confirmed by those who have enjoyed similar opportunities of observation."

On the influence of domestication, Mr. Lawrence, in his Lectures, says, "In endeavouring to account for the diversities of features, proportions, general form, stature, and other particulars, I must repeat an observation already made and exemplified in speaking of colour: namely, that the law of resemblance between parents and offspring, which preserves species, and maintains uniformity in the living part of creation, suffers occasional and rare exceptions; that, under certain circumstances, an offspring is produced with new properties, different from those of the progenitors; and that the most powerful of these causes

is that artificial mode of life which we call the state of domestication.

"At present, we can only note the fact, that the domestic condition produces, in great abundance, not only those deviations from the natural state of the organization, which constitute disease, but also those departures from the ordinary course of the generative functions, which lead to the production of new characters in the offspring, and thus lay the foundation of new breeds. The domestic sow produces young twice a year; the wild animal, only once. The former frequently brings forth monstrous fœtuses, which are unknown in the latter."

In a philosophical point of view, Mr. Blaine observes, "We have no such thing as a pure breed among any of our domestic animals. Our most boasted specimens are either altogether degenerated, or produced from congenital varieties: the native and original types are mostly unknown to us.

"In tracing the natural history of the dog, we must feel convinced, that what we call breeds are but varieties, which have been generated by various causes, as climate, peculiarity in food, restraint and domestication. Man, active in promoting his own benefit, has watched these gradual alterations, and has improved and extended them by aiding the causes that tend to their production, and by future care has perpetuated and made them permanently his own.

"Many varieties among dogs and other domestic animals are the effect of monstrosity, or have arisen from some anomaly in the reproductive or breeding process When these accidental varieties have exhib-

ited a peculiar organization or form which could be applied to any useful or novel purpose, the objects have been reared, and afterwards bred from; and when the singularity has been observed in more than one of the same birth, it has been easy to perpetuate it by breeding again from these congeners, and confining the future intercourse to them.

"To these accidental variations from general form and character among dogs, we are to attribute our most diminutive breeds, our pugs, bull-dogs, wry-legged terriers, and some others; our general breeds are, however, rather the effect of slow cultivation than of sudden and extraordinary production."

---

## SECTION III.

### Consequent Easy Improvement of Families.

I have already shown that organization is nearly indestructible, because, although the two series of organs in parents may be dislocated in progeny, they still exist, and enter into new combinations, or are re-formed. I have also shown that perfection is unattainable by any race, because, long ere it could be reached, parents would resemble each other, sexual excitement would cease, and reproduction would fail.

The first of these facts presents the great obstacle to the general and speedy improvement of the human race. The second proves that no advantages, limited even to privileged families, and enjoyed by them in the highest degree, would exempt them from the im-

perfection and the ills, which are in reality essential to all existence.

Neither of these facts, however, can in any degree discourage either nations or families in the career of improvement, from the highest degree of which all are so vastly remote.

In relation to the first of these facts, I have said that organization is nearly indestructible, because it cannot be doubted that education, though far more slowly than zealous persons imagine, yet if general—an important condition—would slowly ameliorate it. And this is one source of hope for humanity.

Even without that systematic and universal education, which any enlightened government would establish, we see what the education derived, amidst frightful hazards and infinite suffering, from the mere accidents of life, can accomplish.

The poor man, born with happy organization, and reared in the stern school of misfortune, often becomes superior to the aristocracy of the land, who, in the destitution of talent inseparable from their education, are compelled to court his aid, especially when that can render them more secure in rank, and richer in emolument.

Certain it is that families, by intermarriages founded on rational principles, and in conformity with the natural laws so clearly established, as prevailing equally among men and lower animals, may, surely, easily and quickly (some in their first, others in their second generation) raise themselves, in some at least of their members, from deformity to beautiful organi

zation, from disease to health, and from stupidity to high mental ability.

Moreover, if the importance of judicious crossing were seen, among the variously organized tribes composing a nation like the British, these benefits, in moderate degree, would be proportionally extended among the mass of the people.

In the subsequent part of the work, devoted to the subject of Choice, the application of these principles, in its most essential details, will be made to all the great individual varieties.

It is here only meant to be shown that, on these principles, the means of improvement are in the power of every family.

A little reflection on the laws of descent will show, that a son can resemble his father only in half his organization. It similarly follows, that on this son intermarrying, he may not communicate to the grandson the share which he has in his father's, but that which he has in his mother's, conformation.

Thus one-half the father's organization *must* be lost in the son, accident at present alone determining whether it shall be the best or the worst portion; and the other half *may* disappear in the grandson so that the latter shall not have the slightest degree of the organization, nor the slightest reesemblance to his grandfather. Hence it follows, that a man may have no rational interest, physical or moral, in his second or third generation.

On how slender a basis, then, are at present founded the claims of hereditary descent—the certainty that the son must have a very partial resemblance to

the father—that the grandson may have none—and that there are many chances against subsequent generations having the slightest!

Similar reflections, however, on these laws will show, that, by placing himself in suitable relation to an appropriate partner in intermarriage, man, unless all the most undisputed *facts* of breeding be *false*, has (precisely as the breeder has among lower animals) the power to reproduce and to preserve either series of organs—the best, instead of the worst, portion of his organization.

It can, indeed, be only passion, venality or pride, that can prevent man from doing, for his own progeny, that which natural and universal laws permit him to do for the progeny of every domesticated animal. The only reply that, under these circumstances of actual and daily demonstration, he can make to the invitation of nature and science, is, that he prefers a blind passion to an enlightened one,—brutal indulgence, succeeded by life-long disgust, to exquisite enjoyment and permanent happiness,—or money, a mere means of pleasure, at the cost of domestic misery—perhaps of conjugal or filial insanity, to actual pleasure for himself and all around him, as well as the progress of children in intellectual improvement and honourable arts—the sole means of abiding fortune,—or rank from which he may look up to those above, who despise and spit upon him because he would vainly overtake them in their idiot scramble for a bubble, and down on those below, who therefore naturally hate him for his insolent assumption.

To those of higher aspirations than these—to those

who seek for the improvement of their race, and for the mental advancement both in themselves and their progeny, it cannot be wrong, in passing, to say that the other functions will diminish in energy as the cerebral functions become more intense. Hence men of the highest intelligence are more liable than others to cerebral affections. There are, therefore, prudent limits even to the best employment of the mind.

But not only is the means of improved general organization in progeny subject, by intermarriage, to the control of man, beauty of face is, by the same means, equally in his power.

An equality or similar proportion between the organs combined in children, is always productive of more or less beauty, whatever the size of these organs may be. On the contrary, an inequality or disproportion between the combined organs, is always productive of ugliness.

Accordingly, where there is a symmetry of head, there is symmetry of face, or beauty; and where there is want of symmetry of head, there is want of symmetry of face, or ugliness. A perfect correspondence must indeed exist in this respect.

The reason is obvious. The backhead being the originator of all voluntary motions—those of the moveable parts of the face as well as others, they go together, and the agreement or disagreement of these parts becomes striking.

The greatest degrees of ugliness occur in the lower half of the face. I may, therefore, take thence my examples.

A prominent backhead added to a smaller forehead,

always produces a disagreeable projection of the lower parts of the face—generally of the underlip and lower part of the nose. The Ethiopic negro, with a large backhead, has prominent alveoli and lips.

On the contrary, a small backhead added to a very large forehead, always produces a not less disagreeable contraction of the lower part of the face.

Beautiful parents produce ugly children, when the organs in the new combinations are worse adapted to each other than the old ones. Ugly parents produce beautiful children, when the organs are better adapted to each other than the old ones.

Thus the mere relative proportion of the organs combined in children is a great cause of beauty or of ugliness; and there are no exceptions to its influence.

As already said, however, this is not the place for details.

# PART V.

## VAGUE METHODS OF REGULATING PROGENY ADOPTED IN THE BREEDING OF DOMESTICATED ANIMALS.

---

## SECTION I.

### GENERAL PRINCIPLES.

Mr. Cline appears to have been the first anatomist who called the attention of breeders to the scientific principles of their art. In this respect, he did indeed little; and he certainly had no idea either of the number and importance of these principles, or of the conclusions to be drawn from them. But it was still something to point out the value of a little knowledge of anatomy, and the importance of capacity in the chest of animals.

Mr. Cline's first proposition, that the external form of domestic animals is an indication only of internal structure, and that the principles of improving that form, must therefore be founded on a knowledge of the structure and use of internal parts, is quite indisputable.

It is mere nonsense and ribaldry, therefore, when Mr. Hunt says, "If the breeders have long been accustomed to select those best formed for breeding without an anatomical examination, the old method must certainly have the preference, as it would be impossible to breed from these animals after they had been dissected. It will not prove a sufficient objection to this argument to assert that, by the dissection of one animal, the merits of the whole breed may be ascertained, as it is well known to those who understand the business, that great varieties of perfection will take place in the same family; and it must be also evident, that if the degree of perfection is only to be known by dissection, it will be impossible to establish any other criterion of choice but family connexion; and though the own brother to the martyr of this scientific sacrifice be made choice of, it will also be impossible to estimate his perfections till his viscera have been made the subject of anatomical investigation."—Mr. Cline asks for anatomical knowledge, not for dissection. Dissection, indeed, first taught us such truths; but we should have been more stupid than we are, if we had not long ere now learned thereby some of the relations of external forms to internal structure.

In breeding, the hereditary tendency of peculiar structure was well known to the ancients. Among the moderns, it is a matter of common observation.

The principle of breeding is the axiom, that "like produces like"—meaning that the progeny will inherit the qualities of the parents.

This principle is held to extend to form, qualities, the consequences of hard work, or ill-usage, and pre-

disposition to, or exemption from, disease—in short to the whole constitution.

It applies equally to sire and dam. "To breed, therefore," says Mr. Thacker, "in the most successful manner, the male and female should be taken when they are in the highest state of health, and when all the powers and attributes which are wished for, and which it is designed to propagate, are in the most complete order and state of perfection."

The principle, however, is so vague as to be nearly useless in application. Hence Mr. Cline says, "The theory of improvement has not been so well understood, that rules could be laid down for directing the practice."—The reader has already seen the more definite laws which must take its place.

In a subsequent Part, I propose to apply these laws a little further to the breeding of domestic animals. In the present, I shall briefly give, chiefly from the best authorities on the subject, their own view of the vague methods at present adopted, under the heads of In-and-In Breeding, Selection, and Crossing.

---

## SECTION II.

### BREEDING IN-AND-IN.

It was doubtless from the belief that, on the princi ples of like producing like, the most perfect parents would produce the most perfect offspring, that breed-

ing in-and-in originated. It was probably, therefore, the most ancient practice.

In some cases, however, the horse, the camel, &c. are said to have refused connexion with the mother. Varro says, "Equus matrem ut saliret adduci non posset." This however is not always the case. Dogs are less averse to such unions: but the disproportion of age is not so great between them.

That this aversion, however, should in any degree, or on any occasion, exist among animals, that it should exist in the greatest degree among mankind, and that such breeding should always be less prolific, are strong proofs of the impropriety of the closest and the strictest in-and-in, namely, that between parents and progeny, &c.

It was, however, an absurd prejudice, as Sir John Sebright observes, "which formerly prevailed against breeding from animals, between whom there was any degree of relationship. Had this opinion been universally acted upon, no one could have been said to possess a particular breed, good or bad; for the produce of one year would have been dissimilar to that of another, and we should have availed ourselves but little of an animal of superior merit, that we might have had the good fortune to possess."

The Arabians, we are told, preserve the pedigree of their horses more carefully than their own; never allow ignoble blood to be mixed with that of their valued breeds; and attest their unsullied nobility by formal depositions and numerous witnesses. Equal attention is paid to the breed of horses by the Circassians, who distinguish the various races by marks on the

buttock. Now, the former at least of these horses being commonly said to be bred in-and-in, while they have yet maintained their high character, is generally regarded as an argument in favour of in-and-in breeding.

Mr. N. H. Smith, however, long a resident among the Arabs, is of opinion, that "colts bred in-and-in [even though not closely or strictly,] show more blood in their heads, are of better form, and fit to start with fewer sweats, than others; but when the breed is continued incestuous for three or four crosses, the animal degenerates."

Experiments made in Bohemia on the breed of horses, tend also to show that the best breeds degenerate when always united in a direct line with their parents.

On breeding in-and-in in cattle, and sheep more especially, Sir John Sebright, after reasonably doubting the procedure of Mr. Bakewell, endeavouring to show that that term does not strictly apply to Mr. Meynell's practice, and observing that none of the advocates for it with whom he has conversed, have tried it to any extent, states that, as "a tendency at least to the same imperfection, generally prevails in different degrees in the same family, by breeding in-and-in, this defect, however small it may be at first, will increase in every succeeding generation, and will, at last, predominate to such a degree, as to render the breed of little value."

Observing that, by selecting animals for one property only, [instead of all that are essential to them,] the same effect will, in some degree, be produced, as

by breeding in-and-in, Sir John says, "The Leicestershire breeders of sheep have inherited the principles, as well as the stock, of their leader, Mr. Bakewell: he very properly [that must be qualified] considered a propensity to get fat, as the first quality in an animal destined to be the food of man: his successors have carried this principle too far; their stock are become small in size, and tender, produce but little wool, and are bad breeders."

To breeding in-and-in, says the author of the Useful Knowledge Society's work on cattle, "must be traced the speedy degeneracy—the absolute disappearance of the new Leicester cattle, and, in the hands of many an agriculturist, the impairment of constitution and decreased value of the new Leicester sheep and the short-horned beasts."

In breeding in-and-in in dogs, Mr. Blaine observes, "One thing it is but just to state, which is, that breeding in-and-in among dogs, seems to have more opponents than it has in the multiplication of any other domestic race of animals."

In the same manner, do the best observers generally agree as to in-and-in breeding causing degeneracy, loss of reproductive power, &c., in the offspring—data from which, with others, I deduced the law of in-and-in already enunciated, in which the mother gives character to progeny.—For the sake of pointing out that circumstance, as well as of showing the general opinion on the subject, I have quoted the preceding observations.

I must add, however, that it is truly observed, that breeding in-and-in may, to a certain extent, be em-

ployed in strengthening good properties, in fixing any variety that may be thought valuable, or in developing and establishing the excellent form and quality of a breed.

I must further add, that it appears to me, that no cross can be established and maintained, without what some would call, breeding in-and-in between those animals resulting from it which have the homogeneous or corresponding organization meant to characterize the breed.

---

## SECTION III.

### SELECTION.

Here it is first necessary to know the best characteristics of animals, in order continually to select those which most nearly approach these.

By taking advantage, moreover, of the natural tendency to transmit any accidental quality which happens to arise, further power over the race is acquired; and attention to the same points is continued till, in consequence of the effect increasing, a particular figure, proportion of limbs, or any other quality is established in the breed.

It is not merely by putting the best male to the best female, that the desired qualities can be obtained; but by other means not clearly defined in the common practice, and dependent on the principles already laid

down.—But my present business is with the authorities as to selection.

"The alteration," says Sir John Sebright, "which may be made in any breed of animals by selection can hardly be conceived by those who have not paid some attention to this subject: they attribute every improvement to a cross, when it is merely the effect of judicious selection."

By this process, says Dr. Pritchard, "distinct breeds of animals, of horses for example, are formed, which are adapted by their peculiar conformation to various purposes of utility. Strength and the more unwieldy form, necessary to great power of limbs, become the character of one race; while another is distinguished for a light and more graceful shape, favourable to agility and celerity of motion."

So "among the varieties of dogs, one race is remarkable for acute sight, another for fine scent, and a third for greater strength and weight of limbs, pointing them out as fit for the purpose of nightly protection."

"What has been produced by art," says Sir John Sebright, "must be continued by the same means. . . . We must observe the smallest tendency to imperfection in our stock, the moment it appears, so as to be able to counteract it before it becomes a defect; as a rope-dancer, to preserve his equilibrium, must correct the balance, before it is gone too far, and then not by such a motion as will incline it too much to the opposite side. . . . The breeder's success will depend entirely upon the degree in which he may happen to possess this particular talent.

"If one male and one female only, of a valuable breed, could be obtained, the offspring should be separated, and placed in situations as dissimilar as possible; for animals kept together are all subjected to the effects of the same climate, of the same food, and of the same mode of treatment, and consequently the same diseases. By establishing the breed in different places, and by selecting, with a view to obtain different properties in these several colonies, we may perhaps be enabled to continue the breed for some time, without the intermixture of other blood."

"Degeneracy of breeds," says Mr. Knight, (21, December) "I have some reason to believe, may be prevented to some extent at least, by proper use of pastures of a different kind. I had a breed of cattle, so excellent, that I did not like to cross-breed with any other, and I tried the effect of keeping some of the individuals on one pasture and some upon another. The soil of one pasture was strong, argillaceous and red, that of the other, light sandy loam; and I am inclined to think that one individual grown upon one of those soils, afforded some of the benefits of crossing, when caused to breed with another individual of the same family, but reared upon a different soil and pasture."

In this notice of selection as commonly practised, I have omitted all the reasons which I deem erroneous, and have confined myself entirely to facts.

## SECTION IV.

### CROSSING.

Here, as in the two preceding sections, I shall as briefly as possible, state the opinion of a good authority as to each more important point.

"Although close breeding," says Mr. Berry, "may increase and confirm valuable properties, it will also increase and confirm defects. . . . It impairs the constitution, and affects the procreative powers. . . . It will, therefore, always be necessary, after it has been resorted to, to throw in a strong cross, as respects blood, and to refer to such animals, for the purpose, as are unquestionably vigorous and healthy."

In breeding from stock with qualifications of different descriptions, and in different degrees, the breeder "will decide what are indispensable or desirable qualities, and will cross with animals with a view to establish them. His proceeding will be of the 'give and take' kind. He will submit to the introduction of a trifling defect, in order that he may profit by a great excellence; and between excellences, perhaps somewhat incompatible, he will decide on which is the greatest, and give it the preference."

Unfortunately, as the breeder has never been able scientifically, so he has been unable certainty, to accomplish this.

Mr. Wilkinson observes that "the thing generally to be expected from mixing the breeds of animals,

possessing properties differing in degree, is such an union of those properties in the progeny, that they may be greater than in the ancestry on one side, but less than in that of the other. . . . . In crossing a cart-mare with a blood horse, no man expects to obtain from the produce, the strength of the former with the speed of the latter: but an animal that is swifter than the cart-horse, yet incapable of drawing so great a burthen."

I have quoted this in order to explain the cause of the fact stated by Mr. Wilkinson.—The intermediate character of the qualities thus reproduced, is owing, not to each parent imperfectly giving its share in the progeny's organization, but to the circumstance that, in their new combination, each series of organs acts with, and therefore modifies, the other.

In connexion with crossing, an interesting discussion has arisen out of a doctrine of Mr. Cline, as to the relative size of parents.

"Experience," he says, "has proved, that crossing has succeeded, in an eminent degree, only in those instances in which the females were larger than in the usual proportion of females to males; and that it has generally failed when the males were disproportionably large . . . When the male is much larger than the female, the offspring is generally of an imperfect form. If the female be proportionally larger than the male, the offspring is of an improved form.

"The improvement depends on this principle; that the power of the female to supply her offspring with nourishment, is in proportion to her size, and to the

power of nourishing herself from the excellence of her constitution.

"The size of the fœtus is generally in proportion to that of the female parent; and, therefore, when the female parent is disproportionately small, the quantity of nourishment is deficient, and her offspring has all the disproportions of a starveling. But when the female, from her size and good constitution, is more than adequate to the nourishment of a fœtus of a smaller male than herself, the growth must be proportionately greater. The larger female has also a greater quantity of milk, and her offspring is more abundantly supplied with nourishment after birth."

My correspondent * * *, alluding to Mr. Cline's tract, observes, (4, February,) "I need not say that, from such a source, the theoretical views stated are excellent; but I think, in practice, I have found some of them incorrect;" and (21, March) "It is always desirable for the purpose of breeding healthy animals, that the females should be large.—But if, as will sometimes happen, some exceptions should occur in a man's herd or flock, and he should wish to breed from females of a small size, according to my experience, he will do right to select large males to put them to. This is contrary to the theory of Mr. Cline."

Mr. Hunt says, "If we search the whole animal creation, we shall find that the superiority of the male character, both in size and power, is strongly marked . . . I am well informed by all the breeders I am acquainted with, that it is the general practice to make use of males which are larger than the females.

"I have been favoured with the following interest-

ing observations from my friend Mr. Stone, of Knighton."

According to "Mr. Cline's opinion, a bull of this variety [a long-horned bull bred by Mr. Honeyborn of Dishley is referred to] put to a Lincolnshire, Yorkshire, Durham or Hereford cow (they being of a larger sort) would be advantageous; but put to a small Devon, or still smaller Scotch, it would be otherwise. But from a number of experiments, I am decided in my opinion, that he is mistaken. I have had, from the latter cross, as true symmmetry of shape, as healthy constitutions, as profitable animals brought to market at unusually early ages, under three years old, as any I ever experienced.

"Let us suppose a Leicestershire tup put to a Charnwood Forest, or Ryland (both particularly small,) or South Down, ewe,—I have seen their offspring as healthy and useful in every respect as from the large Lincolnshire, Durham, Wilts, or any other variety larger than the Leicestershire tup."

"The grand solution of this question," resumes Mr. Hunt, "is made to depend on the ability of the female parent to nourish the fœtus; for which purpose it is supposed to be necessary that the female parent should be larger than the male. But, supposing the argument in no other respect objectionable, I have no doubt that, on examination, it will appear evident that small females are best calculated for the purpose. Small cows not only give the greatest quantity of milk, but it is reasonable to suppose that they give the greatest quantity in proportion to their quantity of food. [Why?] A large-bodied animal must certainly

require more nourishment than a small one; and consequently a small animal has more nourishment to bestow upon the fœtus, or to supply her offspring with after birth."

It would seem, however, that she would have to spare, according to her size. The *non sequitur* here committed may be removed, if the vital system is larger in the smaller animal.

"I am well persuaded that small females less frequently fail, both in the production and support of a healthy offspring.

"On the good effects of crossing, we are told [by Mr. Cline] that 'the great improvement in the breed of horses in England, arose from crossing with those diminutive stallions, Barbs and Arabians; and the introduction of Flanders mares into this country was the source of improvement in the breed of cart horses.'

"With respect to the matter of fact, I have nothing to allege, but that all might be as here stated: but surely no one ever doubted that a bad breed might be improved by a mixture with a good one; and if the horses in England ever were a set of large, ill-formed, awkward animals, and small, neat, well-formed stallions were procured from Barbary or Arabia, it is reasonable to suppose that great improvements would take place."

Mr. Knight (16, April,) says, "Mr. Cline's opinions upon this subject are altogether wrong,—whether the animal to be produced be intended for labouring, or living and fattening, upon little food;" and he adds that he has obtained offspring from Norwegian pony

mares, by a London dray-horse, which had the powerful osseous system of the former, the legs only being shortened in order to accompany the mother.

"The error of Mr. Cline," Mr. Knight observes (23, November) "and of those from whom he derived information, arose from their having seen the result of breeding between males of large size, much disposition to fatten, and permanent habits through successive generations, with small females, of hardy constitutions, and without permanent hereditary habits. The male here vastly improved the offspring, the female giving hardiness of constitution, and generally much milk."

# PART VI.

## APPLICATION OF THE NATURAL LAWS TO THE BREEDING OF DOMESTIC ANIMALS.

---

### SECTION I.

#### GENERAL OBSERVATIONS.

The same laws, it has been already seen, are as applicable to animals as to man:—the law of Selection operating where both parents are of the same variety, when either gives the organs of sense, forehead, and vital system, and the other, the cerebel and locomotive system;—the law of crossing operating where each parent is of a different variety, when the male gives the backhead and locomotive system; and the female, the forehead, organs of sense and vital system;—and the law of in-and-in breeding operating where both parents are of the same family, when the female gives the backhead and locomotive system, and the male, the forehead, organs of sense and vital system.

But no law is dreamt of in the common practice of breeding.

In breeding hunters, says the author of the article Horse in the Enclyclopædia Britannica, "observe similarity of shape in horse and mare. As length of frame is indispensable in a hunter, if the mare be short, seek for a stallion likely to give her length. Again, if the mare be high on her legs, put her to a short-legged stallion, and *vice versa;* for it is possible that even a hunter's legs may be too short; a racer's certainly may be."

It is very true that stallions have been known both to give length of body and shortness of limbs. But this effort is as often unsuccessful as successful. How shall it be insured?—As these laws show—by the male, possessed of these forms, having higher voluntary and locomotive power than the female.

"Much more dependence," says the same article, "is now placed on the stallion than on the mare. The racing calendar, indeed, clearly proves the fact. Notwithstanding the prodigious number of very highly bred and equally good mares that are every year put to the horse, it is from such as are put to our very best stallions that the great winners are produced. This can in no other way be accounted for, than by such horses having the faculty of imparting to their progeny the peculiar external and internal formation absolutely essential to the first-rate race-horse."

Such horses do so, because they have the "faculty" of doing so! A very satisfactory way of accounting, indeed! Now, the cause is the same here as were the means indicated in the preceding case. Among good stallions, the best is he who is possessed of the

highest voluntary and locomotive powers, which he accordingly stamps upon his progeny.

But it may be asked, of what consequence is it whether we call the stallion the "very best," or say he has the "highest voluntary and locomotive powers." The difference is, that the first expression states only the fact; the second, at the same time, assigns its reason, which enables us to connect the mere fact with causes and effects, with other facts, and to derive from them useful conclusions.

Opposite conditions would enable the mare to stamp her voluntary and locomotive system upon the progeny—always with some disadvantages.

These remarks exemplify the use of understanding the application of the law of Selection.—The utility of the law of crossing may be similarly exemplified.

"I have often been told," says Sir John Sebright, "that from the beautiful shape of Mr. Elman's South Down sheep, they must have been crossed with the new Leicester; and that from the fineness of their wool, they must have been crossed with the Merino breed; but I do not conceive, that even the skill of this very distinguished breeder could have retained the good shape of the former, without any appearance of the coarseness of its wool, or the fine fleece of the latter, without the deformity of its carcass, had he crossed his flock with either of these breeds."

If "shape" here expresses the locomotive system, and if the wool be an appendage of that system, it is evident that they could not be thus obtained.

These, though brief, are sufficient proofs of the im-

portance of a knowledge of the application of the laws here announced.

It is rather more difficult to observe the application of these laws to animals than to man: 1st. because animals are generally examined in a state of imperfect growth; 2ly. because the details of their forms are more or less obscured by hair, wool, &c.; and 3ly. because, when it is, not only not a cross, but when there is nearly a perfect homogeneity of form between the male and female, no difference can be expected in the result.

Hence my correspondent * * *, who could not perceive such difference in his homogeneous herds and flocks, justly observes (23, February, 1838,) "It may possibly be that my experience relating only to animals which have been bred for many generations by persons having the same objects in view, are all of them so similar in their shape and constitution, that it is difficult to say which parent is the one that the progeny take after." And he adds, "I must beg to add that if you could prove upon scientific principles and practical experience any theory to be correct of the nature of the one you have adopted, you would do a great service to all those engaged in breeding animals."

---

## SECTION II.

### HORSES.

In speaking of horses, the circumstance which will occur to every thinker as interfering with these laws,

is the hypothesis of *blood*; for certainly, if that could be transmitted in fourths, eighths, sixteenths, &c., it would be opposed to a doctrine, like that of these laws, according to which it is organization alone which is interchanged, and that always by halves given or taken away. Indeed, I do not hesitate to acknowledge that, if there were the slightest truth in the hypothesis of *blood*, there could be none in the doctrine now laid before the reader.

It is curious, however, that although that unfounded hypothesis exists in the works of almost all writers, yet it was long ago refuted by Osmer; and I cannot do better than quote from his work on the subject, which is so perfectly in harmony with my own.

"Horses who have the finest texture, elegance of shape, and most proportion, are the best racers, let their blood be of what kind it will . . . If I was asked what beauty was, I should say proportion: if I was asked what strength was, I should say proportion . . . A proper length also will be wanting for the sake of velocity: no weak, loose, disproportioned horse, let his blood be what it will, ever yet was a prime racer.

"If it be objected, that many a plain ugly horse has been a good racer,—I can even allow a very plain horse to be a prime racer, without giving up the least part of this system: for instance, if we suppose a horse (with a large head and long ears, like the Godolphin Arabian,) a low mean forehead, flat sided, and goose rumped,—this, I guess, will be allowed to be a plain ugly horse; but yet if such a horse be strong, and justly made in those parts, which are immediately conducive to action, if his shoulders incline

well backwards, his legs and joints in proportion, his carcase strong and deep, his thighs well let down, we shall find he may be a very good racer, even when tried by the principles of mechanics, without appealing to his blood for any part of his goodness.

"We are taught by this doctrine of mechanics, that the power applied to any body must be adequate to the weight of that body, otherwise such power will be deficient for the action we require. . . . The force and power of a muscle consists in the number of fibres of which it is composed; and the velocity and motion of a muscle consists in the length and extent of its fibres. Let us compare this doctrine with the language of the jockey: he tells us if a horse has not length, he will be slow; and if made too slender, he will not be able to bring his weight through. Does not the observation of the jockey exactly correspond with this doctrine?"

I may here observe that my general law, applicable not only to muscles but to all organs, that *the intensity of function is as the length of organ, and the permanence of function as the breadth of organ*, is the foundation of all rational distinction between horses for speed and horses for endurance in draught, &c.

"When we consider a half-bred horse running one mile or more, with the same velocity as a horse of foreign extraction, we do not impute that equality of velocity to any innate quality in the half-bred horse, because we can account for it by external causes: that is, by an equality of the length and extent of his levers and tendons.—And when we consider a half-bred horse running one mile, or more,

with the same velocity as the other, and then giving it up, what shall we do? Shall we say the foreigner beats him by his blood, or by the force and power of his tendons? Or can we, without reproaching our own reason and understanding, impute that to be the effect of occult and hidden causes in one of these instances, and not in the other?

"How many instances have we of different horses beating each other alternately over different sorts of ground! How often do we see short, close, compact horses, beating others of a more lengthened shape over high and hilly courses, as well as deep and slippery ground. . . . And how comes it to pass that horses of a more lengthened shape, have a superiority over horses of a shorter make, upon level and flat courses? Is this effected by the difference of their mechanical powers, or is it effected by the blood? If, by the latter, then this blood is not general, but partial only, which no reasoning man will be absurd enough to allow.

"How many revolutions of fame and credit, have all sportsmen observed in these high-bred families. . . . Observation shows us that on one hand, we may breed horses of foreign extraction too delicate, and too slight for any labour; and on the other hand, so coarse and clumsy as to be fitter for the cart than for the race. Shall we wonder that these cannot race, or shall we doubt that degrees of imperfection in the mechanism, will produce degrees of imperfection in racing! and when we find such deficient, shall we ridiculously impute it to a degeneracy of that blood, which once was in the highest esteem, or to the want of judgment in him who did not properly adapt the

shapes of their progenitors! . . Shall we confess this, or is the fault in nature?

"If we should be asked why the sons of the Godolphin Arabian were superior to most horses of their time, I answer, because he had great power and symmetry of parts, (head excepted) and a propriety of length greatly superior to all other horses of the same diameter, that have been lately seen in this kingdom.

"If any man who doubts this excellence to be in the blood, should ask how it comes to pass that we often see two full brothers, one of which is a good racer, the other indifferent, or perhaps bad, I know of but two answers that can be given: we must either allow this excellence of the blood to be partial, or else we must say, that by putting together a horse and a mare, different in their shapes, a fœtus may be produced of a happy form at one time, and at another *the fœtus partaking more or less of the shape of either*, may not be so happily formed. Which shall we do? Shall we impute this difference of goodness in the two brothers, to the difference of their mechanism? or shall we say this perfection of the blood is partial? If the latter, then we must own that blood is not to be relied on, but that the system of it, and whatever is built on that foundation, is precarious and uncertain, and therefore fall to the ground of its own accord.

"Where shall we find one certain proof of the efficacy of blood in any horse produced in any age or any country, independent of the laws of mechanics?

"He who has a fine female, and judgment enough

to adapt her shapes with propriety to a fine male, will always breed the best racer, let the sort of blood be what it will."

Having made this valuable quotation from Osmer, I now make

*Application of the Natural Laws to the breeding of Horses.*

1. These laws show, that the qualities of the sire and dam are communicated to their progeny, not in various and minute fractional parts, but in halves—in the anterior, or the posterior, series of organs, and in no other way.

2. They show that we must neither expect one parent to communicate to progeny both series of organs, or any part of both series of organs; nor, on the contrary, must we expect both parents to communicate to progeny one and the same series of organs, or any parts of the same series of organs.

3. They show that, by regulating the relative youth, vigour and voluntary power of the sire and dam, either may be made to give to progeny the voluntary and locomotive systems, and the other, the sensitive and vital systems; though, if they be well conformed, it is preferable that the sire should give the former and the dam the latter, as being the systems in which naturally they respectively excel.

4. The details arising out of these laws show that pace and speed depend on the posterior series of organs—the locomotive system in particular, and that action depends on the anterior series of organs—the sensitive system—the eye in particular, and that

therefore these qualities must not be expected from one parent.

5. The conclusion which may be drawn from these laws as to individual parts of these systems and their corresponding qualities, are innumerable. The preceding general applications indicate the mode of proceeding as to all of them.

A consideration of these laws will show how erroneous are the usual directions for attaining improvement in breeding.

Both parents, we are told, "must not have a tendency to the same defect, although in ever so slight a degree; for then it will in general be in excess in the produce."—It will be no more in excess than it is in the one parent who gives to the progeny the system in which that defect exists.

We are told "not even to breed from those having a defect in any attribute, unless there is a redundancy in the same attribute in the mate."—The defect will be of no injury, and the redundancy of no advantage, except the system which contains one or the other be propagated.

Such blunders arise out of ignorance of the preceding laws, and of the natural concatenation of organs which they express.

The fourth of the preceding applications will be illustrated by what I have to say of the eye and action of the Arabian.

That form of the race horse is deemed most perfect which is best adapted to produce speed; that of the hunter which gives both speed and power; and that of the draught horse which gives power alone.

To the first of these, for the sake of a few new remarks, I first turn attention.

The native breed of English horses formed the parent stock of the English racer, by furnishing the posterior series of organs, directly or indirectly, and especially superior size and proportion of moving parts. The Arab did the rest, by furnishing the anterior series of organs—the forehead, organs of sense, (eye and, by the 4th application, action,) the vital system, and therefore the density of every fibre, &c. The enlightened reader will see, that this undeniable partition of qualities from these two breeds,—one giving the whole of the anterior organs, and the other the whole of the posterior ones, illustrates the important truths I have enunciated in the natural laws.

This will be farther impressed on the reader by considering the Arab, to whom we are so deeply indebted.

To a cross with the Byerly Turk, we are indebted for the Herod and Highflyer organization; to the Godolphin Arabian, said to be a Barb, for the Matchem organization; to the Darley Arabian for the Flying Childers and Eclipse organization; and to the Wellesley Arabian, believed to be a Persian, for what is said to be the only advantage gained to English race horses, by foreign cross, in later years.

Let us look more closely to the qualities of the Arab, and it will be seen that the whole of them depend on the anterior series of the organs, which, thus going together, corroborate what has been said.

To commence with the organs of sense, it is ac-

knowledged that "his fine and nearly hairless skin, softened and cleansed as it is by frequent copious perspiration, is highly sensible." That his nostril is wide, and his eye open, are two of his most palpable characters. And on these, his great observing faculties—his mind is dependent.

In illustration of these observing faculties, I may remark that, in examining Mr. Theobald's thorough-bred stallions, I was struck with the circumstance that each, in succession, turned and stood with his eyes toward me, while I remained in his box; and, on speaking of it, Mr. Theobald's stud-groom observed that thorough-bred horses never fail to turn their faces to persons who are met to observe them; and that half-bred horses do the reverse.

Mr. Hillier, the Master of the Horse at Astley's, whose opportunities of observation are very great, assures me of the accuracy of this observation, and adds that thorough-bred horses, in threatening, are apt to lift one of their forefeet, instead of a hind one, as half-bred horses do.

As to their mind generally, some may question even its existence, and still more, our means of knowing its peculiarities. But, in default of a better knowledge of the brain—the organ of the highest faculties of the mind, we need only know what are the habits and the wants of any animal, in order to know its mind. The horse must know well the qualities of the ground in relation to his pace and speed, the extent of leaps, the nature and the strength of the obstacles that oppose him, (hence he breaks through a hedge or a slender bar, but clears a strong gate) his own velocity

compared with that of his opponent, the degree of skill possessed by his rider, &c. He has not, therefore, his large brain without its use; and these views will lead to a better investigation of it, by the comparison of organization and function.

But the Arab has all his faculties cultivated or capable of great cultivation. "The horse of the desert," as Gibbon says, "is educated in the tents among the children of the Arabs, with a tender familiarity which trains him in the habits of gentleness and attachment." And of the great superiority of his observing faculties over those of all other horses, Mr. Hillier assures me.

Yet the author of the article Horse in the Encyclopædia Britannica, says, "their efforts to win a race, we consider to be merely limited by their physical powers, the effect of a proper arrangement of their parts; and that the operation of the mind or spirit, has nothing at all to do with it . . . The spirit of emulation cannot be ascribed to the race-horse;" and, as might have been expected, he inconsistently adds, "If his temper be really bad, he either runs out of the course, to the great danger of his rider, and to the inevitable loss of his owner and those who have betted on his winning, or he 'shuts himself up,' as the term is, and will not head his horses, although in his power to do so."—His spirit of emulation is known to every groom.

So much for his organs of sense, forehead and their functions.—Now as to his vital system, comprising the rest of what, for brevity's sake, I have called his anterior series of organs.

It is not for the size and proportion of his locomo-

tive system, that the Arab is renowned, but for its intimate structure. Now, the intimate structure of every organ—the number and density of their fibres—are entirely dependent upon the vital system, and particularly on the capillary arteries by which they are secreted. In the Arab, therefore, we see the excellence of his vital system in the peculiar character of the intimate structure of his organs—not in their size and proportion.

Accordingly, the writer last quoted says, "the Arabian horse possesses a firmness of leg and sinew unequalled by any other in the world . . . Bones being the weight to be lifted, serve only to extend the parts; and it is evident, that such as are small, but highly condensed, like those of the deer, and the horse of the desert, are, by occupying less space, and containing less weight, more easily acted upon by muscular force, than such as are large and porous, and for a greater duration of time, without fatiguing the acting powers . . . All the muscles and fibres of his frame are driven into closer contact than those of any other breed; and by the membranes [tendons] and ligaments being composed of a finer and thinner substance [his leg being flat and wiry,] he possesses the rare quality of union of strength with lightness, so essential to the endurance of fatigue in all quick motions. He thus moves quicker and with more force, by reason of the lightness and solidity of the materials of which his frame is composed.

Thus his anterior series of organs is nearly perfect.

But more is wanted than this.—The size and proportion of his locomotive system is defective. Osmer,

accordingly, says, "The Turks choose these Arabian horses when young, because, if continued long in the hands of the Arabs, they are *small*, *stunted* and *deformed* in shape; whereas, when brought into Turkey, a land of greater plenty than the deserts of Arabia, they acquire a greater perfection both of size and shape . . . Shall we wonder that his offspring, produced in [England] a land of plenty, of whom the greatest care is taken, who is defended from the extremity of heat and cold, whose food is never limited, and whose vessels are filled with the juices of the sweetest herbage—shall we wonder, I say, that his offspring, so brought up, should acquire a more perfect shape and size than his progenitor?"

As to the defects of the locomotive system in the Arab, the author of the article Horse in the Encyclopædia Brittannica, says, "Accurate observers must have noticed, that the greater part of the horses brought to this country as Barbs and Arabians, have exhibited a *palpable deficiency in the points contributing to strength*, and the *want of general substance*."

Osmer enters further into details. "We seldom see," he says, "any of these horses sent us from abroad, especially from Arabia, but what are more or less *disproportioned*, *crooked* and *deformed* in some part or other . . . Though their shoulders in general exceedingly incline backwards, yet their forelegs stand very much under them; but in different horses this position is more or less observable . . . The Godolphin Arabian,*

* The Godolphin Arabian was purchased out of a water-cart in Paris, and

when I saw him, stood bent at knees, and with his forelegs trembling under him."

The posterior series of organs having, then, been improved in proportion and shape by the English horse, we cannot wonder, that, as observed by the Encyclopædist, "The immediate [uncrossed] descendants of the Eastern horses, have, almost without an exception, proved so deficient of late years, that our breeders will no more have recourse to them than the farmer would to the natural oat, which is little better than a weed, to produce a sample that should rival that of his neighbours in the market . . . Were the finest Eastern horse that could be procured, brought to the starting-post at Newmarket, with the advantage of English training to boot, he would have no chance, at any weight, or for any distance, with even a second-rate English race-horse."

But I cannot agree with that writer when, in a tone

---

consequently of uncertain caste, but evidently the horse of the desert. He was said, on what authority I know not, to be a Barb. As to his great head, there was more in it, I suspect, than even Osmer seems to have imagined. This brings to recollection what the Rev. —— Daniell says of a fox-hound.—"Although a small head is mentioned as one of the requisites of a fox-hound, that is to be understood as relative to beauty only; for as to goodness, large-headed hounds are in no wise inferior. As an instance: amongst a draft of young hounds from Earl Fitzwilliam's was one, of whom Will Deane, his huntsman, made this remark in his letter, 'that he could not guess at Lord Foley's dislike to the hound called Glider, then sent, which was of the best blood in the country, being got by Mr. Meynell's Glider out of Lord Fitzwilliam's Blossom, and was moreover the most promising young hound he had ever entered; unless his Lordship took a distaste to the largeness of the head; but he begged leave to assert, that although it might appear a trifle out of size, there was a world of serious mischief to the foxes contained in it.' The event justified Deane's prediction in its utmost latitude, for Glider was a most capital chase, and long a favourite stallion-hound, notwithstanding the magnitude and inelegance of his head."

of unwarrantable triumph, he says, "Having once gotten possession of the essential constitutional parts necessary to form the race-horse . . . we ourselves have, by a *superior knowledge* of the animal, and the means of availing ourselves of his capabilities, not only by rearing and training, but by riding him also, brought him to a pitch of excellence which will not admit of farther improvement."—The result has indeed been excellent; but it has not been owing to "superior knowledge." We could cross the Arab only with what we had; what we did was done from sheer necessity, not from knowledge; and the best proof of that is, that, till this moment, the theory of that cross was unexplained.

Having, some years ago, communicated to a person employed on the subject, a few observations on the relative offices of the posterior and anterior limbs of quadrupeds, I have transcribed them, as peculiarly applicable to the horse.

The length and conformation of the posterior extremities, especially constitute the point of speed. The longer these extremities *cæteris paribus*, the greater the speed. Running, physiologists observe, is a succession of leaps, and it is undeniable that those animals are the best leapers which have the longest posterior extremities, whether they be quadrupeds or insects, as the hare, grasshopper, &c. I say, *cæteris paribus*, or other circumstances being the same; for if these circumstances are less advantageous, as is the diminished tension of muscles, and quickness of contraction in the frog, &c., then the resumption of

the spring may not take place, and the succession of leaps, which constitutes running, may be imperfect.

I shall now show that speed depends entirely on the construction of the posterior extremities of the animal.

1st. The greater weight of all swiftly running animals must be toward their anterior part; for (as may be illustrated by throwing from the hand any missile loaded at the end) if this were not the case, if swiftly running animals were heaviest *à posteriori*, they would, at every leap, be actually thrown heels over head.

2ndly. The heaviest parts of animals are those which are chiefly passive, or have nothing to do with speed, as the head, neck, chest, spine anteriorly, ribs, viscera, &c.; and hence it is that these parts must as inevitably be placed forward in animals, as the most powerful organs of motion, the posterior extremities, must be placed backward.

3rdly. A mass thus thrown forward is much more easily and swiftly moved than a mass that is dragged; for the mass which is thrown forward clears obstacles, free from impediment; while the mass which is dragged suffers from both.

Hence it follows, that it is the posterior extremities alone which can by any possibility cause speed.

Having thus determined the function of the posterior extremity, I shall now advert to that of the anterior one.

I have no hesitation in asserting that this part contributes little to speed. Its chief action is, not to impel, but to stop; and the little it does contribute to progression, is merely in dragging up the posterior ex-

tremity towards its place through a part of the space covered by the extension of the body.

Examine its functions in every way, and it is evident that it can do no more than this. While the posterior extremity has the power of projecting the body through space, occasionally to the distance of several times its own length, the anterior extremity, after receiving and stopping that impulse, can only drag up the posterior through a portion of space covered by the body, without causing it to pass through one inch of free space.

Mr. Knight is of opinion that we err in cultivating the race horse only for speed, and not for endurance. "Horses," he says (23, November,) "with comparatively short legs, are best made to win long races; the force necessary to move long legs rapidly for a considerable time exhausts the power of the animal; and compact animals, other qualities being given, feed upon the least food."—(8, January) "What enormous expense has been employed in improving the blood horse in this country: yet the blood horse is most certainly a much feebler animal in respect to power of carrying weight, or of sustaining the fatigue of a long race, or any race if the ground be soft and wet, than it was fifty years ago. The breeders have destroyed the constitutional powers of the breed of the animal by excess of stimulation, in over feeding the young animals through successive generations, and they have looked to the legs of the animal for speed, instead of the constitutional power, which gives motion to his legs."

In breeding horses, subject to the laws enunciated, it is not only necessary that the organization of the

animals selected should be of the most perfect kind, a certain age, exercise and perfection in every function are essential.

Mr. Theobald thinks that "the horse should be positively mature before covering." A mare may breed at three or four years old: at an earlier period, breeding will interfere with the developement of her structure and strength.

That developement which is conferred by exercise is not less essential, both during growth and in adult age. A stallion will then have progeny far superior in such attributes, to those of a sire kept in inactivity. Hence it is indispensable that a stallion kept for covering, should be duly exercised. Mr. Thacker observes, that, if a stallion be prevented even by accidental lameness from obtaining exercise, he is sure to be deficient in muscular powers, and to convey that deficiency to his offspring."*

It is of great importance, that the parents should have all their natural powers in absolute perfection. A horse or a mare's being no longer capable of ordinary work, or having suffered from hard and continual labour, is certainly injurious to progeny.

Constitutional infirmity, or the having a tendency to fail in their legs and feet, during training is fatal; and the mare that has slinked her foal is always liable to that accident.

---

* I know a horse who broke his leg in running a race when three years old, and who has since been kept for covering mares, not being capable of any thing else, or even of travelling for that; but his stock are not promising, though he is exceedingly well bred, of a good size, and not deficient of good general shape.

As, then, are the organization, the maturity, the exercise, and the perfection of the natural powers in the parents at the time of reproduction, so will be the perfection of the progeny. And all these conditions may, with advantage, be applied to man and woman.

---

## SECTION III.

### CATTLE.

The best cattle have the face rather short; the muzzle small; the horns fine; the neck light, particularly where it joins the head; the chest wide, deep and capacious; the tail broad and fat toward the top, but thin toward the lower part, which it will always be, when the animal is small boned; the lower part of the thigh small; the legs short, straight, clean, and fine boned, though not so fine as to indicate delicacy of constitution; the flesh, rich and mellow to the feel; the skin of a rich and silky appearance; the countenance calm and placid, denoting the evenness of temper essential to quick feeding and a disposition to get fat.

Two of our finest varieties of cattle are the Hereford and the Durham. Of these, Mr. Knight (23, November) says the form of a perfect Hereford, and that of a perfect Durham, ox, or bull, or cow, are very similar, except that the Durham breed have shorter horns.

"The improvers, as they are called, of the Durham cattle, feed very highly; their young animals are

kept in a fattened state from their birth; and they have brought to market more perfect animals, at an early age, than any other. But every breed of animals which has, through a few generations (two or three is sufficient,) been overfed, requires similar feeding; and the extraordinary animals which the Durham breeders have sent to Smithfield, have come there, I am sure, deeply insolvent—in other words, they have not nearly repaid the expenses of feeding them. The offspring of such animals require and can digest more food than others who have lived upon little.

The Durham breeders once tried their breed against the Hereford, when the Durham consumed 12,775 lbs. more of turnips, and 1,714 lbs. more of hay, in the winter in which they were fattened; whilst they gained much less in value than the Herefords. Our breeders have tried hard, by offering 100 guineas to 10, to provoke them to another trial; but without success.

"All growing animals including mankind, ought to be sufficiently well fed to preserve health and strength, but never to be stimulated by excess of food. The children of parents, however, who have, through many generations, been well fed, would perish if given no more food than would be sufficient for an Irish or Highland Scots peasant child."

In reply to the imputation that, in the hands of some breeders, even the Herefords are falling into the defect of fat preponderating over flesh, he says (16, March, 1838,) "Some varieties of the Hereford cattle certainly have this defect; but not all. In re-

fining the muscle, some breeders have certainly reduced it too much; but the modern Herefords present generally much more lean flesh than either the Devons or Sussex."

The chief qualities sought for in cattle are the tendency to fatten on little food, and that to yield abundance of rich milk.

The tendency to fatten is indicated chiefly by the capacity of the chest.

"Animals of all species," says Mr. Knight (8, January,) "all other qualities being given, are, I think, capable of labour and privation, and capable of fattening, nearly in proportion, as their chests are capacious: but the habits of ancestry will operate generally very powerful."

"It is the width and depth of frame," says Mr. Berry, "which confers weight, and not the mere circumstance of great height . . . While equally great, if not greater, weights can be obtained with shorter legged animals, they are, independently of other recommendations, generally found to possess better constitutions and greater propensity to fatten."

It is curious that those who breed cattle and sheep for the butcher, should not consult him on the subject; and that he is not admitted among the judges at the Smithfield Club. They ought certainly to see and understand the dead animal as well as the living one, in order to knew whether they have judged correctly in the awards they have made. Without this test, may they not commit great injustice?

Mr. Giblett, of Bond street, whose business and experience are among the most extensive in London,

and whose mind is observant and reasoning, dissents entirely from so much of the doctrine of Mr. Bakewell as asserts that the best animals are those which fatten quickest on least food; for although he advocates proneness to fatten fast, with good form and symmetry, yet it is a *sine qua non* with him that every animal should also have a much larger proportion of muscle than of fat, and he has publicly declared that, for want of attention to this, most of the sheep, in particular, bred on Mr. Bakewell's principle, are made more fit for the tallow-chandler than the consumer.

In addition to this testimony, Mr. Giblett favoured me with a striking demonstration of this fact in the carcasses of two bullocks, one weighing one hundred and twenty stone, the other eighty only, but of which the latter was relatively by far the more valuable.

It will be gratifying even to the artist to know that Mr. Giblett's beau ideal of cattle does not differ from his own—that it is the animal displaying all its natural power in highly developed muscular masses, and not the artificial monster consisting of masses of vibrating fat laid on in lumps and patches.

The breeder looks to a narrow interest—he thinks he can get a quicker return for fat than flesh—his herds and flocks are calculated chiefly to produce the former—his bulls and rams fetch him immense sums —and he will maintain this system till he finds it a losing one, which ere long he must do, unless he profit by the hint now given.

As to the characteristics of a good milker, my correspondent, * * *, (11, January) says, "Some persons

believe that they can form some judgment upon this: I cannot."

Certainly, both fattening and the production of milk appear to require a good vital or nutritive system—meaning still the tubular system, which transmits and transmutes the animal liquids. Women and cows wanting that system in good state, will be destitute both of fat and milk.

In relation to the latter, French women who have a bad vital system, are at once meagre, bad breeders, flat busted, mustached, hoarse-voiced, bad complexioned. And something analagous will doubtless be found in kine.

On this subject, Mr. Knight (8, January) says, "I am afraid that some of the defects of the French women are to be found amongst the superior classes, particularly, in this country. The girls are generally much more 'flat-busted' than they were sixty years ago. I now see them with different feelings; but I can see forms with the same eyes; and several observant women have noticed the change. Look at the pictures of women a century or a century and a half ago, and the bosoms of the women there represented are not similar to those of modern times. Excess of application to acquire accomplishments, and particularly music, has, I suspect, operated injuriously; and I do not think that such stimulants, as tea and coffee, have been beneficial."

Thus much seems generally true as to both properties—fattening and milking. The next object is to trace the distinctions which subsist between them.

Now, fat women appear to have relatively a smaller

bosom; and what bosom they have is less formed of the glandular masses with secrete the milk, than of the fatty substance which is interposed between these: their bosom, therefore, as a secreting organ, is less than it appears to be. Thinner woman, on the contrary, (always providing the vital system is good,) have a larger bosom; and it is composed of palpable glandular masses, not of fat. There is, therefore, a foundation for the popular preference of wet nurses who are rather thin than fat. I believe there is a pretty general feeling of the same kind with regard to cows as milkers. And I believe the Alderneys, while they produce rich milk, (having long heads, &c.) have little power of fattening. If it be so, it is important, even if there were no other consequences to be drawn from it.

In reply to these observations, Mr. Knight (8, January) says, "The constitutional disposition to form fat, is certainly hostile to the disposition to give milk. . . . Cows which give little milk often present large udders, which contain much solid matter; and, to inexperienced eyes, a two years old Hereford cow would give a promise of much milk, where very little would be given. . . . A narrow forehead, and a long face, nearly of the same width from end to end, as in the Alderney cow, certainly indicates much more disposition to give milk, than the contrary form, which I have pointed out as indicative of a disposition to fatten."

This tends to corroborate what I have said as to thinness, with a glandular structure of mammæ, being favourable to milking.

If, however, we could discover, between fatteners and milkers, a difference of organization in other respects—a difference existing prior to their becoming milkers, it might enable us to predict, at an early age, what the maiden or the heifer will become in this respect.

Now, fat animals are more generally those of the north, where cold diminishes sensibility. Fat, indeed, appears to be the means which nature very extensively employs to lower sensibility by interposition between the skin and the central parts of the nervous system. Fat women and other animals, accordingly, have not only less sensibility and irritability of the skin, but of the organs of sense generally, eyes usually blue, soft, languid, not brilliant, penetrating, &c. Thinner animals, on the contrary, are more generally those of the south, and have more acute sensibility, and, among women, more brilliant eyes, and large mammæ —themselves organs of exquisite sensation. Hence, the women of Egypt and Africa generally, who have a good vital system, have also large organs of sense, and have, both in ancient and modern times, been famed for the magnitude of their mammæ, capable even of being turned over the shoulder to suckle the infant on the back. "In Meroe crasso majorem infante papillam," said Juvenal; and the fact is equally notorious at the present day.

In reply to these observations, Mr. Knight (previous date) says, "I do not doubt that you are right respecting the use of fat in cold climates; all sleeping animals, through winter, go to sleep in a fatted state. . . . I do not think that breeds of cows, which

give much rich milk, are very hardy. The Alderney cows are what the Herefordshire farmer calls very *nesh*, that is, very incapable of bearing hardship of any kind, and particularly cold. [Consequently of greater sensibility.] Cows which give much milk have the power of eating and digesting much food, and they require, whilst they give much milk, a very abundant and good pasture. The breeds of cows which give less milk, and present greater disposition to become fat, are generally less *nesh*, and will fatten upon less food. . . . The influence of the *feelings* is very considerable. I have observed that whenever a young Hereford cow disliked being milked by the dairy-maid, she soon ceased to give milk; and I do not doubt that, in all cases, if the calves were twice every day permitted to suck after the dairy-maid had finished her labour, the cows would longer continue to give milk, and in larger quantity."

This tends to corroborate what I have said as to greater sensibility being favourable to milking.

If this led only to distinction of these two kinds as to milking—namely, that of fatness and thinness, and that of smaller and larger organs of sense and greater or less sensibility,—it would still be valuable, as showing, either at a later or an earlier period, what we may expect in this important particular. But perhaps its utility may extend still further, and enable us to improve the race.

It may form a basis for our determining whether, in endeavouring to improve a breed, fatteners may most easily become also milkers, to some extent; or

milkers may, to a similar extent, become fatteners; and what are the circumstances which would most favour such partial interchange, if not absolute improvement.—Indeed, from these principles, I would conclude, that an animal fattening in the north would become a better milker in the south, where more genial temperature would render fat less necessary, would increase sensibility, and would cherish the secretion of milk, so intimately connected with that excitement of the reproductive functions which warmer climates produce.

These views as to animals appear to be confirmed by some facts as to woman. We know that the flow both of the catamenia and of milk is less in cold climates, and greater in warm ones. Accordingly, while the mammæ are small and the milk scantier in dry, high and windy regions, the very opposite is the case in warm, low and humid ones, where women suckle their infants for a long time.

Thus, as these two desirable qualities are both dependent upon one system, and as they are opposed to each other, (for excess of one secretion is always more or less at the cost of the rest,) they will be most easily obtained by being distinctly sought for, and the animal of diminished sensibility will most easily fatten, while the animal of increased sensibility will most readily yield milk.

These views are confirmed by the conduct of the London dairy-men. While they acknowledge that the Alderneys yield the best milk, they keep none of them, whatever they may pretend, because these animals are peculiarly delicate, and more especially

because they cannot, after being used as milkers, be fattened for the butchers. The York and Durham cows suit them best.

In certain constitutions, however, and, *to a certain extent*, there is a compatibility between fattening and milking.

Mr. Knight (23, November) says, "The disposition to give much and rich milk, and to fatten rapidly, are *to some extent* at variance with each other; but I have seen cases in which cows which have given a great deal of rich milk, have given birth to most excellent oxen, the cows themselves, however, always continuing small and thin whilst giving milk.

"I very confidently believe in the possibility of ob taining a breed of cows which would afford fine oxen, and would themselves fatten well; but, as great milkers require much more food than others, the farmer who rears oxen, does not think much, perhaps not enough, about milk, and is in the habit (which is certainly wrong) of breeding his bulls from cows which have become his best owing only to their having been bad milkers."

My correspondent * * * says (11, January) that "fattening and milking *to a certain extent* are compatible."

Mr. Wilkinson says rather more strongly than is consistent with physiological laws, "I have frequently found cows that are great milkers, to keep themselves at the same time in high condition, to feed with the quickest despatch when dried of their milk, and whose descendants will arrive at the earliest maturity—a

practical proof, that a great tendency to feeding is not incompatible with a great tendency to milking."

They are to be procured, he thinks, "by selecting those animals that are most perfect in point of form, in quality of flesh, and so on; and again by selecting out of these the very best milkers." He adds, "the property of milking is inherited as readily as that of peculiarity of shape."

"In the selection of bulls," he observes, "that besides attending to those properties which belong to the male, we ought to be careful also, that they are descended from a breed of good milkers, at least if we wish the future stock to possess this property."

These last observations bring me naturally to the

*Application of the Natural Laws to the Breeding of Cattle.*

The first three applications are the same as for the horse. To save the trouble, however, of referring to them, I repeat them here.

1. These laws show that the qualities of the sire and dam are communicated to their progeny, not in various and minute fractional parts, but in halves—in the anterior, or the posterior, series of organs, and no other way.

2. They show that we must neither expect one parent to communicate to progeny both series of organs, or any part of both series of organs; nor, on the contrary, must we expect both parents to communicate to progeny one and the same series of organs, or any parts of the same series of organs.

3. They show that by regulating the relative youth, vigour and voluntary power of the sire and dam, either may be made to give to progeny the voluntary and locomotive systems, and the other, the sensitive and vital systems; though it is preferable that the sire should give the former and the dam the latter, as being the systems in which naturally they respectively excel.

4. The details arising out of these laws show, that the capability of fattening and that of producing milk being dependent on the same system—the vital, and abundance of one secretion being attended by diminution of others, either capability is best insured by being distinctly sought for, the former in the animal of diminished sensibility, and the latter in that of increased sensibility—a rule which, on being submitted to Mr. Knight, is well borne out by his observations, and which must, wherever one of these qualities alone is sought for, be of the greatest utility.

---

## SECTION IV.

### SHEEP.

In breeding sheep, the first object is to procure the kind of animal which, on a given quantity of food, will produce the greatest quantity of mutton.

Here Dr. Jenner's observation to Sir John Sebright (the truth of which, Sir John says, has since been confirmed by his own experience)—that no animal whose chest is narrow can easily be made fat, is well illus-

trated in the meagre Merino sheep, which are in general contracted in that part.

In this, however, there is some inconsistency with Mr. Hunt's account of the Dishley sheep, for which he refers to Marshall's Rural Economy of the Midland Counties. "The carcass of the Dishley sheep," he says, "when fully fat, takes a remarkable form; much wider than it is deep, and almost as broad as it is long; full on the shoulders, widest on the ribs, narrowing with a regular curve towards the tail; approaching the form of the turtle nearer perhaps than any other animal . . . I have," says Mr. Hunt, "lately seen a very fine example of one of these high-bred sheep which was exceedingly fat, and was astonished to find the lungs so remarkably small.

Mr. Giblett's objections to excessive fattening are as applicable to sheep as to cattle.

Both fattening and the production of wool appear to require a good vital or nutritive system, and sheep defective in that system will be more or less defective both in fat and wool.

Large heads, and long necks and legs, are inconsistent with excellence in that system.

It has been already observed, that fat appears to be the means which nature very extensively employs to diminish sensibility by interposition between the skin and the central parts of the nervous system. Accordingly, we find that, when sheep feed upon luxuriant plains, where little muscular exertion is required, a great accumulation of fat accomplishes this purpose. When, on the contrary, they feed upon the scanty herbage of mountains, where great and incessant mus-

cular exertion is requisite, fattening becomes impossible, and sensibility, which would otherwise be unprotected, obtains an exterior covering of the finest wool.

The sheep of the Spanish sierras and those of Shetland equally exemplify this. In such localities, not merely does muscular exertion prevent the deposition of fat, and expose the nervous system to more powerful impressions, but increased cold attacks it, and renders the finest and densest woolly covering indispensable. In Shetland, even the bristles of pigs are sometimes crisped, and converted into a coarse wool; and it is remarkable that, in that country, when the few summer months produce a more luxuriant herbage, the sheep fatten rapidly. This last fact I have from the personal observation of Dr. Copland, and nothing can more strongly confirm the views I have here presented.

From these principles, I am disposed to conclude, that an animal fattening in the south or on the plains, would produce finer wool in the north or on the mountains.

In corroboration of these views, Mr. Knight, (8, January) says, "The fineness of wool is certainly injured by heat; but the attention of man and hereditary habit can do much."

"On the whole," says Dr. Pritchard, "it appears that a considerable change is speedily produced on the fleece of the sheep by the influence of climate . . . The argali, according to Pallas, is covered with hair, which in summer is close like that of a deer, but in winter becomes rough and curled, resembling coarser hair intermixed with wool."

Dr. Hancock, from his own observation, informs me, that in Guyana, the English sheep loses its fine wool in about two years, and has its place supplied by coarser hair.

"If sheep are highly kept," says Sir John Sebright, "their wool will become less fine, but in other respects its quality will not be deteriorated . . . A regular supply of food to the sheep is essential to the growth of good wool; for that part of the hair which grows when the animal is in a high state of flesh, will be thick, and that which is grown when it is reduced by hunger, will be weak and thin; and consequently the thickness of hair will always be irregular, if the animal passes from one extreme to the other."

The observation made with regard to fattening and milking in cattle appears to be applicable to fattening and the production of wool in sheep—namely, that the animal of diminished sensibility will most easily fatten, while the animal of increased sensibility will most readily produce wool.

It is with physiological reason on his side, that Sir John Sebright says, "Perhaps the great secretion of yolk, [bulb] so essential to the production of fine wool, and which is excessive in the Merino sheep, may be incompatible with the fattening quality."

Fattening and the best wool appear, however, in some constitutions, not to be altogether incompatible.

Dr. Copland, in the following letter, testifies that he had seen the Shetland sheep, remarkable for fineness of fleece, become fat when well fed during the summer.

Dear Sir,

The Shetland sheep are very small; their faces are small and short; and their legs are long, relatively to the proportions of the south country breeds.—Their fleeces are generally fine and soft, commonly white, but sometimes grey, brown, or brownish black, and rarely spotted or of different colours. The finest fleeces are usually white, and the points of the wool are somewhat coarser and more curled than the rest. The Shetland mutton is delicate and finely flavoured.

The stunted heath, the grassy sides of the bare hills, and the commons of the country, are the chief pasturages, both in summer and winter. During the latter season, the sheep have no other shelter than is afforded them by the cliffs or abrupt acclivities within their range. In the spring, however, those which are intended to be killed at the end of summer or autumn, are, in parts of the country, conveyed to small islands, which abound with a rich grass, or other pasture, where they often become as fat as the best south-country sheep; but, in their usual ranges of common pasturage, they are rarely very fat. These ranges are commonly elevated from two or three hundred to one thousand or one thousand five hundred feet above the level of the sea; but about the end of autumn and winter, the sheep leave the highest for the lowest elevations. And even on the approach of a storm or of inclement weather in summer, they choose the lower and more sheltered situations. When they remain towards night near the summits of the higher hills, it is a sure indication of some continuance of very temperate or fine weather.

In situations near the sea, they sometimes come down to the shores, particularly in winter, and when the ground is covered by snow, or the milder sea air thaws the snow in these parts, and allows a scanty herbage to spring up for their sustenance. When the ground is more completely covered by snow, they sometimes have recourse to the fuci on the sea shore as the tide retires, but this is rarely the case. They as rarely receive any sustenance from their owners; and, when they do, it consists chiefly of refuse cabbage-leaves, &c.

I believe that in many parts, the fine wool is much coarser than formerly, owing to the introduction of south-country breeds of sheep.

I am, dear Sir, yours truly,

Bulstrode-street, 2, Feb. 1838. JAMES COPLAND.

To Alexander Walker, Esq.

In answer to the question, "In sheep, are fattening and the production of the best wool incompatible?" my correspondent * * * (11, January) says, "My experience is in long-wooled sheep: and among the Leicester breed, the inclination to become fat and to the production of the best wool is certainly quite compatible. I rather think that the sheep which produce the finest wool will fatten quicker than those that produce coarser wool."

Of our two most remarkable breeds of sheep, Mr. Knight says, (8, January) "The Spanish sheep is (I can adduce satisfactory evidence) the old Tarantine sheep; and its habits are so established that, even in rich pastures in this country, it retains through many

generations its fine wool not perceptibly changed . . . A well-formed Leicester sheep will gain in a short time great weight of flesh and fat, and it must be admitted to have a good constitution: but it is nevertheless a very *nesh* animal—it can bear neither fatigue, nor hunger, nor hardship of any kind."

Sir J. Sebright, as already observed, doubts the assertion that the beautiful shape of Mr. Elman's South Down sheep was obtained by crossing with the new Leicester, and their fine wool by crossing with the Merino Breed.

In putting to my correspondent * * * the question, "Is the supposed origin of Mr. Elman's South Down sheep, or rather their improvement by crosses with the new Leicester and the Merino, probable?" his reply (11, January) was, "I believe Mr. Elman always denied that there was any such cross in his sheep, and I know that a skilful man may produce so great an alteration in the character of any breed of domestic animals by carefully and steadily selecting from among them, as breeders, such as possess the qualities he wishes to obtain, and rejecting such as he does not, that no outward appearance of any such breed would induce me to disbelieve the word of a respectable man. It certainly is possible that Mr. Elman may have crossed with the Leicester; but for the reason first given, I do not believe he did. It is in the highest degree improbable that he ever could have crossed with the Merinos."

I have already observed that the error which all such questions imply—an error which I did not perceive when putting the one last mentioned—is, that

they suppose the production of wool not to depend on the same system with the shape of the animal. As, however, they both depend on the locomotive system, it is evident that, in every cross, they must both be given by the same animal, and consequenty that the wool cannot be derived from one, and the shape from another.

It is scarcely necessary to observe, with Sir John Sebright, that the fineness of the fleece, like every other property, may be improved by selection in breeding.

Cattle and sheep, are alike required to be mature, of full stature, in good health, perfect vigour, and in entire possession of all their faculties, when the male is put to the female for breeding.

*The Application of the Natural Laws to the Breeding of Sheep* corresponds so nearly to that for the breeding of cattle (except as to the 4th head,) that it need not be repeated here.—An additional rule also springs out of the third paragraph preceding this one.

# PART VI.

## VAGUE METHODS AFFECTING PROGENY, ADOPTED AMONG MANKIND.

As, under the vague methods regulating progeny adopted in the breeding of domesticated animals, I availed myself of the authority of the best observers, I follow the same plan here.

Of these methods, Camper gave a melancholy picture. Some, he says, "for the purpose of having handsome children, have recourse, as Pliny observes, to ridiculous means and magical conjurations; while others consult the state of the stars, as Quillet advises in his Callipædia. In short, nothing has been too whimsical or too absurd to be resorted to for this purpose."

In more recent times, many have indistinctly seen that "the hereditary transmission of physical and moral qualities, so familiarly acted on in breeding domesticated animals, is equally true of man."

## SECTION I.

### BREEDING IN-AND-IN.

Of in-and-in breeding among mankind, Dr. Hancock (15, August) says, "To the want of renovation, I conceive, we may chiefly attribute the barbarism which, for unnumbered ages, has reigned in Africa, and probably in the South Sea Islands, and amongst the aboriginal tribes of America; and a jealousy of strangers, perhaps, has kept the Chinese stationary for many thousands of years.

"The Arowacks and other American tribes roam at perfect liberty through their native forests and savannahs, but, as it were by one universal magic spell or enchantment, they are all kept most strictly to their respective tribes; and by such isolation, through a long succession of ages, they have dwindled into pigmies compared with those whose races are renovated and refreshed by inosculation, or engrafting of other varieties."

For the obstacles that, among ourselves, are frequently opposed to the union of persons of different classes, the chief motive is the desire of keeping in a state of wealthy ease the few who support aristocracy against the many who obey. The marriages of the former, therefore, frequently depend upon wealth and rank, without any regard being paid to personal qualities; and the consequences are, that the qualities that originally elevated one class above another pass away, and their families rapidly degenerate.

"The marriages of high rank and of hereditary wealth," says Sir Anthony Carlisle, who has long and well observed these things, "are generally concocted in their muniment rooms, where the estates of heirs and heiresses are entailed, together with the personal peculiarities, moral defects, and hereditary diseases of each family, and perpetuated as far as law, sheep-skins, signings and seals can extend them. Hence the frequent termination of such inbred races; while, in every ancient village, of considerable, though not shifting population, the names of humble families have continued for more ages, although ill recorded, than those of the proudest gentry."

We cannot, therefore, be astonished to see that, in marriages thus founded wholly in interest, and accompanied either by perfect indifference or by inconceivable antipathy, the results are domestic misery, sterility, or weak and unhealthy children, and numerous crim. con. actions.

Moreover, as Mr. Lawrence observes, it is in the rulers, in those to whom the destinies of nations are entrusted, and on whose qualities and actions depend the present and future happiness of millions, that the evil is at its height. laws, customs, prejudices, pride, bigotry, confine them to intermarriages with each other, and thus degradation of race is added to all the pernicious influences inseparable from such stations. . . . The strongest illustration of these principles will be found in the present state of many royal and aristocratic houses in Europe: the evil must be progressive, if the same course of proceeding be continued.

## SECTION II.

### SELECTION.

Mr. Lawrence observes, that "a superior breed of human beings could be produced only by selections and exclusions similar to those so successfully employed in rearing our more valuable animals. Yet, in the human species, where the object is of such consequence, the principle is almost entirely overlooked . . . Hence all the native deformities of mind and body, which spring up so plentifully in our artificial mode of life, are handed down to posterity, and tend, by their multiplication and extension, to degrade the race. Consequently, the mass of the population in our large cities will not bear a comparison with that of savage nations, in which, if imperfect or deformed individuals should survive the hardships of their first rearing, they are prevented by the kind of aversion they inspire, from propagating their deformities."

"If the same constraint were exercised over men," says Dr. Pritchard, "which produces such remarkable effects among the brute kinds, there is no doubt that its influence would be as great. But no despot has ever thought of amusing himself in this manner, or at least such an experiment has never been carried on upon that extensive scale, which might lead to important results . . . Something of this kind was indeed attempted by the kings of Prussia, but their project referred to stature . . . It is well known, that the king of Prussia had a corps of gigantic guards, con-

sisting of the tallest men who could be drawn together from all quarters. A regiment of these huge men was stationed during fifty years at Potsdam. 'A great number of the present inhabitants of that place,' says Forster, 'are of a very high stature, which is more especialy striking in the numerous gigantic figures of women. This certainly is owing to the connexions and intermarriages of the tall men with the females of that town.'

"Certain moral causes, however, have an influence on mankind, which appears in some degree to lead to similar ends. . . . In countries where the people are divided into different ranks or orders of society, which is almost universally the case, the improvement of person which is the result of the above-mentioned cause, will always be much more conspicuous in the higher than in the inferior classes."

"In no instance, perhaps," says Lawrence, "has the personal beauty of a people been more improved, by introducing handsome individuals to breed from, than in the Persians, of whom the nobility have, by this means, completely succeeded in washing out the stain of their Mongolian origin. 'That the blood of the Persians,' says Chardin, 'is naturally gross, appears from the Guebres, who are a remnant of the ancient Persians, and are an ugly, ill-made, rough-skinned people.' This is also apparent from the inhabitants of the provinces in the neighbourhood of India, who are nearly as clumsy and deformed as the Guebres, because they never formed alliances with any other tribes. But, in the other parts of the kingdom, the Persian blood is now highly refined by

frequent intermixtures with the Georgians and Circassians, two nations which surpass all the world in personal beauty. There is hardly a man of rank in Persia who is not born of a Georgian or Circassian mother; and even the king himself is commonly sprung, on the female side, from one or other of these countries. As it is long since this mixture commenced, the Persian women have become very handsome and beautiful, though they do not rival the ladies of Georgia. The men are generally tall and erect, their complexion is ruddy and vigorous, and they have a graceful air and an engaging deportment. The mildness of the climate, joined to their temperance in living, has a great influence in improving their personal beauty. This quality they inherit not from their ancestors; for, without the mixture mentioned above, the men of rank in Persia, who are descendants of the Tartars, [Mongols,] would be extremely ugly and deformed."

These effects are every where observed. Captain Cook, describing the people of Owhyhee, says, "The same superiority which is observed in the Erees (nobles) in all the other islands, is found also here. Those whom we saw were, without exception, perfectly well formed, whereas the lower sort, besides their general inferiority, are subject to all the variety of make and figure that is seen in the populace of other countries."

## SECTION III.

### CROSSING.

"In some parts of Ireland," says Dr. Pritchard, "where the Celtic population of that island are nearly unmixed, they are, in general, a people of short stature, small limbs and features: where they are mixed with English settlers, or with the Lowlanders of Scotland, the people are remarkable for fine figures, tall stature, and great physical energy.

"Pallas informs us, that even intermarriages of Russians and Tartars with the Mongolians, who differ widely from both of these races in their physical character, are very frequent in Mongolia. . . . The children born from these marriages are thus described in Pallas's Memoir on the Mongolian Nations. These children have agreeable and sometimes beautiful features, whilst those of an origin purely Kalmuc or Mongol, preserve, till ten years of age, a countenance deformed and bloated, a cacochymous aspect, which disappears only with the growth of the body."

"In Paraguay, the mixed breed constitutes, according to Don Felix de Azara, a great majority of the people termed Spaniards or white men; and they are said to be a people superior in physical qualities to either of the races from which they have sprung, and much more prolific than the aborigines.*

* "Ces métis s'unirent en général les uns aux autres, parcequ'il ne passe en Amérique que très peu de femmes Européennes, et ce sont les descen-

"The offspring of the Dutch by the Hottentot women," says Moodie, "are distinguished for uniting in their persons the vices of both races. In point of understanding, they are superior to the Hottentots; and, by what I have seen of them, I should think that, under other circumstances, many of them would show a decided superiority over the Dutch. They assume it over the Hottentots, with whom they live, and hate the white population, to whose society they can never aspire. They are also a taller and stouter race than the Hottentots, and share in some degree in the constitutional tendency of the Dutch to corpulence. The intermixture of races seems to improve the intellectual powers as much as it does the bodily proportions."

In South America, Dr. Hancock (15, August) says, "The mulattoes, unfortunately and ungenerously held in degradation, are not naturally inferior, I believe, to their fathers, either in moral or physical powers,—but certainly, far in advance of the primitive African race. At least, we may say, they are above the medium of the two castes from which they spring.

"It is a well-known fact, that the Samboes of South America—the progeny of blacks and Indians, are remarkable for their physical superiority over their progenitors of either side.—But I need only allude to

---

dans de ces métis qui composent aujourd'hui au Paraguay la plus grande partie de ce qu'on appelle Espagnols. Ils me paraissent avoir quelque supériorité sur les Espagnols d'Europe, par leur taile, par l'élégance de leurs formes, et même par la blancheur de leur peau. Ces faits, me font soupçonner non seulement que le mélange des races les améliore, mais encore que l'espèce Européeanne l'emporte à la longue sur l'Américaine, ou du moins le masculin sur le feminin."

these people: I believe they have been duly noticed by Humboldt and other travellers.

"Many obvious examples, however, might be adduced, where people are less kept under restraint—as at St. Domingo, and in those called Maroons at the back parts of Surinam. These originated from negro deserters from the Dutch estates, who formed settlements up the Courantine, and intermarried with the native tribes; and this union has produced a most athletic and vigorous race of men, active and enterprising, who present an extraordinary contrast compared with their ancestral line of either side. Some of these, on trading projects, we met with in the interior in 1811, at Mahanarawa's, (the Carib king,) where, indeed, the aboriginal natives, who are comparatively timid, would scarcely dare show themselves. I presume that, at this time, all the neighbouring tribes combined would scarcely be a match for them.

"It is not only, however, in the mingling of distinct races that we observe an amelioration or improvement in the progeny. Results nearly equal, perhaps, arise from intermarriages amongst different tribes of the same caste. This is exemplified in the striking superiority of the creole negroes, in corporeal and mental powers, compared with their African parents who came from different tribes. Of the Maroons in the West India Islands, Dallas observes, 'They displayed a striking distinction in their personal appearance, being blacker, taller, and in every respect handsomer than those on the estate.—In their person and carriage, erect, lofty, indicating a consciousness of superiority, vigour appeared in their muscles, and

their motions displayed agility. They possessed most, if not all, of the senses in a superior degree.'

"The Caribes are the only American tribe who, without restraint, take wives from the other tribes adjacent; and their superiority over all their neighbours is too well known to require a word in illustration.

"I do not know if the progress of the American republic may not be, in some measure, attributable to the circumstances here considered. The Americans —a melange of all the different nations of Europe, though mostly of English, Scottish and Irish descent, are noted for activity and enterprise; and their march of improvement, in practical science, the mechanical arts, and commerce, has surpassed what could have been anticipated in a people cast into a wilderness so distant from the civilized world. Their rapid increase and improvement has attracted the admiration of all Europe, and they have offered to the world a splendid example of justice and national freedom.

"May I suggest a hint for your consideration?—It appears to me probable, that the most magnificent empires have owed their foundation chiefly to great migrations, or im-migrations, of the human race."

From the authorities now quoted, it is evident that, destitute of principles as is crossing among the varieties of mankind, its advantages have been generally observed and acknowledged; and this preliminary was necessary to my showing, in the next Part, what constitute the best intermarriages among mankind.

# PART VIII.

## CHOICE IN INTERMARRIAGE AS PRESCRIBED BY THE NATURAL LAWS AND THEIR MODIFICATIONS.

---

### SECTION I.

#### GENERAL OBSERVATIONS ON AGE, STATURE, ETC.

In the various sections of this part, the facts and principles stated in the preceding parts of the work, as well as those in the work on "Beauty," are briefly referred to, in order to apply them to choice in intermarriage. The brief reference made to these facts and principles, however, will be quite inadequate, unless, by the perusal of the preceding parts, and of the work on "Beauty," they are previously well understood; such reference now serving the purpose merely of calling them to mind.

With regard to age, it has been seen that it is most natural to the young man to admire beauty of the locomotive system;—to the middle-aged man, to admire beauty of the vital system;—and to the older

man, to admire beauty of the mental system; but that, as woman is more precocious than man, she becomes more advanced in reference to sex, than man at the same age; and, consequently, to be duly matched to her husband, the wife should be the younger.

As the average stature of woman is two or three inches less than that of man, and her whole figure is slenderer, these proportions are naturally preferred. Women, indeed, who are too tall, are generally awkward; and a low stature is far less objectionable.

Man, as we have seen, has the shoulders wider than those of woman: woman has the hanches more capacious than those of men. The upper part of the body also projects less anteriorly, and the lower part projects more in woman than in man. The hanches of woman are more apart; her hips, more elevated; her abdomen, larger; and her thighs, more voluminous. And as, with these proportions and developements, all the functions most essentially feminine—impregnation, gestation, and parturition, are intimately connected, such proportions and developements are naturally preferred.

In woman, consequently, as an object of choice, the head, shoulders and chest, should be relatively small and compact; and the arms and limbs should be relatively short, and should taper as they recede from the trunk, while the hands and feet should be small. Thus her body should taper upwards, as her limbs taper downwards.

Owing, then, as we have seen, to smaller stature, and to greater size of the abdomen, the middle point

of the figure, which is at the pubes in man, is higher in woman; and this also he prefers in her, as an object of choice;—as well as that her members be, as naturally they are, more rounded, less hard, her forms less angular, and her traits finer.

The reader has further seen that man naturally and necessarily seeks next, not for qualities which are his own, but for those of which he is not in possession—something different, something new, something capable of exciting him; that this conforms to the fundamental difference of the sexes; and that those marriages in which such qualities exist are always more prolific than others. He bears in mind Mr. Knight's corroboration of this, that "the most powerful human minds will be found in offspring of parents of different hereditary constitutions," and that he has "witnessed the bad effects of marriages between two individuals very similar to each other in character and colour, and springing from ancestry of similar character."

Amidst these differences, it is evident that we should profit by rendering them the means of correcting faulty organization, and of annulling in children the effects of hereditary predispositions.

Now, on this important point, the reader is aware that, according to the laws of resemblance, the qualities of the father and mother are communicated to their progeny, not in various and minute fractional parts, but in halves—in the anterior, or the posterior, series of organs, and in no other way; that man, however, has to do only with the law of selection, because by its means he can achieve every influence

upon progeny; and that, by placing himself in suitable relation to an appropriate partner in intermarriage, man, unless all the most undisputed *facts* of breeding be *false*, has (precisely as the breeder has among lower animals) the power to reproduce and to preserve either series of organs—the best, instead of the worst portion of his organization.

The reader will probably remember the observation of Dr. Pritchard, that "If the same constraint were exercised over men, which produces such remarkable effects among the brute kinds, there is no doubt that its influence would be as great;" while he has seen the establishment of those natural laws of which neither such writers, as they themselves avow, nor the breeders of animals, had any conception.

In these general observations, it remains only to remind the reader, that the organization of the woman destined to reproduce, should be of the best kind; and that maturity, exercise and perfection in every function, are equally essential; for, as are these and their adaptation to the male, so will be the perfection of the progeny.

In society, however, we see persons not only regardless of imperfect organization and function, but of actual disease. Some consequently, are childless; whilst others become the parents of beings destined to a life of suffering. Laws assuredly ought to prescribe proper means for insuring the natural conformation and health of both parties, and should forbid marriage before each had furnished a certificate vouching for these. Monstrosities and diseases capable of being transmitted by generation, should also be regarded as

so many physical causes of divorce. By this means, not only sterility and deformities, but degeneration of the species, would be avoided.

---

## SECTION II.

### AS TO THE LOCOMOTIVE SYSTEM.

From my work on "Beauty," I may first quote a general account of beauty of the locomotive system, as necessary to understanding the subject, and as a guide to choice.

"In the woman possessing this species of beauty, the face is generally somewhat bony and oblong;—the neck, less connected with the nutritive system, is rather long and tapering;—the shoulders, without being angular, are sufficiently broad and definite for muscular attachments;—the bosom, a vital organ, is but of moderate dimensions;—the waist, enclosing smaller nutritive organs, is remarkable for fine proportion, and resembles, in some respects, an inverted cone;—the hanches, for the same reason, are but moderately expanded;—the thighs are proportional;—the arms, as well as the limbs, being formed chiefly of locomotive organs, are rather long and moderately tapering;—the hands and feet are moderately small;—the complexion, owing to the inferiority of the nutritive system, is often rather dark;—and the hair is frequently dark and strong.—The whole figure is pre

cise, striking, and often brilliant.—From its proportions, it sometimes seems almost aerial.

"To this class belong generally the more firm, vigorous, and even actively impassioned women; though it may doubtless boast many of greatly modified character.

"The chief modifications of this species should next be understood.

"The first of these is that in which the developement of the bones, those of the pelvis excepted, is proportionally small.—This character will be especially apparent where the long bones approach the surface; as in the arm immediately above the wrist, and in the leg immediately above the ancle.

"The second modification of this species of beauty is that in which the developement of the ligaments and the articulations they form, those also of the pelvis excepted, is proportionally small.—This conformation will be especially apparent,—in the arm, at the wrist,—and, in the leg, at the ancle.

"The third modification of this species of beauty is that in which the developement of the muscles is proportionally large around the pelvis, and delicate elsewhere.—This conformation being concealed by the drapery, may nevertheless be conjectured from the imperfect view of the hip, or of the calf of the leg, or more accurately by means of the external indications of form given elsewhere."

The points of beauty as to the trunk and extremities must lastly be understood, as essential to choice.

In the former, the shoulders should not be much narrower than the pelvis, because that would indicate excessive weakness of the locomotive system.

The upper part of the trunk, including the shoulders, should form an inverted cone, because otherwise the lightness and beauty of the locomotive system is destroyed.

As to the trunk, the rest is obvious from the preceding general description.

In the arms, it must be remembered that the bones, ligaments and muscles belong to the locomotive system, and their fundamental beauty depends upon its proportions; while to the nutritive system are owing in woman, their roundness, their softer forms and their more flowing outlines.

The hand in woman ought to be much smaller, plumper, softer and whiter than in man, gently dimpled over the first joints, having the fingers long, round and tapering, the other joints marked by slight reliefs, the fingers delicate and flexible, and the nails extending as far as their tips, arched, smooth, polished, slightly transparent, and rose-coloured. Some of these circumstances, however, depend on the vital system.

The form of the hand appears, in some cases, to have more of an intellectual character than in others; nor is this to be wondered at, seeing that it is the principal organ of sense which is the most valuable.

It should always be remembered, that want of moderate exercise of every kind is the great cause of universal deformity of the arms among women of the more opulent classes.

In regard to the lower extremities, (of which also the bases belong to the locomotive system, though some characteristics of the vital system must be involved in describing them,) it is essential to remember, that the width of the haunches should cause the further separation of the thigh-bones; that the muscles of the thighs having larger origins from the pelvis, should be more voluminous; that the haunches should reach their greatest extent at the upper part of the thighs, which also rise anteriorly as high as the pubes; that the thighs of women should, consequently, be remarkable for their fulness,—much of the delicacy, ease, suppleness, and grace of the female form resulting from this; and that they should also be more curved before than in man.

It is also to be remembered, that the knees should approximate; that all the other parts of the limbs should present forms more softly rounded; that the feet being smaller, the base of support should be less extended; and that the feet are susceptible of a great degree of beauty.

It is evident that woman's extremities being thus feeble, her muscular power is confined chiefly to the vicinity of the pelvis.

As the parts of the limbs are concealed by drapery, the best external indications of their form, and the developement of their parts, must be referred to in my work on "Beauty."

As connected with the muscular system and with expression, it is known that the flute part of the throat in woman should be smaller than in man; and that her voice should also be much more acute.

Such being essential characteristics of this system in woman, the best guidance in choice is thereby afforded. One or two observations may be added.

Although, in the locomotive system, man generally prefers a less stature, woman a taller, Rousseau's observation must be remembered—that "by the extreme weakness of women commences that of men," and that "women ought not to be robust *like* men, but *for* them, in order that the men born of them may be so likewise."

It has been observed, that if sexual proportions be reversed, by man being little, and woman tall, those opposites will naturally be sought for; and that an effeminate man is better matched with a masculine woman, though for him it is a despicable position.

It has also been observed, that the female may give her locomotive system, character, or shape to progeny, simply by being relatively more vigorous; but that vast disadvantage must attend this method, since it implies the relative debility of the male parent.

It has likewise been observed, that the shorter body, longer limbs, and meagre frame of some of our own northern races may, in progeny, be corrected by intermarriage with the longer bodied, shorter limbed, and more fully formed races of our south-eastern counties.

From what has been previously said, it will moreover appear, that, in choice, deception as to some points which the mother may be supposed capable of communicating to progeny, will be avoided, by bearing in mind that either the eyebrows, or the lower part of the nose, or the under lip, in the woman

chosen, will probably be altered in her progeny; and also that the parent who gives the locomotive system does not give the carriage and the manner of walking, and consequently, though a woman may possess both of these last, she cannot communicate both.

Respecting choice in the locomotive system, I have only to add a few words as to the influence of exercise on the forms of progeny.

It is well known that the hands of a man who labours are much larger and stronger than those of one who never labours; and accoucheurs have observed, that the hand of the son of such labourer will be larger, and better adapted for labour in consequence. The same is the case with every part of the locomotive system.—On the contrary, families of ancient ancestry, whose progenitors have for ages lived in indolence, are small in bodily frame and locomotive system.

Defect of this kind is more frequently derived from the female than from the male. Women of the opulent classes are kept, whilst young and growing, to ornamental work, books and music. They seldom go on foot to any distance from home, but employ easy, close and warm carriages, so that their locomotive system is not developed by exertion. Even their music is less frequently attended by exercise than it ought to be. Hence, these females are delicate and diminutive in stature, whilst the farmer's daughters, who take an active part in household affairs, are strong and healthy.

The males of these families do sometimes make the best of their natural frame, by athletic exercises; but

that will not completely remedy the defects of a bad locomotive system derived from a mother brought up in indolence and ease; and they may, as observed by Mr. Thacker, to whom I am indebted for several good observations on this subject, be considered as only half-bred.

Moreover, they generally intermarry with those who have been reared and brought up like their mothers, which may be regarded as a kind of in-and-in breeding, and which has its ill effects. In some cases, indeed, a degree of absolute in-and-in breeding is added to all other defects; and this continuing generation after generation, these families rapidly degenerate in stature and muscularity.

Even during pregnancy, too sedentary a life is injurious both to the mother and the infant, and for this reason women in the country, who are inured to daily toil, give birth to strong healthy children, and are also generally more fruitful.

It is not, therefore, sufficient that human beings should be born with a good organization only: in order either to retain this, or to convey it to their descendants, they must preserve it by exercise in the highest state of developement.

It is well known, that if a stallion be prevented, even by accidental lameness, from obtaining exercise, he is sure to be deficient in muscular powers, and to convey that deficiency to his offspring. It is also known, that even a horse or mare's being no longer capable of ordinary work, or having suffered from hard and continued labour, is certainly injurious to

progeny.—The laws of nature are simple and universal.

---

## SECTION III.

### AS TO THE VITAL SYSTEM.

I have already observed, that the vital system is peculiarly the system of women; and that so truly is this the case, that any great employment either of the locomotive or mental organs, deranges the peculiar functions of woman, and destroys the characteristics of her sex. The women of the labouring classes are notorious examples of this; and intellectual ladies either seldom become mothers, or they become intellectual when they have ceased to be mothers.

I give a general description of this species from my work on "Beauty."

"In the woman possessing this species of beauty, the face is generally rounded, to give greater room to the cavities connected with nutrition;—the eyes are generally of the softest azure, which is similarly associated;—the neck is often rather short, in order intimately to connect the head with the nutritive organs in the trunk;—the shoulders are softly rounded, and owe any breadth they may possess, rather to the expanded chest, containing these organs, than to any bony or muscular size of the shoulders themselves;—

the bosom, a vital organ, in its luxuriance, seems laterally to protrude on the space occupied by the arms;—the waist, though sufficiently marked, is, as it were, encroached on by that plumpness of all the contiguous parts which the powerful nutritive system affords;—the hanches are greatly expanded for the vital purposes of gestation and parturition;—the thighs are large in proportion;—but the locomotive organs, the limbs and arms, tapering and becoming delicate, terminate in feet and hands which, compared with the ample trunk, are peculiarly small;—the complexion, dependent upon nutrition, has the rose and lily so exquisitely blended, that we are surprised it should defy the usual operation of the elements;—and there is a luxuriant profusion of soft and fine flaxen or auburn hair. The whole figure is soft and voluptuous in the extreme.

"To this class belong all the more feminine, soft, and passively voluptuous women."

The chief modifications of this species of beauty should also be understood.

The first modification is that in which the digestive and absorbent system is small but active.—Hence women affect delicacy of appetite, and compress the waist, and endeavour to render it slender.

The second modification of this species of beauty is that in which the circulating vessels, being moderately active and finely ramified, render the surface of the skin turgid with transparent liquids, diffuse under that, the light and warm colouring of youth, permit the shades of azure veins to appear, or, where more patent, cast the hue of the rose over that of the lily.

The third modification of this species of beauty, is that in which the active secreting vessels not only cause the plumpness, elasticity, softness, polish and whiteness necessary to beauty, but furnish the mammary and uterine secretions.

It is now essential to a rational guidance of choice, to point out suitable conditions of the vital system, as to age, form of the pelvis, &c.

With regard to age, if that labour of nature which is necessary for the completion of the organization be troubled by premature marriage, woman remains always of small stature, weak and pale.

If pregnancy ensue, breeding will still more interfere with the development of her structure and strength; she will be liable to abortions and fluxes; and the pains of childbirth may destroy her.

If she become a mother, she cannot afford to her offspring a sufficiency of nutritious milk; her children will be weak and ailing; she must submit, in rearing them, to attentions and vigils exceeding her strength; and her youth will be passed in anxiety and grief, which bring on premature old age.

Moreover, to the due performance of the duties of the married state, the greater or less development of another order of faculties—those constituting mind, must be taken into consideration.

For all these reasons, it is prudent to allow an interval of at least two years to take place between the appearance of the catamenia and marriage; for it is then generally that they have acquired regularity, that woman reaches the period of her full growth, and

that there is a surplus of vital power necessary for the reproduction of the species.

The age from twenty to twenty-five is the period at which women in England appear best adapted for becoming mothers.

It may here be observed, that when a man past sixty marries a young girl, as is sometimes the case, he often pursues only the shadow of a pleasure of which he can no longer seize the reality; and the misery entailed upon a young girl by marriage with an old man, should alone be a sufficient reason for legal opposition to such union.

A well-organized woman, on the other hand, is not indifferent when the catamenia have ceased. This occurs only in countries where, as in France, the vital system is bad. But it may perhaps be doubted by some, whether the marriage of a female in whom the characteristic sign of fruitfulness has ceased, should be suffered by law, seeing it is injurious to the state to deprive it of that portion of the population that could have been furnished to it by the young husband whom she usually appropriates. Dionysius the Tyrant replied to his mother, who, at an advanced period of life, wished to marry a young man, "It is in my power to break the laws of Syracuse, but not those of nature." I believe that Dionysius was wrong; and that these women are essential to the economy of nature.

No circumstance, in choice, is more important than the form of the pelvis in woman; for upon this depends her own fate and that of her infant.

That several national varieties exist in the form of

the pelvis, appears to have been first clearly shown by Dr. Vrolik of Amsterdam, whose observations have been reviewed by Professor Weber, of Bonn. In Weber's opinion, the most frequently occurring form of pelvis among Europeans, is the oval; the most frequent in the American nations, the round; the square, in people resembling the Mongolians; and the oblong, in the races of Africa; and there is a correspondence, between these diversities and the shape of other parts of the skeleton, and even of the skull.

In intermarriage, the size of the pelvis is of vast importance. It is evident that the head of the fœtus, which is generally five inches in diameter, cannot be expelled through the inferior aperture, if that is only about one half that diameter. A woman thus formed, if unfortunately she become pregnant, will be under the necessity of undergoing the Cæsarian operation, or the section of the symphysis pubis, or of witnessing the sacrifice of her child, by the accoucher.

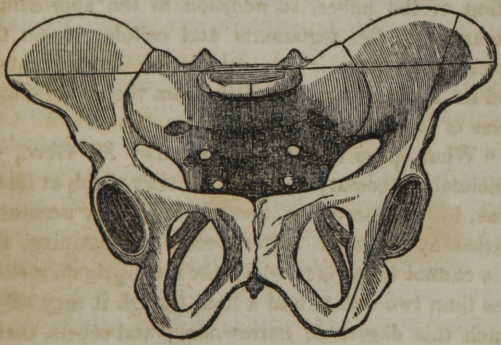
These malformations can in general scarcely be known without an examination which is opposed by modesty; and their existence consequently is often a secret till the first accouchement.

We may, however, suspect malformation of the pelvis, says a recent writer, "when the hollow of the back is so great as to force the last lumbar vertebra into the upper part of the cavity of the pelvis; when the irregularities of the hip bones elevate it too much on one side; when the the thighs press too much against each other in walking; and whenever there remain any traces of rachitis, such as crookedness in

the long bones, or any extraordinary development of their extremities.

It is observed, nevertheless, that "there are some very deformed women in whom the pelvis possesses its natural proportions, so that they are delivered with ease; whilst there are many who, with the appearance of regular conformation, have some malformation that renders their first accouchement almost inevitably mortal.

"As some persons may feel disposed to measure the exterior of a young female pelvis, for the purpose of forming a somewhat correct opinion as to its capacity, and whether delivery will be easy, or if the assistance of art will be necessary, the following calculations have been given, as nearest to the true dimensions in females of middle size and moderate plumpness.



"From the upper part of the pubic eminence to the sacrum, above the projection formed by the spinal

apophysis of the last lumber vertebra, there are, in a well-formed pelvis, seven French inches; (190 millimetres) from the extreme projection of one haunch or spine of the ilium to the other, eleven inches, six lines; (300 millimetres) from the extreme projection of one haunch to the top of the tuberosity of the ischium of the same side, seven inches, eight lines (200 millimetres.)

"A knowledge of the extent of the sacro-pubic diameter, is almost always the most important as regards any conception of the issue of a laborious delivery. The best method of obtaining this, in a living person, is, in measuring the exterior of the pelvis, to deduct from the total space existing between the pubic eminence, and the top of the spinal apophysis of the first false vertebra of the sacrum, the known thickness of the base of that bone, and of the articulation of the pubes, in addition to the approximate thickness of the teguments and cellular tissue that cover these parts. This calculation is very simple, and its result differs very little from the actual dimensions of the diameter required."

"What space of pelvis," says Dr. M. Good, "is absolutely necessary to enable a living child, at its full time, to pass through it, has not been very accurately settled by obstetric writers, some maintaining, that this cannot take place where the conjugate diameter is less than two inches and a half, though it may till we reach this degree of narrowness; and others, that it cannot take effect under three inches. The difference in the size of the head in different children on their birth, and of the thickness of the soft parts with-

in the pelvis in different women, may easily account for this variation in the rule laid down. It is clear, however, from the acknowledgment of both parties, that if the dimension of the pelvis be much under three inches, delivery cannot be accomplished without the loss of the child."

It is the duty of medical attendants and relatives, says the writer before quoted, "to point out to a female whose pelvis is ill formed, that, in marrying, she exposes herself to suffering which may end in death." It would, however, be well if a law were in existence, that no girl should marry when any malformation, duly attested by medical men, renders delivery physically impossible without imminent danger to the mother, or to the child, or to both. To allow marriage between a healthy and active person and an infirm or deformed being, is to attack the happiness and health of the former, or the life of the latter.

Into choice, the consideration of the signs of virginity next enter.

These are principally the presence of the hymen, and some appearance of the sanguineous fluid at the first union.

The hymen is a membrane of semilunar, or, occasionally, of circular form, which is stretched across the orifice of the vagina, leaving only an aperture sufficiently large to permit the catamenia to pass. It appears to be merely a duplicature of the membrane which lines the interior of that canal; and it diminishes in width until it is obliterated by exercise of the part.

The importance of this sign is not the same among

all nations. Amongst the greater part of the nations of Asia, and in some of those of Africa, and even among barbarous hordes in Europe, proofs of virginity are required on the marriage night. Among others, on the contrary, an opposite estimate is formed. Conolly tells us that, among the Toorkmans, "for a man to marry a widow is a difficult matter; for, unlike the Arabs, who consider marriage with widows ill-omened, the Toorkmans prefer them on account of their superior knowledge of the ménage, they being of course better acquainted with household duties than unmarried girls. In Arabia, only half price is given for a widow; but the Toorkman relicts are generally at a considerable premium. It was related as an instance of a man's great generosity, that he gave his daughter, a widow, to the brother of his deceased son-in-law, when he might have gotten to the value of ——— I am afraid to say how many tomauns for her.

The hymen exists in the fœtus, and in women in whom it has not been destroyed by circumstances connected or unconnected with defloration. It has not, however, been bestowed exclusively upon women, as Haller imagined, as a distinctive mark of virginity. All the females of the mammiferous animals, of monkeys particularly, and even of cetacea, exhibit the hymen more or less developed.

This duplicature may be wanting from original malformation; the first catamenia, if the aperture be small,—or an accident, as a fall,—or disease, as an ulcer, may destroy it. Its loss for the most part is no proof of the absence of virginity.

On the other hand, the presence of this membrane

cannot constitute a sign of virginity. Zacchias observes, that it is not ruptured when it is thick and hard, when there is a disproportion between the organs, or when the sexual union has taken place only at periods of great relaxation. Gavard found it perfect in a female thirteen years of age, who was labouring under syphilis. Even conception has occurred in some cases, without the destruction of this membrane. Ruysch mentions an accouchment, which could not be completed without dividing a double hymen, which had not interfered with impregnation, but which prevented the exit of the child. The female, who was the subject of this case, had been long making useless efforts for her delivery, when Ruysch was called in. He perceived a first obstacle, a very thick and strong hymen; and he divided it. A second obstacle appeared in a second membrane; and a second incision was requisite. The delivery was then accomplished.

Baudelocque says, "It is well known that the hymen is not always torn in the first union; and that it has been found entire in some women at the time of labour, I can myself adduce two examples." The first was that of a young lady who assured him that she had not allowed perfect access. In this case, the hymen shut the vagina very closely, and left but a very small opening. She, nevertheless, became pregnant; and the parts were so found at labour. In the other, the membrane alone resisted, for half an hour, all the efforts of the last periods of delivery.

Dr. Blundell says, "Four impregnations, in which the hymen remained unbroken, have fallen under my

notice; the diameter of the vaginal orifice not exceeding that of the smaller finger; and this, too, though the male organ was of ordinary dimensions." And again, "I know of three cases in which the organ was not suffered to enter the vagina at all, and where, nevertheless—I suppose from the mere deposition of the reproductive liquid upon the vulva, impregnation took place."

An anthropological fact which sets this question completely at rest is this, which I have myself observed in the dissecting-room, namely, that the hymen is re-formed in women who abstain from sexual indulgence. This was found to be the case in the body of an old woman who bore evident marks of having been the mother of children.

Marc, in the Dictionnaire des Sciences Médicals, says, "A young female severely afflicted with syphilis, was brought to La Pitie. The hymen was altogether wanting; the vagina greatly dilated; and the external reproductive parts diseased. She was cured; and, to the astonishment of the medical observers, a well-formed semilunar hymen was found."

Any flow of the sanguineous liquid is a sign equally uncertain.

The bright red colour of the nipples, says Beck, the hardness of the mammæ, and the general appearance of the female, all deserve attention, but they can seldom be of any practical utility in determining the point under examination.

As to the increased size of the neck, it is certain that indulgence may momentarily cause it. Hence the Romans were in the habit of measuring the thick-

ness of the bride's neck with a thread both on the morning of marriage, and the following one, and of thence concluding concerning her change of condition. We may, however, reasonably doubt the infallibility of this sign, as circumstances unconnected with marriage produce the same phenomenon.

The lobe of the ear is asserted by some to be most frequently of a very bright and lively red.

Considering the whole of these signs, the faculty of medicine at Leipsic has declared that there does not exist any true and certain sign of virginity; and Morgagni is of a similar opinion.

If there be few or no signs of virginity, it is far otherwise with signs of the habit of child-bearing, which I have described in the work on Beauty.

The more minute indications of this kind are the streaks of fissures left on the abdomen and mammæ, owing to their previous distentions; and others which affect the reproductive organs, but which need not here be described.

Having now described beauty of the vital system and its modifications, pointed out the suitable conditions as to the age and the form of the pelvis, shown the uncertainty of all signs of virginity, and referred to those of child-bearing, it seems expedient, after these generalities, to give some account of the particular causes of importance—hermaphrodism, malformation and diseases, before describing those of aptitude for reproduction—the chief considerations as to choice, except those regarding age and the pelvis, which fall under the vital system.

Respecting impotence, the law of England as laid

down by Blackstone, is as follows :—" A total divorce is given whenever it is proved that corporeal imbecility existed before marriage. In this case, the connexion is declared to be null and void, *ab initio*. Imbecility may, however, arise after marriage; but it will not vacate it, because there was no fraud in the original contract, and one of the ends of marriage, the procreation of children, may have been answered."

By the English and Scottish law, sterility is a ground for divorce—according to the latter, only *à mensâ et thoro*.

The particular causes of sterility are either malformations or diseases of the reproductive organs.

Under the first head falls hermaphrodism, and here it is hardly necessary to say, that proper hermaphrodites, or beings having all the reproductive organs of both sexes, and capable of performing both kinds of reproductive functions, are altogether fabulous.

An enlargement of the clitoris in woman is the cause of most of the mistakes on this subject. This enlargement seldom occurs in Europe, but it is frequent in warm climates, where its excision is a common practice.

Sir Everard Home relates an instance of this kind in a Mandingo negress, twenty-four years of age.—Her mammæ were very flat; her voice rough; and her countenance masculine. The clitoris was two inches long, and in thickness resembled a common-sized thumb. When viewed at some distance, the end appeared round and of a red colour; but, on closer inspection, it was found to be more pointed than that of a penis, not flat below, and having neither prepuse nor

perforation. When handled, it became half erected, and was then three inches long, and much larger than before. On voiding water she was obliged to lift it up, as it covered the orifice of the urethra. The other parts of the female organs were in a natural state.

Dr. Davis refers to a state of extirpation of the clitoris by Mr. Richard Simmons of London, in which the length was nine inches, and the circumference of the largest part of the stem, five inches. Its general appearance was very smooth and fleshy, and its upper surface covered with cuticle.

M. St. Hilaire, who has paid great attention to this subject, divides the reproductive apparatus into six different portions or segments, three on a side, which, in several respects, are independent of each other: 1 and 2, the deep-seated organs—tests and ovaries; 3 and 4, the middle organs—matrix or prostate and vesiculæ seminales; 5 and 6, the external organs—penis and scrotum, clitoris and vulva.

When the number of these parts is not changed, and there is simply a modification in their developement, we have the first class or hermaphrodism without excess. This again is subdivided into four orders. —1. Male hermaphrodism, when the reproductive apparatus, essentially male, presents in some one portion the form of a female organ—as a scrotal fissure, resembling in some respects a vulva; 2, female hermaphrodism, where the apparatus, though essentially female, yet offers in some one portion the form of a male organ, as in the excessive developement of the clitoris; 3, neutral hermaphrodism, when the portions of the sexual apparatus are so mixed up, and so am-

biguous, that it is impossible to ascertain to what sex the individual belongs; 4, mixed hermaphrodism, when the organs of the two sexes are actually united and mixed in the same individual.—Of this last, there are several species: alternate, when the deep organs belong to one sex, and the middle to the other, while the external present a mixture of both; lateral, in which the deep and middle organs, when viewed on one side of the median line, appear to belong to the male sex, while on the other they are female; the external organs, as in the former species, being partly male, and partly female, &c.

The second class includes all anamolies with excess of parts, and is divided into three orders:—1, Complex male hermaphrodism, where we find, with an apparatus essentially male, some supernumerary female organ, as a matrix, &c.; 2, complex female hermaphrodism, with the addition of a male organ, as a testis, &c., to an apparatus essentially female; 3, bisexual hermaphrodism, where a male and female apparatus exists in the same individual.

M. St. Hilaire remarks, that legislation, admitting only two grand classes of individuals, on whom it imposes duties, and to whom it grants different and almost opposite rights, according to their sex, does not truly embrace the entire of the cases which occur in nature: for there are subjects who have really no sex, such as neuter hermaphrodites, and hermaphrodites mixed by superposition; and, on the other hand, certain individuals, the bisexual hermaphrodites who present the two sexes united in the same degree.

In a remarkable case of this description, which oc-

curred in Paris to Professor Bouillaud, the subject, aged sixty-two, a widower, who died of Cholera, was apparently a male; yet, on dissection, a matrix with its ovaries was found. There was a perfect prostate gland; the testes, vesiculæ seminales, and vasa deferentia, were wanting; the penis had a well-formed glans and prepuce; a vagina of about two inches long, connected the matrix with the urethra; the external reproductive organs of the female were entirely absent; but the general confirmation (except a thick and soft beard) inclined to that sex.

M. St. Hilaire and Manec observe on this case, that "we must distinguish the organs of reproduction from those of mere coition: there may be an amalgamation or co-existence of the latter, but not of the former."

The notice of other malformations naturally follows that of hermaphrodism; and on this subject I am chiefly indebted to Beck.

The absolute causes of impotence in the male, or those for which there is no known relief, principally originate in some malformation or defect in the reproductive organs; and these may be either natural or artificial.

To this class may be referred an absolute want of the penis; the ureters terminating in the perinæum, or above the os pubis.

In some subjects has occurred an amputation of the virile organ.

There are many cases of the penis being impervious.

In an unnatural perforation of the penis, or, in other

words, the extremity of the canal of the urethra terminating at some other place than the natural one, the possibility of impregnation may depend on the distance to which the orifice is thrown back.—A case is related by Mr. Hurd, in which the patient had been relieved by complete amputation; there was only a very small protrusion of the organ on pressure; yet he had, subsequent to this, two children.

The natural want of both testes, provided that ever occurs, or their artificial loss, must be a cause of impotence.*

The loss of one of the testes, if this were compensated by a healthy condition of the other, would be no ground of dread. But if the remaining testis be small and extenuated, or have become scirrhous or carcinomatous, or even if the epididymis be tumefied and hard, it gives reason to expect impotence.

In woman, there are various malformations that form an obstacle to conception.

It is asserted, on the authority of Hufeland, that the the body of a child three years old was opened at Berlin, in which there was not the slightest trace, either externally or internally, of any part of the reproductive organs peculiar to either sex.

Cases of congenital deficiency of the vagina, though very rare, have occurred.

An obliteration or thickening of the sexual organs, so as to prevent any access, occurs.

---

* In many instances these organs have not descended from the abdomen, and yet the individual has exhibited every proof of virility.

Congenital brevity of the vagina would seem to be occasionally an incurable cause, so far as relates to the pain caused by coition, although possibly it may not be accompanied with sterility.—Dr. Hunter, being consulted by a lady in a mask, thus circum stanced, told her that she was the most unfortunate partner a man could have, as there was no cure. Dr. Dewees appears to have met with two cases. In one, the whole distance to which the finger could be passed did not exceed one inch or and inch and a half; in the other, it was apparently connected with an absence of the uterus, as the vagina terminated in a cul de sac.

Sometimes the vagina is found thus ending in a cul de sac.

Another cause both of impotence and sterility, is a natural or fistulous communication of the vagina with the bladder or rectum.

Fabricius of Hilden, in tracing the causes of barrenness in a woman who had been twice married without having any family, found the orifice of the matrix schirrous, and closed so completely that it was impossible to introduce the smallest probe into its interior.

Ruysch and Littre have observed the imperforation of the neck, in opening females who had been barren.

The vagina and matrix have been found closed with a dense fleshy substance.

The absence of the matrix occurs. Columbus states that a female who suffered acute pains when she indulged in pleasures, exhibited, on a post mortum ex-

amination, only a slight swelling or pad at the extremity of the vagina.

In these different cases, we can ascertain the absence of the matrix by introducing on one side a sound into the bladder, and on the other the forefinger into the rectum. The proof will be decisive, if we cannot find any voluminous body between the finger and the probe.

It would appear that, though the matrix is wanting, if the ovaries exist, the mammæ and the external characteristics of womanhood exist.

This occurred in a case where the vagina was closed by a thick, muscular-looking substance, operated on by Dr. Macfarlane, of Glasgow. The patient died, and, on dissection, no matrix was found, but the ovaries were large and well formed. The breasts were fully developed.

In the case of Agatha Mellassene, who died, aged 27, at the Hôtel Dieu, in 1823, the external organs were well formed, and the mammæ full; yet on dissection, no matrix could be found, but the broad ligaments were present, containing in their folds the fallopian tubes and well developed ovaries.

The uterine tubes may be wanting, or they may be obliterated either by tumors, or be agglutination of their sides, produced by inflammation following excess, abortion, or difficult delivery; and this is doubtless the reason why many females are precluded from conceiving a second time.

The ovaries may be so feebly developed as not to

be in a condition to receive the impression of the fertilizing liquid.

They have been sometimes found originally wanting. Morgagni mentions a girl who exhibited no vestiges of them. Such too was the case mentioned in the Philosophical Transactions. The woman's stature was about four feet six inches, having ceased to grow at ten years of age, and she died at the age of twenty-nine. She never had any catamenia; her mammæ and nipples never enlarged more than in the male subject; there was no appearance of hair on the pubes; and she never showed any passion for the male sex. On dissection, the os tincæ and matrix were found of the usual form, but they had never increased beyond their size in the infant state; the passage into the matrix through the cervix was oblique; the cavity of the matrix was of common shape, and the fallopian tubes were pervious to the fimbriæ; the coats of the matrix were membraneous; and the ovaries were so indistinct, as rather to show the rudiments which ought to have formed them, than any part of their natural structure.

Mr. Pott removed the ovaries in a case of sanguinai hernia, by a surgical operation.—Before this period, the female (aged twenty-three) was stout, large-breasted, and had the catamenia regularly. Afterwards, although she enjoyed good health, she became thinner, her mammæ were gone, and she never had the catamenia.

Such are the incurable cases. The curable are very different.

Elongation of the nymphæ and clitoris are both sus-

ceptible of cure, and do not present any obstacle to conception. Even with regard to these, however, it should be remembered that accidental monstrosities, malformations and changes produced by habit and education, either in forms or qualities, pass from the parents to their posterity.

Exterior imperforation may sometimes be remedied by the surgeon's skill.—Dupuytren in his Essay on Laceration of the Perinæum during Labour, mentions two cases. He delivered a young woman secretly. The perinæum was ruptured, but by the use of the suture it again united. Several years afterwards, a man and woman visited him: the husband was unable to consummate his marriage. On examination, the aperture of the vagina was found very narrow, and a cicatrix was on the perinæum. It was his old patient. He advised patience; and, in a short time, the female became pregnant, and was safely delivered.—In a parallel case, the husband deemed it a most unequivocal proof of previous purity.

The contraction of the conduit itself may be enlarged by gradual dilatations. Should pregnancy intervene, dilatation gradually takes place before the period of delivery; this occurs more readily in young females than in those of advanced years.

In a case reported by M. Villaume, the hymen was present, but there was merely a mass of cellular tissue in place of the vagina; and by an operation, an opening was made to the matrix. Dr. Physick is also stated to have operated with success in a case where the vagina was entirely closed up to a considerable distance within the os externum.

The obliquity of the matrix merely requires some management in the act of reproduction.

After malformations should follow diseases, as more or less to be guarded against in choice.

In men, mutilations, or severe wounds of the reproductive organs, carcinoma of the testes or penis, and a schirrous or a paralytic state induced by injury to the nerves or muscles of the parts, are all likely to prevent cohabitation.

Owing to complete and constant abstinence from coition, the internal spermatic organs, as well as the penis, shrink, and become inert, constituting impotence.—As an infant, says the canon law, is unfit for marriage because it is unable to perform its duties, in the same manner men who are impotent have no right to contract this obligation. It is moveover an act of deceit and felony.—In this case, even a desire to live with a fair fame should induce the deceived wife to claim the dissolution of a contract entered into with imposture and fraud.

With regard to both sexes, everything that tends to diminish the energy of either, as debauchery, is at variance with reproduction.

Thus, in very voluptuous women, conception may sometimes have really taken place, and its product be, immediately after its arrival in the matrix, destroyed by sanguine and other exhalations produced by frequent and excessive indulgence.

Even a structural change would in such persons seem to cause sterility in some instances. Mr. Langstaff, in several dissections, found the fimbriated extremities of the fallopian tubes on one or both sides

adherent to some of the neighbouring parts; and it is probable that a constant state of inflammatory turgescence in the reproductive organs led to this.

Women who marry late in life conceive always less readily, and those who exercise the mental organs severely and continually are in most cases barren, while in others they become subject to serious accidents in pregnancy, because they carry all their powers towards the brain, and deprive the sexual organs of their natural energy.

Among the causes of sterility of an incurable nature in women, and sensible to the sight or touch during life, Beck reckons the following:—enlarged and schirrous ovaries; a schirrous or cartilaginous matrix; a cancer of the vagina or matrix, owing to the pain that accompanies it; a stricture in the cavity of that organ; a polypus in the interior of the matrix.

"Where," says Dr. M. Good, "there is a manifest retention of the catamenial flux, after it has been once established, producing the general symptoms of disorder noticed in describing this disease, it is rarely that conception takes place, in consequence of the morbid condition of the organs that form its seat.

"For the same reason, it seldom occurs where the periodical flow is accompanied with great and spasmodic pain, is small in quantity, and often deteriorated in quality. And if, during any intermediate term, conception accidentally commence, the very next paroxysm of distressing pain puts a total end to all hope, by separating the germ from the matrix.

"There must be a healthy degree of tone and energy in the conceptive organs, as well as of ease

and quiet, in order that they should prove fruitful: and hence, wherever the catamenia are more frequently repeated than is natural, or are thrown forth, even at the proper time, in great profusion, and, as is generally the case, intermixed with genuine blood, there is as little chance of conception as in the difficult flow. The organs are too debilitated for the new process; and, not unfrequently, there is as little desire as elasticity."

Cancer of the mammæ, as well as of the matrix, when it consists merely of that state of chronic inflammation termed induration, is almost always aggravated even by the most moderate indulgence in the pleasures of love, to which is frequently owing its rapid progress and mortal character.

There exist general diseases which are so injuriously influenced by marriage, that they constitute grounds of celibacy.

Pulmonary phthisis is one of those, of which pleasure, as a powerful stimulant of the circulatory system, must hasten the progress.

In women with marked disposition to aneurisms, or already subject to them, the increased activity of the heart must drive the blood more forcibly against the sides of the vessels; the lateral effort of this liquid must constantly tend to distend them; and if the effort operate upon a part already weakened, it must continually offer less and less resistance, until, even death as sudden as alarming may occur.

Among the curable causes of impotence in men may be enumerated the following:—retraction of the penis, originating from stone in the bladder, or some other

urinary disease; obliteration of the canal of the urethra, from stricture or other causes; malformation as to the place of the aperture of the urethra; a natural phymosis, confining the glans in such a manner as to prevent the emission of the reproductive liquid; atony of the parts arising sometimes from local disease or external injury, and at others from masturbation; inability to propel the liquid out of its vessels—this is frequently an absolute cause, but generally it is a curable one.

Among the diseases that are considered compatible with the act of reproduction, are asthma and the early stages of phthsis pulmonalis.

In many chlorotic girls, marriage would tend to develope the attributes of their sex; but, to marry a chlorotic girl of fifteen or sixteen, with a view to favour the developement of puberty, and especially of the catamenia, is not only to subject her to dangerous risks, but to desire a wife and daughters with similar tendencies to disease.

A state of exhaustion of the uterine system produced by excessive excitement, and added to this the most perfect indifference, explain why courtezans rarely conceive.

In the female addicted to bad habits, the relaxation of the uterine organs, and its consequence, an inability to retain the reproductive liquid, render all who yield to these habits barren.

Long-continued hæmorrhage, recent prolapsus of the matrix or vagina, and even protracted fluor albus, are of course eminently unfavourable.

Narrowness of the vagina occasionally originates

from accidental causes, tumors, callosities, cicatrices remaining after ulcers, or lacerations from difficult labour; and in these cases, dilatation may be made by surgical means.

There are many cases of constitutional sterility, which cannot be at present explained.

As the mare that has slinked her foal is always liable to that accident, so it is with women who have once miscarried.

Having now first described beauty of the vital system and its modifications, pointed out the suitable conditions as to the age and form of the pelvis, shown the uncertainty of all signs of virginity, and indicated those of child-bearing, and having, after these generalities, given some account of the particular causes of impotence—hermaphrodism, malformation and diseases, I now proceed to describe those of aptitude for reproduction—the chief considerations as to choice which fall under the vital system.

I need scarcely say that, in the first place, the reproductive organs must possess a certain degree of development.

The three following conditions, we are told, may induce us generally to expect aptitude for generation in a female: the growth of desire at the period of puberty, the eruption of the catamenia at the right time, and moderate enjoyment of matrimonial embraces. But it is not less truly added, that we meet with females combining all these, who are nevertheless childless, though married many years to men of good constitutions who had previously given proofs of reproductive powers, and that, on the other hand, the ab

sence of these three conditions is not always a certain proof that a woman will not conceive, as some become pregnant without ever having had the catamenia.

It is a nearer approach to a correct view, to observe that "there are temperaments and constitutions more adapted for reproduction than others, in consequence of organic peculiarities and dispositions that it is not in the power of the anatomist to discover; women possessed of such a temperament conceiving generally with great readiness."

A similar approach to the truth is made, when we are told, that "it has been thought that the handsomest women are the most fruitful; that beauty and health should correspond; that there exists an intimate relation, between the perfection of forms and the principal faculties of an individual; and that the principal attributes of beauty in a woman seem to depend, by a secret connexion, on the circumstances of organization most proper to insure conception, and favour the developement of the product."

The simple solution of all these "undiscoverable peculiarities" and "secret connexions" is, that the great condition of aptitude for reproduction is the greatest possible perfection of the vital system.

And here it may be first observed, that the luxuriance of the plains and abundance of nutritious food are favourable to the developement of the nutritive system.

The vital system is relatively largest in little women, especially after maternity.

The chief points in this system are the following:

The length of the neck should be proportionally

less than in the male, because the dependence of the mental and locomotive systems on the vital one, is naturally connected with the shorter course of the vessels of the neck.

The neck should form a gradual transition between the body and head, its fulness concealing all prominences of the neck and throat.

The shoulders should slope from the lower part of the neck, because the reverse shows that the upper part of the chest owes its width to the bones and muscles of the shoulders.

The upper part of the chest should be relatively short and wide, independent of the size of the shoulders, for this shows that the vital organs which it contains are sufficiently developed.

The waist should taper little farther than the middle of the trunk, and be marked, especially in the back and loins, by the approximation of the hips.

The waist should be narrower than the upper part of the trunk and its muscles, because the reverse indicates an expansion of the stomach, liver and great intestine, resulting from their excessive use.

The back of woman should be more hollow than that of man; for otherwise the pelvis is not of sufficient depth for parturition.

Woman should have the loins more extended than man, at the expense of the superior and inferior parts; for this conformation is essential in gestation.

The abdomen should be larger in woman than in man, for the same reason.

Over all these parts, the cellular tissue, and the

plumpness which is connected with it, should obliterate all distinct projection of muscles.

The surface of the whole female form should be characterized by the softness, elasticity, smoothness, delicacy and polish of the forms, and by the gradual and easy transitions between the parts.

The moderate plumpness already described, should bestow on the organs of woman great suppleness.

Plumpness is essential to beauty, especially in mothers, because in them the abdomen and mammæ necessarily expand, and would afterwards collapse and become wrinkled.

An excess of plumpness, however, is to be guarded against. Young women who are very fat are cold, and even sometimes barren.

At the period of the cessation of the catamenia, fatness may exist in a greater degree. It is then that, in well-constituted women, the fat, accumulated in the cellular tissue, rounds the outlines anew, restores the look of youth, and constitutes the age of return.

In no case should plumpness be so predominant as to destroy the distinctness of parts.

In a young woman, the mammæ should occupy the bosom, rise from it with nearly equal curves all around, and similarly terminate in their apices; and, in the mature woman, they should, when supported, seem to protrude laterally.

The space between their apices should be as great as from these to the depression above the breast-bone.

The thinner women (providing the vital system is

good) have a larger bosom, composed of palpable glandular masses, not of fat; and accordingly thinness, with a glandular structure of the mammæ, appears to be favourable to the production of milk.

Women yielding much milk are further distinguished by greater sensibility. A narrower forehead, and longer face, accordingly, indicate more disposition to give milk, than the contrary form.

Excess of application to acquire accomplishments, and particularly music, operate injuriously upon the developement of the vital system generally, and therefore of the bosom in particular.

The skin of woman should be fine, soft and white, delicate, thin and transparent, fresh and animated; the complexion should be pure and vivid; the hair should be fine, soft and luxuriant; and the nails should be smooth, transparent and rose-coloured.

What the vital system will be, even though yet undeveloped, is very well indicated by Mr. Knight's observation, that if in women, he were shown merely a face, short and round, full in the region of the forehead, and having what are commonly called chubby cheeks, but contracted and fine in the nose and mouth, he would unhesitatingly predict the trunk to be wide and capacious, and the limbs to taper thence to their extremities.

As to excess of the vital system, it should be remembered that the impressions made on the skin of the abdomen during gestation, and on that of the mammæ during lactation, result chiefly from a large vital system being united with a small locomotive system, in

which case, the skin of the abdomen and breast is always too tight.

It is preferable that the female should give to progeny the vital system, which in her is always most developed.

In concluding these guides as to the vital system, I must observe that an irritable and impassioned temperament is unfavourable to conception. So is excessive voluptuousness.

Chastity, on the contrary, adds to the force of love, and to the vigour of its organs, and is a sure means of fecundity. Hence animals which yield to the reproductive impulse only at the rutting time, conceive easily. Hence Lycurgus forbade any intercourse between the sexes till a fixed age, which rendered the maidens andromanes.

Moreover, intercourse between the Spartan husband and wife, as they could obtain only furtive enjoyments, was always attended with strong passion and volition. This not only rendered enjoyment more intense, but generated children strong both in mind and body. Nature uses the same means for the preservation of nobleness and beauty among inferior animals: the most vigorous males are always preferred by the females, and the former repel the weaker by force.

This vigour of love, however, has nothing to do with morbid passion or spasm. If woman experiences any spasmodic convulsion, it interferes with conception. Voluptuous spasms are succeeded by weakness and relaxation; the local contraction and closing of the matrix occurs less frequently and less

perfectly; and women thus circumstanced are barren.

We accordingly find that the inhabitants of hot climates, though of warm temperament, have fewer children than those of colder climates, whose passions are more moderate.

We also know that the Arabs race their mares till they are fatigued, before they are put to the stallion, as it renders them weaker and less lascivious; and, in this country, the practice of throwing cold water over the body of a too lascivious animal has evidently for its object to lower the erotic temperament, and to produce a closing of the matrix.

Considering this question in its connexion with pregnancy, it is evident that these frenzies of love counteract the views of nature, and are injurious to the developement of the fœtus.

Certain it also is, that children born of parents either too young or too old, or in a state of mental or bodily disease, in intoxication, or in languor, never possess the excellent organization, observable in children engendered under more favourable circumstances.

The first exercise of her new faculty causes some remarkable changes in woman. Her neck sometimes swells and augments in size: the cause being that the brain at this period becomes more subservient to purposes connected with generation; the communication between the trunk and the head is more frequent, intense and sustained; and the neck, which contains the communicating organs, necessarily increases in size.

The women of calmer temperament, whose placid features announce a gentler and more passive love, often owe to marriage more splendid beauty; while in impassioned women, freshness disappears, and flaccidity succeeds to elasticity.

During pregnancy and suckling, the former generally retain plumpness, while the latter generally become meagre.

Renewed conception, pregnancy, delivery and suckling, hasten debility in feeble, ill-constituted, unhappy and dissipated women.

Having now said all that seems necessary as to the particular causes of aptitude for reproduction,—the chief considerations as to choice which fall under the vital system,—we naturally arrive at the special suitableness of individuals to each other respectively.

It has already been seen that, for the object of nature to be attained, there must not be too great a disproportion of age between the husband and wife.

It is necessary to consider intermarriage, as correcting faulty organization in the vital system.

Excessive length of body, shortness of limbs, and fulness of form, common to our south-eastern counties, may, in progeny, be corrected, as already indicated, by intermarriage with the shorter bodied, longer limbed, and meagre framed northern races.

As to minuter circumstances in the vital system, it has been seen that the dry seek the humid; the meagre, the plump; the hard, the soft; the rough, the smooth; the warm, the colder; the dark, the fairer, &c.; and that, if here any of the more usual sexual

qualities are reversed, the opposite ones will be accepted or sought for.

Even as to colour, Mr. Knight's remark should be borne in mind.—"I prefer a male of a different colour from the breed of the female, where that can be obtained; and I think that I have seen fine children produced in more than one instance, where one family has been dark, and the other fair."

The union of different temperaments and opposite organic predominances, should be favoured; but the notion that the bilious might advantageously be joined with the lymphatic or the sanguine, or that a person in whom any organ is too much developed or too irritable, might contract an alliance with one in whom the same organ is inferior to the others in strength and irritability, is founded in the error that both parents may communicate parts of the same system.

Pleasure, or, at all events, the absence of antipathy in the mental nervous system, seems necessary to the formation of a new being; and at least unity or simultaneous concurrence in the vital nervous system are evidently essential. When, on the contrary, there is too great a difference of character, and a married pair cannot enter even into momentary harmony, barrenness must be the result.

We are, indeed, assured that there have been cases in which antipathy, disgust, hatred and even anger, have not proved positive causes of sterility.—But, in these cases, there were periods of conciliation.

Sometimes a difference, an unconquerable incompability of certain points of character, may render any kind of union impossible between two persons, who,

when afterwards paired with other mates, have large families, or who obtain these when age or custom has reduced them to relative harmony ; and hence couples, that have been childless for fifteen or twenty years, give birth to children at a more advanced age.

Upon the whole, it appears, as has been already said, that of marriages founded solely on interest, and accompanied either by indifference or antipathy, the results are domestic misery, sterility, or weak and unhealthy children, and numerous crimes.

Place and time, is relation to fruitfulness, are next worthy of notice.

Races inhabiting countries that are moderately cold, are generally more fruitful than those inhabiting hot climates.

In a given number of inhabitants, the provinces furnish a greater quantity of births than their capital cities ; notwithstanding the poverty of the peasantry, their coarse and scanty diet, and the toils of agriculture.

The poor quarters of a large town swarm with children ; while those inhabited by the wealthy are almost deserted. Indeed, if our cities were not recruited with the surplus population of the country, they would soon become dreary solitudes.

Observation has proved that the spring and summer are the seasons most favorable to conception.

This is determined by the number of births not being distributed over the different periods of the year, but mostly occurring in winter. According to an investigation of the civil registers of Paris for six successive years, the months in this respect range in the

following order,—March, January, February, May, August, October, September, July, November, June, December.

The months, therefore, most favorable to conception are June, April, May, July, August, November.—It is observed, however, that in the richer classes of society in France, who live in the midst of all the accessories of luxury, and make winter their season of enjoyment, the majority of conceptions occur in the months of January, February, and March, and the births in Autumn.

Observation shows that conception takes place more easily after the eruption of the catamenia. Enlightened practitioners now universally grant that "a frugal diet and light food is equally desirable for children both before and after birth; and that milk is more plentiful in a mother who lives upon vegetables and the milk of some quadruped, than in her who pampers herself with delicate and substantial food." Wine, which is injurious to all men without distinction, cannot fail to be very prejudicial to pregnant women.

During this period, it is also granted that women who lead an active life perceive scarcely any change in themselves, excepting the cessation of the periodical flow and a great sensibility of the mammæ. It would therefore be of great importance to abrogate the custom, so prevalent at present amongst females, of remaining constantly idle.

"The very easy labours of Negresses, native Americans, and other women in the savage state," says Mr. Lawrence, "have been often noticed by travellers.

This point is not explicable by any prerogative of physical formation; for the pelvis is rather smaller in these dark-coloured races than in the European and other white people. Simple diet, constant and laborious exertion, give to these children of nature a hardiness of constitution, and exempt them from most of the ills which afflict the indolent and luxurious females of civilized societies."

Some important data, however, are here overlooked by Mr. Lawrence. Roussel observes that, "The women of the Ostiaks have no anxiety as to the time of their lying-in, and do not take any of those precautions which the delivery of European women renders almost indispensable to them. They lie-in wherever they may be, without being embarrassed; they, or the persons who assist them, plunge the new-born infant into water; and the mothers speedily resume their usual occupations, or continue their progress if they are on a journey. As these people are situate near the Samoiedes, and are found between the fifty-ninth and sixtieth degrees of northern latitude, this vigorous constitution has been ascribed to the severity of the climate . . . The women however of the island of Amboyna, toward the third degree of southern latitude, are similarly circumstanced; and authors discover the cause of this in the heat of the climate, which renders, say they, the members of women supple and capable of adapting themselves without difficulty to the efforts of delivery. We may, from this, see how manageable upon this subject are the explications derived from cold and from heat."

The fact is, that the function of parturition is al-

ways more painfully discharged in intellectual regions than in barbarous ones. Travellers have observed this fact, without knowing how to account for it. Nay, they have observed, without attempting to explain the decisive fact, that, in countries where child-birth is naturally easy, it generally becomes difficult if the native woman has been impregnated by a European man.

"This wonderful facility," say Lewis and Clark, "with which the Indian women bring forth their children, seems rather some benevolent gift of nature, in exempting them from pains which their savage state would render doubly grievous, than any result of habit. If, as has been imagined, a pure dry air, or a cold and elevated country, are obstacles to easy delivery, every difficulty incident to that operation might be expected in this part of the continent: nor can another reason, the habit of carrying heavy burthens during pregnancy, be at all applicable to the Shoshonee women, who rarely carry any burdens, since their nation possesses an abundance of horses. We have indeed been several times informed by those conversant with Indian manners, and who asserted their knowledge of the fact, that Indian women pregnant by white men, experience more difficulty in child-birth than when the father is an Indian. If this account be true, it may contribute to strengthen the belief, that the easy delivery of Indian women is wholly constitutional."—This fact is worth a thousand volumes of speculation.

It cannot indeed be doubted that our early education and subsequent life, consisting in thought and

study, even in the artisan, develope the cerebral organs. The difficulty of parturition is greatly owing therefore to the increased capacity of the head. In Genesis it is said, that God condemned woman, after she had tasted of the tree of knowledge of good and evil, to a painful delivery. The allegory, if it is one, as St. Jerome and other fathers of the Church have thought, is beautiful and just.

The round head of the English corresponds exactly with their round pelvis. I had long remarked these separately, without seeing the connexion between them. The pubes, however, which is round in round-headed nations, as the English, is prominent in long-headed nations, as the Scottish. Hence an English woman will suffer more in giving birth to a child by a Scottish man.

Sir Anthony Carlisle informs me, that "Mrs. Wolstonecraft, one of the heroines of her time, and an extraordinarily sensible woman, informed him that the stories about the pains of parturition were excessively exaggerated. And although she died in child-bed, the event was entirely owing to the mismanagement of an impatient doctor."

Professor Chaussier, in solving a question that has reference to medical jurisprudence, is said to have hit upon the idea of examining what point is the middle of the body in an infant of a certain age. He observed that, at six months, it is under the breast-bone or sternum; at eight months, above the navel; and at forty weeks, at the navel itself. The utility of this examination, if it be well founded, is evident, as it would serve to prove whether a child is born at its

proper time, and, in a more enlarged view, to fix the fact whether at a certain epoch one portion of the body is or is not in just proportion with the rest. This would open a new field to the researches of the artist who wishes to study the character of each age, and to the physiologist who takes an interest in gaining an improved knowledge of individuals.

A knowledge of the laws announced in this work, is of great importance in determining the parentage of a child.

Thousands of doubtful cases occur, in consequence of the face presenting little resemblance to one of the parents, and from other causes which may really or seemingly corroborate this one. These laws, however, show that the lineaments of the other parent will always be discovered in the figure, &c.

Here it must be observed, that the doubts arising from this want of resemblance in the face, would much more frequently occur, were it not, that, along with the form of the backhead, which the other parent imparts, go the common appetites, sympathies and passions which bind them together as insensibly as surely. This explains why the parent is generally most attached to the child which is least resembled in face.

The importance of these laws in the guidance of education is not less obvious; for it is evident that they not only indicate the capacity of the child, but corroborate this by all the parent's own experience, whence he will naturally seek eagerly to profit in the person of his child.

As to diseases, parents transmit to children organi

zation more or less developed and irritable, and corresponding functions; and hence must arise hereditary dispositions to disease—scrofula, consumption, gout, rheumatism, insanity, &c. "There is more doubt," says Mr. Lawrence, "in some other cases, as hair-lip, squinting, club-foot, hernia, aneurism, cataract, fatuity, &c.; of which, however, there are many well-authenticated examples.—I have attended, at different times, for complaints of the urinary organs, a gentleman, whose father and grandfather died of stone."

Mr. Knight (1, December) says, "Has it ever been publicly noticed that, in consumptive families, the hazel and black-eyed children die, and the blue-eyed live? In observations which I have made during the last fifty years, I have never seen a blue-eyed young subject grow into a consumption, that is, I never saw a blue-eyed young person, who grew rapidly, who was tall and slender, with narrow shoulders, contracted chest, and who died about the age of puberty. Whether this circumstance has or has not been noticed by pathologists, the fact is, I am quite certain, correct. A man whose constitution has a consumptive tendency, should therefore choose a blue-eyed wife."

---

## SECTION IV.

### AS TO THE MENTAL SYSTEM.

This system is not to be sought for, at the cost or to the neglect of the vital system. "Powers of

thought," as Mr. Knight observes, (1, December) "when much exercised, require powers of stomach, for if the stomach feels disordered, the head does not continue clear."

On the other hand, the vital system must not be sought for, to the neglect of the mental. "It deserves well," says Kames, "to be pondered by the young and the amorous, who in forming the matrimonial society, are too often blindly impelled by the animal pleasure merely, inflamed by beauty. [That of the vital system being evidently here alluded to.] It may indeed happen after pleasure is gone, and go it must with a swift pace, that a new connexion is formed upon more dignified and more lasting principles: but this is a dangerous experiment; for even supposing good sense, good temper, and external merit of every sort, which is a very favourable supposition, yet a new connexion upon these qualifications is rarely formed: it generally or rather always happens, that such qualifications, the only solid foundation of an indissoluble connexion, are rendered altogether invisible by satiety of enjoyment creating disgust."

"In the woman possessing this species of beauty," as shown in my work on that subject, "the greater developement of its upper part gives to the head, in every view, a pyriform appearance;—the face is generally oval;—the high and pale forehead announces the excellence of the observing faculties;—the intensely expressive eye is full of sensibility;—in the lower features, modesty and dignity are often united; she has not the expanded bosom, the general plumpness, nor the beautiful complexion of the second

species of beauty ;—and she boasts easy and graceful motion, rather than the elegant proportion of the first. The whole figure is characterized by intellectuality and grace.

"This species of beauty is less proper to woman,—less feminine, than the preceding. It is not the intellectual system, but the vital one, which is and ought to be most developed in woman."

The first modification of this species of beauty, is that in which the developement of the organs of sense is proportionally large, and the sensibility great.

The second modification of this species of beauty is that in which the developement of the brain, the forehead excepted, is proportionally small.—Hence the mental system, in woman, is subordinate to the vital; and the reverse is inconsistent with the happy exercise of her faculties.

The third modification of this species of beauty is that in which the developement of the cerebel or organ of the will, as well as its muscles, is proportionally small. Conformably with the smaller size of the cerebel, and especially with its smaller breadth—its elongated form, (the influence of which is explained in my works on "The Nervous System," "Physiognomy," and "Beauty,") the disposition of woman to sustained exertion is much less than that of man.

Scott describes a subordinate modification of beauty of the mental system, when, speaking of Lady Binks, he says, "The sultana-like beauty of the haughty dame, which promised to an admirer all the viscissitudes which can be expressed by a countenance lovely in every change, and changing as often as an ardent

and impetuous disposition, unused to constraint, and despising admonition, should please to dictate." In this peculiar modification, the locomotive system is generally handsome; the vital system displays the sanguine temperament; and in the mental system, intelligence is considerable, though emotion and passion dominate.

This modification I have observed to prevail among the women of Italy, who, by means of it, obtain that command over their lovers for which they are celebrated—a command, however, which they could neither achieve nor maintain, were it not that they blend with this, no inconsiderable degree of the uterine, or, more correctly, the ovarian temperament, and every art of inspiring love.

I have also observed that to men who require excitement, whether in consequence of cold temperament or of exhaustion amidst pleasures, this modification of beauty has great attractions: the slightly offended movement of the elegant figure, the flush of the beautiful cheek, and the flash of the kindling eye, awake them to life, admiration and pleasure. They forget that, of all passion, premature old age and ugliness are the sure results.

To the last of these works, I must refer the reader for an account of the points of beauty in the mental system; and in the head and face in particular: it would be unfair to transfer them to this work.

I will here only observe, that the facial angle of Camper shows the developement of the most important portion of the brain in the anterior, or, as Dr. Barclay more correctly terms it, the antinial direction,

and the proportion which it bears to the organs of sense and expression in the face;—that the height of the forehead cannot, without deformity, and injury to various functions, exceed the space from the forehead to the bottom of the nose, or that from the nose to the bottom of the chin:—and that the nose should descend in nearly the same line with the forehead and with little indentation under the glabella or space between the eye-brows, the reason of which I first pointed out.

I may add, that the skin should be thin and delicate;—that the mouth should be small, the lips delicately outlined, and becoming thin towards their commissures, while the under lip should be most developed and turned outward;—that the nose should be as already described:—that the eyes should be large and elongated, with irides blue, hazel or black, eyelids very gently inflected, eyelashes long and silky, and eyebrows, fine, arched and moderately separated;—that the ears should be rather small, with unbroken curves, and with little prominence;—that the cheek-bones should display beautiful curves, the teeth form a longer ellipsis than in man, and the chin be softly rounded;—and that the facial muscles should be feeble.

Finally, I may observe, that the whole countenance should be softly rounded; that the colour of the forehead, temples, eyelids, nose, and lips where undeveloped, should be of rather an opaque white, that of the approach to the cheeks and the middle of the chin of a slight tint of rose-colour, and that of the middle of the cheeks altogether rosy but delicate;—that, from

the anterior part of the head, the hair should divide in a vertical direction;—and that the faulty feature, which is found in all faces, and which always exaggerates, should be carefully looked to.

Such being the essential characteristics of this system in woman, the best guidance in choice is thereby offered. One or two observations may be added, as to the exercise, employment and combination of these organs in relation to choice.

It is known that the more any of the organs of the body are employed, the more they are developed in size, and *vice versa.*

Now, in the opulent classes, the organ of thought being less employed, its volume gradually diminishes, and intellectual power is gradually lost.

It has further been seen that, when one parent communicates to a child the form of the face generally and the forehead, the other will be found to communicate the form of the posterior part of the head; and, while the child has the observing, imitating and other faculties of the former, it will be found to have the passions, acts of the will, &c. of the latter. The proportion therefore which exists between these parts in the heads of parents, is nearly decisive of the character of their progeny: if they be feeble in both parents, they must also be so in the offspring. Hence the perpetually increasing degeneracy of aristocratic families.

Moreover, in this case, the degraded organization is every hour still further degraded by the operation of the same circumstances on the child which operated on the father.

Hence the justice of Mr. Knight's observation, (1, December) "Amongst ancient families, quick men are abundant; but a deep and clear reasoner is seldom seen. How well and how readily the aristocracy of England speak! how weakly they reason!"

This leads to the observation that "there is a feeling very generally entertained by literary and scientific individuals, that only those physical and moral qualities need be looked for in a wife which render her a good mother and a domestic house-keeper, and that a cultivated mind is of little importance." But this is a great error, not merely because these men being compelled by their profession to remain much at home, are obliged, from having no one to comprehend them, to think alone, but because uneducated women are sure to communicate lower mental faculties to children.

Kames very sensibly observes, "that in the common course of European education, young women are trained to make an agreeable figure, and to behave with decency and propriety: very little culture is bestowed on the head; and still less on the heart, if it be not the art of hiding passion. Education so slight and superficial is far from seconding the purpose of nature, that of making women fit companions for men of sense. Due cultivation of the female mind, would add greatly to the happiness of the males, and still more to that of the females . . . Married women in particular, destined by nature to take the lead in educating their children, would no longer be the greatest obstruction to good education, by their ignorance, frivolity, and disorderly manners of living.

Even upon the breast, infants are susceptible of impressions; and the mother hath opportunities without end of instilling into them good principles, before they are fit for a male tutor."—Kames, however, takes no notice of the transmission of organization and function.

The better education of women is thus of greater importance to their progeny than is commonly imagined.

Habits and pursuits long followed in families, develope, as Mr. Knight observes, the organs which they employ. It is important, therefore, as he also observes, that the minds of the ancestry should have been exercised in some way; and the progeny will generally be found best calculated to do that which the parents, through successive generations, have done.

Confining our observations, however, even to the individuals themselves. Two persons who are equally violent, passionate and capricious, are rarely susceptible of union. It is well therefore that in the mental system, the irritable seek the calm; the grave, the gay; the impassioned, the modest; the impetuous, the gentle; &c., or in opposite cases, the opposite.

As to insanity, it must, in choice, be especially remembered that if, in one parent, the forehead and the observing, imitating and other faculties are very defective, and if, in the other parent, the backhead and the exciting faculties, the passions and the will, are equally defective,—as each parent may communicate either the anterior or the posterior organs, in this case, the offspring may receive the very defective forehead and observing faculties of one parent, and the very

defective backhead and motive faculties of the other, and that the idiocy of such offspring would be the inevitable result;—that if, in one parent, there be but one of the portions of the head well developed, and in the other, neither portion, then there is but one chance of sanity against three of insanity or of defect;—and that if, on the contrary, in one parent, there be both portions of the head well developed, and in the other one portion, then there are three chances of sanity against one of defect.

Now, suppose mental incapacity or aberration to exist in a slight degree, in consequence of defect or excess of any of the great portions of the brain alluded to, and on this it will generally be found to depend, the most prejudiced will not dispute that, in this case, if marriage be inevitable, its victim should have the very opposite structure.

A little reflection will show that a family having either forehead or backhead ill developed, may correct this in one generation; while a family having both forehead and backhead ill developed, cannot correct it in less than two generations—that is, by a substitution of both portions of the organization, by two successive intermarriages.

In regulating the first changes produced, it must be remembered:—

That the forehead may, in progeny, be elevated and projected, if a more projecting backhead and cerebel be united with it;

That the forehead may, in the progeny, be broadened, if a broader backhead and cerebel be united with it;

That a round face will, in progeny, be elongated and projected inferiorly, if a more projecting backhead and cerebel be united with it;

That a narrow face will, in progeny, be broadened, if a broader backhead and cerebel be united with it;

That an equality or similar proportion between the organs combined in children, is always productive of more or less beauty, whatever the size of these organs may be, and that, on the contrary, an inequality or disproportion between the combined organs is always productive of ugliness;

That, accordingly, where there is symmetry of head, there is symmetry of face, or beauty; and where there is want of symmetry of head, there is want of symmetry of face, or ugliness;

That thus a prominent backhead added to a smaller forehead, always produces a disagreeable projection of the lower parts of the face—generally of the under lip and lower part of the nose;

That, on the contrary, a small backhead added to a very large forehead always produces a not less disagreeable contraction of the lower part of the face;

That beautiful parents produce ugly children, when the organs in the new combinations are worse adapted to each other than in the old ones;

That ugly parents produce beautiful children, when the organs are better adapted to each other than in the old ones;

That thus the mere relative proportion of the organs combined in children is a great cause of beauty or of ugliness, and there are no exceptions to its influence;

That while muscular power depends on the poste-

rior series of organs—the locomotive system in particular, beautiful action depends on the anterior series of organs—the sensitive system—the eye in particular, and that therefore these qualities must not be expected from one parent;

That if, in one parent, sensibility exceed volition in a greater degree than in the other, that parent must communicate the anterior series of organs—the organs of sense, the anterior part of the brain, and the vital system;

That, on the contrary, if in one parent, volition exceed sensibility in a greater degree than in the other, that parent will doubtless communicate the posterior series of organs—the cerebel and the muscular system:

That, therefore, by regulating the relative youth, vigour and voluntary power of the father and mother, either may be made to give to progeny the voluntary and locomotive systems, and the other, the sensitive and vital systems—though it is preferable that the sire should give the former and the dam the latter, as being the systems in which naturally they respectively excel.

That all the differences in the features of children who yet resemble the same parent, are mere modifications of those of that parent (those produced by the cerebel of the other parent excepted,)—such modifications as that parent might assume under the influence of different emotions—such modifications as that parent actually has assumed, and therefore has in these very instances communicated.

That, in the act of reproduction, the senses con-

nected with intellect, the eye and the ear, or those connected merely with life, may be employed, and the new being may be the product and the personification either of mere intellectual or mere sensual pleasure!

That, according to the state and action of each of these organs in the parent, will each be feeble, moderate, or greatly developed, faintly out-lined, delicate, or coarse, in the progeny.

Finally, it is frightful to observe the manner in which some writers speak of insanity as a bar to marriage.—A French writer says, "All agree in preventing marriage as long as the insanity presents any character of decided continuance, and all recommend it, if in her lucid intervals the young girl manifests any strong desire for marriage, or any inclination to unite with the object of her choice. [Her progeny, of course, will be as prone to insanity as herself!] The effects that marriage will produce on her may be judged of by observing the nature of the agreeable impression made upon her by the announcement of the approaching union. [The man who plays so hazardous a game must be worthless.] But if she suffers a fresh attack when she first learns the certainty of her marriage, I think it would be imprudent to solemnize it, unless her insanity assumed the character of erotic monomania, or nymphomania properly so called." [And then the man may hope that his daughters will only display their graces in furor uterinus!]

"With somnambulism and melancholy, it is different. These two conditions rarely present any motives for opposing the marriage of a young girl. It is more than probable that they will be removed by the

new kind of excitement this organ receives in the varied and lively emotions occasioned by the married state." [But they may not be removed!] They may recur under new circumstances! And it cannot be pleasant to reflect that a man may any night awake to discover that his wife has gone undressed upon a shopping excursion, or that his child is amusing an assembly of policemen on the other side of the street by journeying astride upon the house top; for if the portion of the organization on which this depends be communicated, the tendency to such disease will as surely be communicated.]

It has been shown that, from ignorance of the relative proportions of cerebral parts, and of the influence of such proportions over the mental capacity of progeny, sane parents often produce insane children. A fact more alarming can scarcely be presented to a reflecting mind; nor can any condition more distressing to a parent be imagined. If the facts here stated be accurate, and the inductions from them be true, that condition henceforward will not be more distressing than criminal.

# CATALOGUE

OF

# IMPORTANT WORKS

PUBLISHED BY


## HENRY G. LANGLEY,

**8, ASTOR HOUSE, BROADWAY,**

**NEW-YORK.**

**1844.**


---

### M. DE TOCQUEVILLE'S GREAT WORK.

**DEMOCRACY IN AMERICA,**

By Alexis De Tocqueville.

New complete edition, in 2 vols. 8vo. Corrected and Enlarged, with a Map and Original Index. Translated by Henry Reeve, Esq., with Introductory Prefaces, by the Hon. John C. Spencer. Price $4 00 in muslin, $4 50 sheep.

"This work is one of the most profound and philosophical ever written upon the character and institutions of our country."—*Boston Traveller.*

"As a study of political science, this book stands unrivalled in our times, equally remarkable for lucidity of style, acuteness and delicacy of reasoning, and for the moral and intellectual vigour with which it has been conceived and completed."—*London Times.*

"We recommend M. De Tocqueville's work as the very best on the subject of America we have ever met with."—*Blackwood.*

"In our deliberative judgment, this is the most original, comprehensive and profound treatise that has ever appeared regarding our Republic. A treatise which is destined to live and take rank with the master works of former ages. It is a text book for those who wish to arrive at a right understanding of the political and social structure of the institutions of our country."—*Merchants' Magazine.*

## DE TOCQUEVILLE ABRIDGED.

DESIGNED FOR DISTRICT SCHOOL LIBRARIES, COLLEGES, &C.

In accordance with the recommendation of several superintendents of District Schools, the Publishers beg to announce that they have in active preparation, a condensed edition of the above standard work, adapted expressly for the use of District Schools, Colleges, &c., to form 2 vols. 12mo., and at a price which will render it accessible to all classes.

## IMPORTANT NATIONAL WORK,

PRINTED UNDER AUTHORITY OF CONGRESS.

In three Vols. Octavo.

## THE MADISON PAPERS.

Comprising the debates of JAMES MADISON in the Congress of the Federation of 1782-83, and 1787, with letters and other extracts; also his debates in the Federal Convention of 1787.—Now published from the Original Manuscripts, deposited in the Department of State, by direction of the joint committee of Congress, under the superintendence of Henry Gilpin, Esq.—Illustrated by fac-similes of the original manuscripts, including that of the *Declaration of Independence*. Price $9 muslin, $10 sheep.

The character of Mr. Madison's Writings, especially those portions which refer to the transactions of the Congress of the Confederation—constituting a part of our national archives at one of its most eventful crises—possesses, not only great historical value, but acquires an increasing interest as the great epoch to which they relate becomes more and more remote. The Debates and the Correspondence refer with brevity to a variety of subjects in the order of their occurrence, and also to the remarks, conduct, and opinions of many distinguished persons in public life. Besides much of the proceedings of Congress, these volumes comprise portions of the Diplomatic Correspondence, which is exceedingly valuable, and letters of eminent men of the time, &c.

"The publication of these long-desired 'Madison Papers' affords one of the few instances in literary history, in which the public expectation, though raised to a high pitch, has been fully satisfied. The nature of the subject with which the work is occupied, sufficiently establishes its intrinsic importance.—By a fortunate concurrence of circumstances, this precious document is presented to us in a form so nearly perfect, that it would perhaps be difficult to point out any particular of the least consequence in which it could be improved.—Prepared, elaborated and perfected, it has at length come before the country. We receive it with welcome, as a precious treasure for ourselves and our offspring through all future time."—*Alex. H. Everett, in Democratic Review.*

## COMMERCE OF THE PRAIRIES,
## OR THE JOURNAL OF A SANTA FE TRADER;

Being personal observations of a Trader, made on eight several expeditions across the Great Western Prairies, and during an almost uninterrupted residence of nine years in North Mexico. Embracing some account of the Natural History of those Prairies, and many new particulars of the Frontier Indians—of the Wild Tribes of the Plains—and of the New Mexican Indians of the North; and also Historical Sketches of the Past and Present Condition of New Mexico, its inhabitants, their manners, customs and superstitions: to which is prefixed a brief Narrative of the Origin and Vicissitudes of the United States and Santa Fe Trade. Illustrated with numerous engravings. By *Josiah Gregg*, 2 vols. 12mo. Price $2 00.

"This work presents to the mind's eye the picture of the vast prairie ocean, which bounds with its eastern shore a portion of our border, awakening to the life and bustle of a maturing civilization. It presents by far the most complete and reliable account of our overland commerce with Mexico, and the kind of life led by those who engage in it, of any work that has ever been printed, to our knowledge. It is marked by a cautiousness of expression, and an indisposition to exaggerate or overstate, which at once commands our utmost confidence in the author's fidelity; Mr. Gregg's statements, moreover, are entitled to special consideration, as he has, perhaps, a larger experience in this trade than any other living writer:—having taken the lead in eight or nine expeditions." —*Democratic Review.*

## THE POETICAL WORKS OF PRAED.

## LILLIAN, AND OTHER POEMS,

FANCIFUL AND FACETIOUS.

By WILLIAM MACKWORTH PRAED.

First Collected edition. Edited by R. W. GRISWOLD, 1 vol. 12mo. muslin. $1 25.

"Praed's Lillian, and indeed his poetical works generally, are among the most beautiful things of the kind of which our language can boast."—*Pennsylvanian.*

"The writings of this admired poet are among the finest imaginative productions in the language; the principal poem, Lillian, has been justly esteemed one of the gems of true poesy; while the minor pieces comprised in the present volume, and now for the first time collected together, evince the most refined humour and pathos, as well as the no less charming attributes of ethereal and chastened beauty."

"Praed was the Poet of Society, 'a fellow of infinite humour,' and in scholarship and art, surpassed by none of the English poets of the age. Though many of his pieces have been almost universally read in this country, they have never yet been printed collectively, either here or in England."—*Democratic Review.*

## MRS. SEDGWICK'S NEW WORK.

## ALIDA, OR, TOWN AND COUNTRY.

By the author of "Allen Prescott," &c. 1 vol, 8vo Price 50 cents.

## COMPLETE HISTORY OF LITERATURE.

In one vol. 12mo. Fifth Edition.

## LECTURES ON THE HISTORY OF LITERATURE,

BY FREDERIC VON SCHLEGEL. TRANSLATED BY J. G. LOCKHART.

WITH A SERIES OF QUESTIONS FOR SCHOOLS, BY PROF. FROST.

Price $1 25, muslin.

"By far the most profound view of the history of Literature which has yet been presented."—*Blackwood.*

"One of the most valuable works that ever adorned a library."—*Herald.*

"This work is destined to universal popularity; its beneficial influence will be coeval with the existence of literature and civilization."—*Literary Gazette.*

"Schlegel, standing as it were upon the *Alp* of time, sketched with an artist hand the glorious literary panorama lying beneath the horizon of the past. With the intuitive perception of genius, he unfolds to us the mechanism of each system of ancient philosophy that spent its ephemeral breath in struggling for a supremacy, which, if temporarily attained, was early lost from the want of an innate, self-sustaining, vital principle. The occult sciences, poetry, languages, exploded sophisms, &c. are presented to the eager eye in groups wrought with the same vivid, life-like portraiture, with here and there —like the *air* amid the most complex sounds in music—an acute critical aphorism interspersed; so fascinating in its keen subtlety, that we are lost in admiration."—*Louisville Journal.*

## MADAME DE STAEL'S CORINNE.

## CORINNE; OR, ITALY.

With Poetic Illustrations by L. E. L. 1 vol. 8vo. Price 50 cents.

This exquisite work of fiction,—the acknowledged *chef d'œuvre* of Madame De Staël,—has long been regarded by the reading community as one of the classics of modern times. It will be sufficient for those who may not already have enjoyed the privilege of its perusal, to subjoin a brief allusion to its high merits taken from the published diary of the late Sir James Mackintosh, no mean authority in literary criticism; he says,—"I have not received the original, yet I can no longer refrain from a translation:"—the second and third volumes I swallow slowly, that I may taste every drop; I prolong my enjoyment, and really dread its termination. It is a powerful and extraordinary book, a single sentence of which has excited more feeling, and exercised more reason, than the most esteemed models of elegance!" The poetical contributions of L. E. L. add much to the value of this edition.

## THE M'KENZIE CASE.

The Proceedings of the Court of Inquiry and Court Martial, with an elaborate Review. By JAMES F. COOPER. 1 vol. 8vo., muslin, $1 00.

The absorbing interest which the tragic occurrences on board the ill-fated brig Somers, under command of Capt. M'Kenzie, has awakened throughout the whole country as well as in Europe, will impart to this, the only complete and authorized record of the facts, great and permanent value; added to which, the work includes an elaborate review of the whole subject, by James Fenimore Cooper, Esq., occupying nearly one hundred pages.

## ELIZA COOK'S POEMS.

In one beautifully-printed volume,

## MELAIA, AND OTHER POEMS.

BY ELIZA COOK.

Richly embellished with twelve finely-executed English Engravings—Copies in morocco super. $3 50, cloth gilt, $3 50.

"This is a beautiful volume, splendidly bound, still more elegantly illustrated, and combining some of the choicest poems in the language. '*The Old Arm Chair*,' is one of her most popular poems, and has touched the hearts of thousands who never knew even the name of the author. She writes for the heart, and her beautiful songs always reach it. The book contains twelve beautiful English engravings, and forms one of the most elegant holiday presents yet offered."—*Cour. & Enq.*

"We know of no other living writer of verse, whose productions have been so generally linked with the magic of the sister muse: and a great portion of the present collection, which includes numerous new and very pleasing pieces, will doubtless be yet laid under similar contribution by our musical composers. For our own part, we give unqualified preference for this elegant volume—for elegant it assuredly is as to its embellishments, printing, and costly exterior—to any of the boasted *Annuals* we have seen."—*Democratic Review.*

"This beautiful volume may be styled, as we observe it has been already by some, the *Gem of the Season*. It equals the best efforts of our emulative and enterprising publishers; and, whether we consider the exquisite finish of its embellishments, its elegance of typography, or its very chaste ornamental binding, it fully sustains our assertion."—*Merchants' Magazine.*

## MRS. ELLIS'S POPULAR WORKS.

OVER 80,000 VOLUMES SOLD!!

Now Ready, in 8vo. price 25 cents,

## THE MOTHERS OF ENGLAND,

THEIR DUTIES, RESPONSIBILITIES AND DOMESTIC INFLUENCE.

"An excellent practical work; there is no straining after fine writing, no sacrificing truth to effect; but what is far better, the writer has discharged her duty with diligence and faithfulness, seeking, as she tells us, to point out to her countrywomen the means of 'winning back to the homes of England,' the boasted felicity for which they were once so justly famed."—*Christian Examiner.*

II.

## THE WIVES OF ENGLAND,

THEIR RELATIVE DUTIES, DOMESTIC INFLUENCES, AND SOCIAL OBLIGATIONS.

PRICE 25 CENTS.

"One of the most attractive works that ever emanated from the press. The amiable authoress has taken an untrodden path, her themes are as novel as they are interesting—she enters the very sanctuary of home, and lifting the veil that hides from the vulgar gaze, portrays with life-like effect, the hallowed scenes of the domestic circle. Her delineations are characteristic of a highly-refined and gifted intellect, and invested with such a pleasing, gentle, and amiable spirit, that wherever her works are read, they at once receive the ready tribute of our admiration."—*New World.*

III.

## THE DAUGHTERS OF ENGLAND,

THEIR POSITION IN SOCIETY, CHARACTER, AND RESPONSIBILITIES.

PRICE 25 CENTS.

"We have perused this honest and searching work with much satisfaction, and can confidently recommend it to every mother who wishes her daughters to become really useful members of society; and to every young female who has the wisdom to prefer esteem to admiration."—*Christian Adv.*

IV.

## THE WOMEN OF ENGLAND,

THEIR SOCIAL DUTIES AND DOMESTIC HABITS.

PRICE 25 CENTS.

"We know no volume better calculated to exercise a powerful, lasting, and beneficial influence. If we could have our own way, every family should order a copy of 'The Women of England.' *Husbands, especially young Husbands, should buy it for their Wives; Fathers, for their Daughters; Brothers, for their Sisters.*"—*Methodist Magazine.*

V.

## THE POETRY OF LIFE,

In one volume, 8vo., 250 pages. Price 37½ cents.

VI.

## A VOICE FROM THE VINTAGE,

OR, FORCE OF EXAMPLE: ADDRESSED TO THOSE WHO THINK AND FEEL.

PRICE 12½ CENTS.

"We do not hesitate to pronounce this one of the best as well as one of the most useful, of Mrs. Ellis's highly popular works. Whatever she attempts is accomplished in a clear, vigorous and masterly manner—grappling her subject with a strength and grasp of mind truly astonishing to all, more especially to those who argue that depth of thought and wisdom are the attributes of the sterner sex only."—*Washingtonian.*

VII.

## PICTURES OF PRIVATE LIFE,

FIRST AND SECOND SERIES.

PRICE 25 CENTS EACH.

"This, we believe, was Mrs. Ellis's first work, and in some respects it is her best. It is a simple, truthful and touching delineation of the joys and sorrows, temptations, duties, and blessings of private domestic life, for the purpose of imparting useful instruction, and sound advice. The fiction is wrought with great interest and power, but is always subordinate to a high moral design, and is only assumed as a pleasing medium for the utterance of truths which would lose much of their impressiveness if proclaimed in a didactic form. There are few writers to whom a more cordial commendation can be given, by those who regard the interests of morality and religion, as well as the attractions of style and beauty of sentiment, than Mrs. Ellis."—*Evangelist.*

VIII.

## MRS. ELLIS'S POETICAL WORKS,

Beautifully printed in duodecimo, with a finely-engraved Portrait of the Author.

## THE IRISH GIRL;

## AND OTHER POEMS,

By Mrs. Ellis.

Editions in muslin gilt, $1,25, and morocco extra, $2,25.

IX.

## A FAMILY TREASURE.

In one beautiful volume 8vo., cloth gilt.

## THE DOMESTIC GUIDES OF MRS. ELLIS,

CONTAINING

THE MOTHERS OF ENGLAND.
THE WIVES OF ENGLAND.
THE DAUGHTERS OF ENGLAND.
THE WOMEN OF ENGLAND.

"To wish prosperity to such a book as this, is to desire the moral and physical welfare of the human species."—*Bath Chronicle.*

"The unexampled success attending the works of this gifted writer in behalf of the moral elevation of her sex, has placed her at once at the head of the female authors of any country. The gentle and benign spirit, which is diffused through her various productions, awakens a ready response of the heart to integrity and faithfulness. She appears as a sort of universal mother of her sex, counselling and warning her children upon subjects that most intimately affect their weal or wo ; and this she does with the deep fondness of a Niobe, yet with the stern inflexibility of a Minerva. Her writings exhibit throughout the keenest perception and accuracy of discrimination, coupled with sobriety of judgment, delicacy of sentiment, warmth of feeling, and nicety of adaptation ; and above all, a sweet Christian charity pervades every page.

"Amiable and holy are these lessons, calculated to elevate and purify the young hearts into which they may be received, and to carry those best blessings of love and peace into many a family. Its purity, its morality, its integrity, are all unblemished ; it should be found in every family and carefully studied."—*Metropolitan.*

## THE SELECT WORKS OF MRS. ELLIS.

"We have perused this honest and searching work with much satisfaction, and can confidently recommend it to every mother who wishes her daughters to become really useful members of society ; and to every young female who has the wisdom to prefer esteem to admiration."—*Christian Advocate.*

"Mrs. Ellis is not a stern moralist, who frightens with her severity, but a winning instructress, to whom it is sweet to listen ; and though the volume before us is avowedly one of teaching, it will be read with pleasure, recommended by its taste, its sentiment, and its refinement, even by those whom it may reprove ; and this we think is saying much, for censure is seldom acceptable, and it is a rare thing for the medicine which gives health to give pleasure too."—*Metropolitan.*

## A NEW JUVENILE BY MRS. ELLIS.

In one volume, 18mo.

### BROTHER AND SISTERS,

AND OTHER SKETCHES AND TALES.

By Mrs. Ellis,

Author of the "Mothers," "Wives," "Women," and "Daughters of England," &c. &c. Price 50 cents.

## POPULAR HAND-BOOKS,

Elegantly bound in muslin, gilt edges, and ornamental stamps. Price 25 cents each, or $1 50 for the Series.

I.

### HAND-BOOK OF DREAMS:

Their Origin, History, and Interpretations.

"Even the remembrance of our dreamings will teach us some truths.—*Watts.*

II.

### HAND-BOOK OF DOMESTIC COOKERY:

Containing directions for preparing upward of four hundred dishes.

III.

### HAND-BOOK OF LETTER-WRITING FOR GENTLEMEN:

Containing original letters relating to Business, Duty, Friendship, &c.

IV.

### HAND-BOOK OF LETTER-WRITING FOR LADIES:

Containing original letters on Friendship, Love, Marriage, &c.

V.

### HAND-BOOK OF THE LANGUAGE AND SENTIMENT OF FLOWERS:

Containing the name of every Flower to which a sentiment has been assigned.

VI.

### HAND-BOOK OF MANNERS:

With Rules for the Regulation of Conduct.

"The history of manners, the history of common life."—*Dr. Johnson.*

## M. CHATEAUBRIAND'S ATALA.

In 8vo. neatly printed. Price one shilling.

### ATALA, A TALE.

Translated from the French of Chateaubriand.

By M. J. Smead & H. P. Lefebvre.

"This new translation, in the cheap popular form of publication, of so esteemed and well-known a little classic as the 'Atala' of Chateaubriand, must prove universally acceptable to the lovers of elegant fiction everywhere."—*Democratic Review.*

## ONE HUNDRED GLEES FOR $1.

## THE NEW-YORK GLEE BOOK,

Containing one Hundred Glees, Quartetts, Trios, Songs in Parts, Rounds and Catches; composed, selected, and harmonized with an ad libitum Accompaniment for the Pianoforte. 1 vol. 8vo. paper $1, bound in cloth, $1,25.

BY GEORGE LODER.

"Drawn from the rich stores of the old English composers, such as Webbe, Lock, Hayes, &c., culling more largely from the moderns, Rossini, Auber, Strauss, Bishop, Weber, &c. For the family circle there is no music so pleasant, so universally acceptable, as the Glee; and as family singing is deservedly in vogue, and becoming more so, the appearance of this volume is timely: it supplies a want that has been much felt."—*Commercial Advertiser.*

"The work embraces more than a hundred of the most choice and popular pieces of music, and possesses a high value. It is neatly printed in a convenient form."—*Evening Post.*

"We hail the appearance of this work with great pleasure. This volume is one of the most desirable books in the world for a family of brothers and sisters, and even parents who are fond of family singing; and we cannot conceive of a more delightful sight than the use of it around the domestic fireside. We recommend it with great satisfaction."—*Herald.*

"We do not hesitate to say, that in publishing the work to which we here allude, Mr. Loder has become a public benefactor! and we will endeavour to prove it. Of all the amusements of domestic circles, we believe it will be admitted that music is both the most prominent and one of the most rational. Now, a work containing a hundred pieces of the choicest kinds, written or selected by a man of taste, experience and skill, like the well-known editor of the book before us; one also, who can adapt those pieces with regard to the capabilities of amateur musicians, put them in neat style to the musical world, and at so very reasonable expense, must needs be, as we have said, a public benefactor. We presume this excellent volume will have an immense circulation, as well from its convenient size as a hand-book, as from the fact of its comprising within its cover, a whole treasury of musical riches."—*Anglo American.*

"This is a work which has been long needed; it will prove a source of great satisfaction to professors as well as amateurs; the more so as the different arrangements in it are easily conceived, and based on correct principles."—*W. Scharfenberg.*

"The judgment shown in arranging popular melodies, as well as the merits of the original pieces, must render the New-York Glee Book highly acceptable to the public."—*Wm. Blondel.*

"On the whole, it is undoubtedly the best and cheapest work of its class ever published in this or any other country. The original contributions by the editor are graceful and musician-like compositions, and the remainder selected or arranged by him, are in admirable taste: it is a work eminently calculated to cultivate and refine the general taste for this species of composition."—*Henry C. Watson.*

## THE MEMOIRS OF SILVIO PELLICO,

## OR, MY PRISONS.

Translated by Smead and Lefebvre. 1 vol. 8vo., paper, 25 cents.

"These memoirs are, in many instances, truly affecting, and replete with passages of the noblest feeling; they contain a recital of evils suffered by the author, and an avowal of consolations to be found in the greatest misfortunes. Many scenes are described in a most vivid and graphic manner, and altogether the work is of a most interesting character."—*N. Orleans Crescent.*

## MR. C. EDWARDS LESTER'S NEW WORK.

In two vols. 12mo. beautifully printed and embellished by finely-engraved plates from designs of *Chapman.*

## THE CONDITION AND FATE OF ENGLAND.

BY THE AUTHOR OF "THE GLORY AND SHAME OF ENGLAND."

Price $1 75.

The above new work is designed as a continuation and summing up of the arguments comprised in the author's former volumes, "*The Glory and Shame of England ;*" it presents a graphic picture of the *actual* condition of the English people, deduced from statistical documents of unimpeachable authority; developing scenes of terrific and startling interest descriptive of the appalling distress of the British manufacturing classes, including notices of the present portentous aspect of affairs in that country.

The following is a synopsis of the topics comprised in these interesting volumes .—

Book I. Embraces a view of the power and magnificence of the British Empire, with illustrations of the spirit of the feudal and of the modern age.

Book II. The general condition of the mass of the British people in *past* ages,—their burdens and sufferings during centuries of unrelieved oppression.

Book III. The injustice, wrongs, and oppressive laws under which the majority of the British people are *now* struggling.

Book IV. A continuation of the same subject, including a Reply to a recent publication, entitled "*The Fame and Glory of England Vindicated,*" by an anonymous libeller of the Democratic Institutions of this country, written over the signature of "*Libertas.*"

Book V. The sufferings and crime, the ignorance and degradation caused by the oppressive burdens of the people.

Book VI. Glances at the woes and struggles of Ireland under the tyrannical power of England, and her only hope of relief.

Book VII. The feelings of the people under a sense of the deep injustice they have so long endured, and their determination to suffer the slavery no longer.

Book. VIII. The opposition of the Aristocracy to the Liberties of the People, and their determination still to keep them in subjection.

Book. IX. The progress of the Democratic principle throughout the world, and especially in Great Britain.

Book X. The final issue of this conflict—Reform or Revolution.

"This work is a sequel to the "Glory and Shame of England," developing more fully its prominent points, and, repeating the opinions therein advanced concerning the past prosperity, the present misery, and the approaching downfall of Great Britain. The author has manifested some industry in collecting and skill in arranging his facts ; the style of the work is vigorous and exciting.

Mr. Lester's style is sometimes elevated, and even eloquent, but it often descends to that which is below the dignity of history, and is too much after the manner of a newspaper controversialist. Upon the whole, this work is one in which the reader will find a good deal to arrest attention, and furnish food for reflection upon the rise and fall of kingdoms and States ; although we think the author dwells too much on "the dark portions of the picture," as do many British tourists when writing about our own country. We may think too, that he generalizes too much from isolated cases, and hence, that his conclusions are not always just."—*Nashville Whig.*

## MISS ELIZABETH BARRETT'S POEMS.

Preparing for speedy publication in one beautiful volume,

### A DRAMA OF EXILE, AND OTHER POEMS,

By Elizabeth B. Barrett.

The Poems of Miss Barrett, most of them now for the first time given to the world, will be issued almost simultaneously with a forthcoming London edition, the American edition being now reprinted from the early proof sheets of the original. A recent critic of no mean pretensions to scholarship, pronounces the productions of this extraordinary poetess as being of the most empyrean order; her own most exquisite utterances of the divine soul of poetry that glows within, being generated of the sweetest union of womanly tenderness of heart, and masculine loftiness and power of intellect. The principal poem—one of the most beautiful which our day has produced—has been declared by another excellent critic, the finest that has appeared since the *Manfred*. She writes like an inspired priestess—not without a most truthful heart, but a heart that is devoted to religion, and while individuality is cast upward in the divine afflatus, and dissolved and carried off in the recipient breath of angelic mmistrants.

## PICTURES OF WESTERN LIFE.

In one vol. 8vo. Price 25 cents.

### ELLEN WOODVILLE: OR, LIFE IN THE WEST.

This attractive work will find its way to numerous readers whose knowledge of domestic life in the far-west is almost as limited in the atlantic cities of our own land, as it is in Europe itself. It is written in a felicitous style, and few works will prove more generally acceptable at the summer watering places, where our reading selections are specially made with reference to amusement.—*Democratic Review*.

## HERSHBERGER H. R.

THE HORSEMAN;

A work on Horsemanship, with Rules for Riding, and hints on the selection of Horses. With 30 engravings. 1 vol. 12mo., muslin, $1 00.

"A work of great utility and value to all who are desirous of acquiring the science of Horsemanship; it being a characteristic feature of the present production to reduce that subject to systematic exactness. It also includes copious instructions on the Sword Exercise, and other matters of interest to the service, forming altogether a complete military manual."—*Dem. Rev.*

## THE MYSTERIES OF THE HEATHS.

Translated from the French, by George Fleming. 8vo. paper 25 cts.

"One of the most interesting and exciting books ever published."

This is a translation from the French of Frederic Soulié, to which the translator appears to have done every justice. It is a tale of considerable interest, said to be founded on fact, relative to the Gipsies of France, full of incident, which continues unabated from the first to the last page; and but little recourse is had to sentiment or description, and consequently will be found to partake more of the form of real life than is usual in works of fiction. Its perusal cannot fail but be gratifying to all that admire such works.—*Hunt.*

## ALEX. DUMAS' NEW WORK,

Second edition, in one vol. 12mo. Price 1 00, muslin.

### THE PROGRESS OF DEMOCRACY,

Illustrated in the History of Gaul and France, from the earliest period to the present day. Translated from the French of Alex. Dumas, by an American.

"As a historian, our author has displayed eminent ability, as the work now before us abundantly testifies; its style, moreover, is the most delightfully interesting that we remember ever to have met with."—*Knickerbocker.*

"The political theory of the work is original, striking, and beautifully developed."—*Phila. Ledger.*

"One of the most valuable as well as interesting compends that has appeared."—*Boston Atlas.*

"This work is one of the most valuable, as well as most attractive, historical compends that have been published for many years."—*Courier and Enquirer.*

"It is one of the most useful and readable books of the day; full of striking and profound reflections, and enlivened by a style, the raciness and brilliancy of which no living French writer can surpass."—*N. Y. Commercial Advertiser.*

"We are glad of an opportunity to call the attention of our readers to this work in an English dress: a work, the most original in design, and at least among the most able in execution, of all contemporary productions."—*New World.*

"This work is a fit companion for the celebrated volumes of De Tocqueville, which have recently been issued in a splendid edition, by the same publishers."—*Brother Jonathan.*

## THE ANTHROPOLOGICAL WORKS

OF ALEXANDER WALKER.

New Complete Uniform Edition in three volumes. Price $3 75, muslin.

As an evidence of the great value of these popular writings on Physiological Science, it is sufficient to state, that over *forty thousand* copies of his several works have been sold since their first appearance in the United States. These works comprise a large amount of curious and valuable information, equally adapted for popular use, and the advancement of science.

"If ever writer chose an attractive theme, Mr. Walker is certainly that writer. His volumes contain a vast fund of original, profound, acute, curious, and amusing observation, highly interesting to all."—*London Literary Gazette.*

"A rich accession to our literature in every sense. The author comes to the performance of his work with qualifications of a high order, and has supported it with extensive philosophical research, and delightful attractions in illustrative anecdote."—*Spectator.*

### INTERMARRIAGE,

Or, the Mode in which, and the Causes why, Beauty, Health and Intellect, result from certain Unions; and Deformity, Disease, and Insanity from others. Illustrated by Drawings. By ALEXANDER WALKER. With an Introductory Preface and Notes by an American Physician. Eighteenth Edition, in one vol. 12mo. Price $1 25, muslin.

## WOMAN,

Physiologically considered as to Mind, Morals, Marriage, Matrimonial Slavery, Infidelity, and Divorce. By ALEXANDER WALKER, author of "Intermarriage;" with Notes and an Appendix, adapting the work to this country, by an American Physician. Tenth Edition, in one vol. 12mo. Price $1 25.

## BEAUTY,

Illustrated chiefly by an analysis and classification of Beauty in Woman. By ALEXANDER WALKER. With Notes and an Explanatory Introduction, by an American Physician. Sixth Edition, in one vol. 12mo. Price $1 25, muslin.

"We have read this work with great delight; the subject is treated in a masterly manner. To a complete knowledge of the scientific part of his subject, the author adds immense practical information, and an elegance of style rarely found in works of science."—*London Athenæum.*

## PATHOLOGY,

Founded on the Natural System of Anatomy and Physiology,

by ALEXANDER WALKER.

A Philosophical Sketch, in which the natural classification of diseases, and the distinction between morbid and curative symptoms, afforded by pain or its absence, are pointed out, as well as the errors of Homœopathy and other hypotheses. One vol. Price 75 cents, muslin.

Another work from the pen of this popular Physiologist, embracing a new order of subjects, though not the less interesting, as the title fully exhibits. To the many admirers of his former works, this new production cannot fail of receiving a cordial welcome.

## D'ISRAELI'S NEW WORK.

SIXTH EDITION.

## THE AMENITIES OF LITERATURE,

By J. D'ISRAELI, Esq.

Author of "The Miscellanies of Literature," "The Curiosities of Literature," &c. beautifully printed in two vols. 12mo. Price $2 25, muslin.

"Quite worthy of an author who has done perhaps more than any other to illustrate and adorn the English language and literature; this work will rank in all public and private libraries with the author's previous delightful miscellanies, 'The Curiosities of Literature,' 'The Miscellanies of Literature,' &c."—*New World.*

"The volumes are as invaluable and curious as interesting, and form history enough of the subject for any save the antiquary—and no modern history would content him."—*Brother Jonathan.*

"AMENITIES OF LITERATURE.—We have ever considered the author of these volumes as a literary benefactor, one who, in his own peculiar province, has done more to advance the cause of letters than any other writer, by rescuing from oblivion, and doing justice to the primitive sons of genius who laid the basis of English literature. 'The Amenities' we regard superior to its brothers, 'The Curiosities,' and 'The Miscellanies,' inasmuch that there is more unity in its design, a greater depth of research, and as it were, a kind of history of the minds of authors as well as of their writings. Like whatever comes from the pen of this accomplished individual, it is remarkable for purity of style and interesting anecdote, and must become an especial favourite with all classes of readers."—*Lit. Gaz.*

## THE RUINS OF CENTRAL AMERICA.

In one beautifully-printed volume octavo, embellished by nearly fifty Illustrations, executed in a novel and effective style, from drawings taken on the spot.

## RAMBLES IN YUCATAN,

OR, NOTES OF TRAVEL THROUGH THE PENINSULA,

INCLUDING A VISIT TO ITS REMARKABLE RUINS,

BY A MODERN ANTIQUARY.—Price $2 00.

This beautiful volume, besides presenting a synoptical account of those interesting vestiges of antiquity in Central America, which have become recently so much the objects of public attention, will be found to comprise a Geographical, Political, and Statistical description of Yucatan, and the ancient cities of Chichen, Kabah, Zayi, Uxmal, and also other places not previously visited by any other tourist; including a graphic and detailed account of their numerous stupendous ruins,—and a unique collection of rare and curious Idols, which have never before been discovered: to which is appended notices of the manners and customs of the present inhabitants of the peninsula, including brief historical sketches of its churches, colleges, and other public institutions, &c. &c.

The following are among the principal embellishments:—Frontispiece in Vignette,—The Temple,—The Pyramid at Chichen,—The House of the Caciques,—The Front View of the House of the Caciques,—The Nun's House,—Pyramids,—Uxmal Ruins,—The Governor's House,—The Pigeon Houses,—The Fascade of Governor's House,—Zayi Ruins,—Lonato, or Natural Well,—The Road Side,—Yucateco Indian House,—The Plantain,—The Agave Americana,—Idols,—Map and Plans.

STILL MORE REMARKABLE RUINS IN CENTRAL AMERICA.—We have lately looked over some drawings made by a traveller, recently returned from Central America, representing the ruins of an ancient city, not yet visited by any traveller, which are perhaps more remarkable than even those visited by Stephens and Catherwood."—*N. Y. Evening Post.*

## RYAN'S ALGEBRA—Price $1 00, sheep.

## AN ELEMENTARY TREATISE ON ALGEBRA,

Theoretical and Practical, adapted for Schools, Colleges, &c., by JAMES RYAN; to which is added an Appendix by Robert Adrain, Professor of Mathematics in Columbia College. Eighth edition, greatly enlarged and improved by the author.

## MISCELLANIES OF LITERATURE,

By J. D'ISRAELI, Esq.

Author of "The Amenities of Literature," "Curiosities of Literature."

Three vols. 12mo. New Edition, with numerous Additions and Revisions by the author. Price $3 00, muslin.

"In the volumes before us, there is not an uninteresting line from the title page to finis."—*Brother Jonathan.*

"It is a work that enchains you from beginning to end; in the perusal of which you feel reluctant to pause, till you find yourself compelled by the unwelcome finis."—*Merchants' Magazine.*

"This valuable work puts us at once into fellowship with the master-spirits of the past, and brings up the scenes and events of other days with life-like freshness. This work supplies us with what we have long needed—a home description of literature and the master-builders of it; their difficulties, hardships, dispositions, social wants and pleasures. It is a good counterpart to the 'Curiosities of Literature,' and like that will amuse as well as instruct."—*New-Yorker.*

"The writings of D'Israeli belong to a class no less peculiar in their character, than they are valuable in their kind. Few authors have laboured so assiduously, or rendered such efficient service to the interests of literature. His style is pre-eminent for its nervousness and classic beauty, and it is doubtless to this cause no less than to the immense collection of amusing and characteristic anecdote which he has supplied that we are to ascribe the high estimation with which his former writings have been received. We cordially recommend these delightful volumes to all who can appreciate the pleasing combination of the *utile et dulce* in books."—*New World.*

"Take up either of the volumes, and open where you please, the reader will at once find his attention chained by something curious and new, though very old: indeed, for casual and curious reading, D'Israeli is incomparable."—*N. Y. American.*

"Had this popular author now for the first time appeared before the reading world, these volumes would be amply sufficient to ensure him a proud rank among the first writers of the age. The work abounds in entertaining anecdotes, pertinent quotations, and philosophic reflections; there is a power of thought and patient research manifested throughout which has rarely if ever been equalled."—*The Classic.*

## JAMES'S LAST HISTORICAL WORK.

### LIFE AND TIMES OF RICHARD CŒUR-DE-LION,

By G. P. R. James, Esq.

Author of "Richelieu," and "The Ancient Regime," &c. &c.

2 vols. 12mo. Price $1 50, muslin.

"This new historical work by the author of 'Richelieu,' is characterized by all the usual fascinations of style for which his pen is so distinguished: he has also chosen an epoch in English history, the most romantic and chivalrous that could have been selected, and the result has been, he has given us a most interesting and attractive book."—*Boston Post.*

"Indeed, the general history of the period of which he writes, is so rich and interesting, that had the subject of the Life of Richard fallen into far inferior hands, a readable and entertaining work might have been reasonably expected."—*Albany Evening Journal.*

## TALES FROM THE

### ARABIAN NIGHTS' ENTERTAINMENTS,

Entirely re-written and adapted for Children. Embellished with nearly fifty beautiful illustrations. Price 75 cents, muslin, gilt.

## SIMM'S LIFE OF MARION.

### LIFE OF GENERAL FRANCIS MARION,

By the Author of "Guy Rivers."

With numerous Engravings. 1 vol. 12mo. Ready in June. $1 00.

"Few characters have stood out more boldly on our Revolutionary Annals, who have supplied more interesting and exciting materials for the historian, than that of General Marion: and it is not saying too much to claim for the work before us, no less the merit of accredited historical truth, than the most stirring and absorbing attributes of high-wrought fiction."—*Dem. Review.*

## BEAUTIFUL NEW JUVENILES.

New Edition, with numerous beautiful coloured drawings.

### ROBIN HOOD AND HIS MERRY FORESTERS.

By Stephen Percy, Author of the "Kings of England," &c.

Price $1 00, coloured—plain 75 cents.

### THE ANNALS OF THE POOR,

Comprising "The Dairyman's Daughter," "The Negro Servant," "The Young Cottager," "The Cottage Conversation," "A visit to the Infirmary," &c.

By Rev. Legh Richmond.

A new edition, enlarged and illustrated, with an Introductory Sketch of the author, by Rev. John Ayre, A. M. 1 vol. 18mo. cloth gilt. With plates. Price 75 cents, muslin.

The above popular works need no recommendation, having been long among the choicest works designed for present-books for the young:—it is only necessary to allude to the elegant style in which the present editions have been produced, and which entitle them to take rank with the best specimens of the day.

## TEMPERANCE TEXT BOOK.

Fifth Edition, in one vol. 12mo. Price $1 25, muslin.

### BACCHUS.

THE NEW TEMPERANCE PRIZE ESSAY.

An Essay on the Nature, Causes, Effects and Cure of Intemperance. By Ralph Barnes Grindrod. Second American, from the third English edition. Edited by Charles A. Lee, A. M., M. D., &c.

"A work so admirably complete must be hailed by the advocate of Temperance as an invaluable addition to the cause."—*New Era.*

"The work is such a thorough examination of the theme, that it must serve as a text-book on the subject."—*Pennsylvanian.*

"The most thorough, learned and satisfactory publication on this subject ever yet offered to the public in any language."—*Christian Intelligencer.*

## SEQUEL TO THE WORKS OF BURNS.

Second edition, in one vol. 12mo. Price $1 00, muslin.

## THE LIFE AND LAND OF BURNS.

By ALLAN CUNNINGHAM, with contributions by Thomas Campbell, Esq., Author of "The Pleasures of Hope;" to which is prefixed, an Essay on the Genius and Writings of Burns, by Thomas Carlyle, Esq.

"This book is invaluable as completing the works of Burns, and as being also illustrative of them."—*Cincinnati Gazette.*

"Written with all a poet's thought and feeling."—*Tattler.*

"Another tribute to the memory of one of the truest poets that the world, perhaps, has ever seen. This posthumous volume will be regarded of peculiar and permanent value, as being a sequel to all the editions of the writings of the poet extant, to which it is the *clue* for their complete elucidation. The Essay of Carlyle, included in the present work, is a splendid effort, and among the finest specimens of this original and beautiful writer. The work will commend itself not only to every son of Scotia, but to all the admirers of poetry throughout our wide-spread borders."—*New World.*

"All the admirers of Scotland's sweetest bard—and who will acknowledge that he is not one?—will be delighted with this volume, filled as it is with various reminiscences and particulars about him, that have never before appeared. It would be enough to say that it is a joint tribute to the memory of the poet of nature, by Cunningham, Campbell, and Carlyle; but it has even more than this to recommend it. It has several original letters, never before published in this country, and is altogether one of the pleasantest books that have appeared for a long while."—*N. Y. Review.*

## DR. FORRY'S NEW WORK.

## THE LAW OF POPULATION AND MORTALITY IN THE UNITED STATES.

BASED UPON THE SIX CENSUSES AND OTHER DATA;

With a condensed View of General Hygeine or State Medicine, in its relations to Vital Statistics, as regards the promotion of Human Longevity and Happiness. By *Samuel Forry, M. D.*, author of "The Climate of the United States," Editor of "The New York Journal of Medicine," etc.

The above production is based upon an extended paper, read by Dr. Forry before the New-York Historical Society; and at the suggestion of the leading members of which, he has been induced to expand the highly-interesting subject into a volume.

1 vol. 12mo. Price $1 00.

## DR. MARTYN PAINE'S NEW WORK.

## A THERAPEUTICAL ARRANGEMENT OF THE MATERIA MEDICA,

Or, the Materia Medica arranged upon physiological principles, and in the order of general practical value which remedial agents hold under their several denominations, and in conformity with the physiological doctrines set forth in the Medical and Physiological Commentaries.

BY MARTYN PAINE, M. D.,
Professor of the Institutes of Medicine, &c. in the New-York University.

One vol. 12mo. Price $1 00.

## THE UNITED STATES MAGAZINE,

AND

# DEMOCRATIC REVIEW.

JOHN L. O'SULLIVAN, Editor.

By an increase in the number of pages, and by an alteration in its typographical arrangements, the quantity of matter previously furnished to the readers of the Democratic Review, has been increased during the past two years about SEVENTY-FIVE PER CENT.

The following are among the contributors to this work:

| | | |
|---|---|---|
| BANCROFT, | PARK GODWIN, | J. L. STEPHENS, |
| J. F. COOPER, | HAWTHORNE, | TILDEN, |
| AMOS KENDALL, | DAVEZAC, | WHITTIER, |
| PAULDING, | EAMES, | BRYANT, |
| SEDGWICK, | A. H. EVERETT, | CASS, |
| GILPIN, | BROWNSON, | C. J. INGERSOLL, |
| BUTLER, | CAMBRELENG. | |

The monthly Financial and Commercial articles, which have frequently been pronounced by the most intelligent criticisms during the past year, in themselves alone worth the subscription to the work, will be continued from the same able hand.

TERMS.—Five Dollars per annum, payable in advance : each number will contain one hundred and twelve closely-printed pages, and embellished with a finely-engraved portrait.

Any person taking four copies, or becoming responsible for four subscribers,

WILL BE ENTITLED TO A FIFTH COPY GRATIS.

Committees or Societies, on remitting to the Publishers $50 in current New York funds, can receive thirteen copies of the work.

Persons residing in the country, who may wish to receive the work by mail, can have it punctually forwarded, strongly enveloped, by remitting the amount of subscription to the publishers.

Remittances may be made by enclosing the money and mailing the same in the presence of a postmaster. Bank notes that pass current in business generally in the State of New-York, will be received.

The work will be punctually delivered free of expense to subscribers in the principal cities in the Union on the first of the month, and forwarded to mail subscribers and agents on the 25th of the month preceding publication. All communications for the Editor to be addressed (*post-paid*) to

HENRY G. LANGLEY, Publisher,
8, *Astor House, New-York.*

### CRITICAL NOTICES.

"THE DEMOCRATIC REVIEW.—This magnificent periodical comes to us freighted with the richest cargo of literary wares that we have encountered many a day. On the whole, we think it as good a number of the Democratic Review as we have seen ; and that is equivalent to saying that it is quite equal to anything in the Magazine line extant."—*Tribune, March*, 30, 1844.

"This ably-conducted Periodical exhibits the same vigorous features, and classical taste, which have distinguished it for a long period, and which constitute it at once a Mentor in grave matters and an agreeable companion in those of a lighter nature. We do not meddle with the political speculations of the United States, but are disposed to recommend the leading article on 'Constitutional Reform,' as a model of the style in which political controversy ought to be conducted."—*Anglo-American.*

"A great work, which for the first time reflects a literary lustre upon Washington."—*Nat. Intelligencer.*

"The ablest Periodical in the country, and equal to any abroad. It is not, as many suppose, a mere *party* organ—in its literary and critical department, the Review is also of the very highest order; its contents are varied, and in general rich and interesting in the selection of its subjects."—*Standard.*

"We welcome it with unspeakable satisfaction, believing it destined to take the first rank among the literary journals of the age, and also that it will exert the happiest influence upon the political destinies of our common country."—*Washington Globe.*

"No magazine in this country has ever presented a prouder array of talent than this. Without subscribing to its political tenets, or dissenting from them; for, on that point, we choose to be non-committal; we think that every impartial reader must acknowledge that the political papers in the Democratic Review are among those which will not die as mere ephemera, but be referred to, by and by, as part of the history of our times. And not only are they well and ably written, but they possess usually more impartiality than we always find in partisan writings. On great national questions, and subjects vitally concerning our character and prospects as a people, we find the writers in the Review, frequently soaring above the partisan policy and partisan interests, with a magnanimity which does them honour."—*Brother Jonathan.*

"We never peruse this able magazine, without wishing it in the hands of every intelligent reader in the Union. It is not the partisan apologist, or defender of the acts of a *party*, but an able champion of the democratic *principle* —looking to the welfare of the whole family of man. It follows no beaten tracks, and is hampered by no prejudices—but taking truth for its guide, it follows natural and immutable laws to their source, and discusses their operation with an energy and talent belonging to no other publication in the country.

"We avail ourselves of this opportunity to recommend, as we have repeatedly done before, this work to a liberal patronage from the public. No review in the country is conducted with more ability, or ranks higher than this. He who would see the great measures of the country discussed with the bold spirit of free inquiry, and who would at the same time encourage high literary merit and cultivate a correct taste, will do well to become a subscriber to this admirable publication."—*Boston Post.*

"If there is any periodical worthy the support of an inquiring people, it is this—the *best* Review of the country."—*Eastern Rock.*

## NEW MEDICAL JOURNAL.

## NEW-YORK JOURNAL OF MEDICINE AND THE COLLATERAL SCIENCES.

EDITED by SAMUEL FORRY, M. D.,

*Author of 'The Climate of the United States and its Endemic Influences,' &c.*

The leading objects proposed in the establishment of this Journal are, to elevate the character and dignity of the American Medical Profession generally, and especially to afford a medium, free from all individual interests and party views, through which the rich results of the experience of the profession in this city, much of which is now lost to the world, may be communicated. As New-York is the largest city of the western continent, numbering with its environs, 350,000 inhabitants, here are to be found the same materials which have served to build up the fame of the *Clinical* Schools of London and Paris. Considering that the State of New-York has within its limits four Medical Schools, at which 800 students are annually matriculated, the fact that it has not a single Medical Journal of its own, seems almost incredible.

The work is issued at intervals of two months—a form that possesses undoubtedly a decided advantage over the weekly as well as monthly journal, which, in consequence of their contracted limits, especially the former, can allow of the insertion of elaborate articles only in detached parts, thus impairing both their interest and value. It consists of three departments: 1.

Original Contributions ; 2. Critical Analysis ; 3. A condensed summary of whatever may be new and valuable in Foreign and American journals. By the extensive business arrangements of the publisher, he is enabled to obtain the earliest intelligence from abroad ; and as by the same means, this Journal will speedily reach the countries of Europe, the labours of its contributors will be rewarded by a widely-extended circulation.

THE EDITOR.

The undersigned having assumed the publication of the above-named Journal, is happy in stating that he has secured the valuable services of an Editor, who is already most favourably known as a writer, both in this country and in Europe, by his work on "*The Climate of the United States and its Endemic Influences ;*" and they would add, that he has also had the advantage of thirteen years' experience in his profession, both in private practice and the public service, the latter having rendered him familiar with the diseases peculiar to the diversified regions of our widely-extended country.

This Journal is published punctually on the first day of every other month. The terms are three dollars per annum, payable in advance ; and as each number contains 144 octavo pages, it is the cheapest publication of the kind in this country. Remittances may be made by enclosing the money and mailing it in the presence of a post-master.

HENRY G. LANGLEY, Publisher,
8, *Astor House, New-York.*

## A BOOK FOR FAMILY USE.

### A TREATISE ON FOOD AND DIET,

With Observations on the Dietetical Regimen suited for disordered states of the Digestive Organs, &c. &c. By JONATHAN PEREIRA, M. D. F. R. S. Edited, by express Desire of the Author, by Dr CHARLES A. LEE.

1 vol. 8vo. Price, muslin, $1,25, paper, $1 00.

"This treatise contains much valuable information, conveyed in a form which will interest while it instructs. No family should be without it; since it will instruct and guide to a proper treatment of symptoms of disease, where the impossibility of obtaining medical aid might otherwise prove fatal. As the effective detector of adulteration in food, it is most valuable ; while the instructions for preparing diet are excellent, and will economize outlay in the general consumption, as well as direct to the use of the kind of diet best suited to the preservation and promotion of health."

## THE CLIMATE OF THE UNITED STATES.

In one Octavo Volume, with Explanatory Maps.

### THE CLIMATE OF THE UNITED STATES,

AND ITS ENDEMIC INFLUENCES ;

Based chiefly on the Records of the Medical Department and Adjutant General's Office, United States Army. By SAMUEL FORRY, M. D. Price $2 50, muslin.

"The highest praise that we can award to this great labour—for so it may be truly designated—is, that the older country, with all its industrious intelligence, has nothing of the kind ; most of the contributions in local medical topography that adorn the pages of the Transactions of the Provincial Medical Association will not bear comparison ; and it reflects altogether the highest credit on the medical literature of the United States."—*London Literary Gazette.*

## DR. COPLAND'S MEDICAL DICTIONARY,

IN MONTHLY PARTS.

### A DICTIONARY OF PRACTICAL MEDICINE,

Comprising General Pathology, the Nature and Treatment of Diseases, Morbid Structures, and the Disorders especially incident to climates, to the sex, and to the different epochs of life. With numerous prescriptions for the medicines recommended: a classification of disease according to pathological principles; a copious bibliography, with references, and an Appendix of approved formulæ, &c. &c. By JAMES COPLAND, M. D., F. R. S., Fellow of the Royal College of Physicians, &c. &c.

This work contains the opinions and practice of the most experienced writers, British and Foreign, digested and wrought-up with the results of the author's experience. It also presents a diversified range of opinions, methods of cure, and authorities, and comprises the complications and modified states of disease which are even more frequently met with than those specific forms too often described by Nosologists as constant and unvarying types, to which morbid actions, occurring under a great variety of circumstances, can never closely adhere. It contains also a full exposition of the general principles of pathology, a minute description of the organic lesions of the human body, and a detailed account of those states of disorder incidental to the sex, the different periods of life, and to particular climates, with the peculiarities resulting from temperament and habit of body. Each article is methodically divided and headed: and to each a copious Bibliography, with references, is added.

The above work will be issued in monthly parts, at fifty cents each. Part I. now ready.

## THE HOSPITALS AND SURGEONS OF PARIS.

A General, Historical, and Statistical Account of the Public Hospitals of Paris, with Biographical Notices of the most Distinguished Living French Surgeons.

By F. CAMPBELL STEWART, M. D.

1 vol. 8vo., muslin, $2 00.

"The author of this very agreeable book has succeeded admirably in making a volume that will be read with deep interest by persons both within and without the pale of the profession. Without claiming anything on the score of originality of thought, Dr. Stewart is entitled to the praise of having collected a large amount of that very kind of matter about which every one is solicitous to know something; we know of no substitute for it, and therefore recommend it strongly to our friends."—*Boston Medical Journal.*

## DR. SWEETSER'S NEW WORK.

One volume 12mo.

### MENTAL HYGIENE,

Or an Examination of the Intellect and Passions, with the design of illustrating their influence on Health and the Duration of Life. By WILLIAM SWEETSER, M. D., Author of "A Treatise on Consumption;" late Professor of Theory and Practice of Physic, and Fellow of the American Academy of Arts and Sciences.

UNDER THE SUPERVISION OF VALENTINE MOTT, M. D.

## NEW WORK ON OPERATIVE SURGERY,

In three vols. 8vo.

## NEW ELEMENTS OF OPERATIVE SURGERY.

By ALF. A. L. M. VELPEAU,

Professor of Clinical Surgery, &c., Paris, Member of the Royal Academy of Medicine, &c.

Carefully revised, entirely remodelled, and augmented with a Treatise on Minor Surgery; including several hundred pages of new matter, comprising all the latest Improvements and Discoveries in Surgery in America and Europe, up to the present time; the whole incorporated with nearly two hundred illustrative plates. Translated from the recent improved Paris edition, by P. S. TOWNSEND, M. D.

Under the supervision of, and with a Prefatory Notice and Observations, by VALENTINE MOTT, M. D., Professor of Surgery in the University of New-York, &c. Accompanied by an Atlas in 4to., containing 22 finely engraved plates.

The above work will comprise the latest advantages of the present advanced state of surgical art, and also include the rich experience of the eminent professor under whose editorial revision the work passes. It is believed it will be found the most valuable contribution to medical science which has yet appeared. The first volume is now ready, and the entire work, consisting of three large octavo volumes, and a beautiful atlas in quarto, will be completed in the course of the spring. Subscribers' names respectfully requested to be addressed to the publisher, H. G. LANGLEY, New-York. Terms to subscribers, $10 00 for the complete work.

## DR. TAYLOR'S NEW WORK.

## OBSERVATIONS ON OBSTETRIC AUSCULTATION,

With an Analysis of the Evidences of Pregnancy, and an Inquiry into the Proofs of the Life and Death of the Fœtus in Utero.

BY EVORY KENNEDY, M. D.

With an Appendix containing Legal Notes, by JOHN SMITH, Esq. Barrister at Law; with Notes and Additional Illustrations.

BY ISAAC E. TAYLOR, M. D.

Accompanied by seventeen fine Lithographic Plates. 1 vol. 12mo. Price $2 00.

## THE DUBLIN DISSECTOR,

OR, MANUAL OF ANATOMY.

Comprising a Dissection of the Bones, Muscles, Nerves and Viscera; also the relative Anatomy of the different regions of the Human Body; together with the Elements of Pathology. From the revised Dublin Edition, considerably enlarged and improved. Edited by R. WATTS, Jun., M. D., Professor of Anatomy in the New-York Medical College. One vol. 12mo. 550 pp. Price $2 00.

THE LATEST AND BEST WORK ON FORENSIC MEDICINE.

## PRINCIPLES OF MEDICAL JURISPRUDENCE,

With so much of Anatomy, Physiology, Pathology, and the Practice of Medicine and Surgery, as are essential to be known by Lawyers, Coroners, Magistrates, Officers of the Army and Navy, etc etc. By WILLIAM A. GUY, M. B. Cantab Professor of Forensic Medicine, King's College, London: Physician to the King's College Hospital, etc. etc. First American Edition. Edited by C. A. LEE, M.D., who has added two hundred pages of original matter, adapting the work to the wants of the Medical and Legal Professions in the United States. 1 vol. 8vo.

The Editor has enjoyed the advantages of freely consulting Chancellor Kent, on many of the legal questions which come under discussion; and the opinions of this eminent jurist on several important points will be found embodied in the text, from his own notes kindly furnished, and which he has permitted the editor to publish.

The American Editor has, among other additions, (embodied with the text in brackets,) given the laws of the different States in relation to the questions discussed by the author; remarks on the duties of the coroner; compensation of medical men, when called on to make post-mortem dissections at coroners' inquests; the importance of appointing medical men to the office of coroner; medical evidence; the quotation of authorities by physicians in giving testimony; the duties of medical men in relation to the disclosure of professional secrets, or facts communicated in professional confidence; the undue deference paid to personal experience; its proper value; identity of the living; identity of the dead; the influence of certain causes, localities, &c., in the preservation of the human body, illustrated by examples from the cemeteries of this city and other places; the remarkable case of Timothy Monroe; additional means of determining the age of the dead; cases of hypospadias; hermaphroditism; St. Hilaire's division of the generative system; causes of impotence in the male and female, with cases; impotence as a ground of divorce; questions raised in a late remarkable trial of a clergymen for seduction, with remarks on the medical testimony, &c. &c.

STEWART'S TRANSLATION OF

## M. BILLARD ON INFANTILE DISEASES.

New Edition, Improved. One volume 8vo.

## A TREATISE ON THE DISEASES OF INFANTS.

Founded on recent Clinical Observations and Investigations in Pathological Anatomy, made at the Hospice des Enfans-trouvés; with a Dissertation on the Viability of the Child.

By C. M. BILLARD,

*Docteur en Médecine de la Faculté de Paris, &c. &c.*

With Notes by DR. OLIVER, of Angers.

Translated from the third French edition, with Notes, by JAMES STEWART, M. D., late Physician to the New-York Orphan Asylum, and one of the Consulting Physicians of the Northern Dispensary of the City of New-York. 1 vol. 8vo. pp. 650.

## DR. J. STEWART'S NEW WORK.

## A PRACTICAL TREATISE ON THE DISEASES OF CHILDREN,

A new Edition, thoroughly revised and considerably augmented.

By JAMES STEWART, M. D., A. M.

One volume 8vo.

The groundwork of this Treatise is in the fact, that the development of the functions and the process of increased capillary circulation attendant on growth, are the chief predisposing causes of the frequency of diseases among children—a period of life devoted to the increase of the body. The division of the subject is that founded on the functions of the human body, as the most natural; and the one adopted in this work is that which recognizes the functions in their natural order of development; on which account they may become sources of disease. The arrangements adopted enable the author to bring the whole subject under consideration in the order presented by the succesive appearances of development of the great functions of the human body, while the subdivisions afforded him an opportunity of faithfully condensing the important pathological and semeiological facts scattered throughout the various records of the profession.

"This work will be found indispensable to the practitioner who wishes to obtain the best established facts and principles in relation to a most important class of diseases."—*N. Y. Jour. of Medicine.*

"A wider circulation is required before this finished and elegant book can be appreciated by the whole profession. We recommend it with confidence to our readers, hoping they may derive as much benefit from its perusal as we have done."—*Boston Med. and Sur. Jour.*

## THOMPSON'S CONSPECTUS.

One volume 24mo. Price neatly bound in Sheep $1 00, and Tucks $1 25.

### A CONSPECTUS OF THE PHARMACOPŒIAS

Of the London, Edinburgh and Dublin Colleges of Physicians: being a Practical Compendium of Materia Medica and Pharmacy. First American, from the thirteenth London edition, with extensive additions from the recent works on Materia Medica.

EDITED BY DR. C. A. LEE,

*Professor of Materia Medica and Pathology in the Medical College, Geneva, N. Y*

This edition has been greatly enlarged by extended remarks on the uses and applications of Medicines, with notices of all the new remedies lately introduced into medicine, and referred to in the works of Magendie, Dunglison, Wood, Bache, and Pereira, and the Philadelphia Journal of Pharmacy. The Appendix on Poisons has been also enlarged, and will be found to include all articles likely to be employed as such, together with their Symptoms, Morbid Appearances, Tests and Treatment. The Appendix also contains Tables on Chemical Analysis,—The Art of Prescribing Medicines,—Forms of Prescriptions,—Select Formulæ for Infants,—Dietetic Preparations,—Alcoholic Strength of Wines,—Weights and Measures,—Composition of all the celebrated Mineral Waters, &c. &c.

The above work is very highly recommended by Drs. Valentine Mott, J. B. Beck, Draper, Augustine Smith, Torrey, and many other distinguished members of the Faculty.

W 2614 (3)

Health, Education, and Welfare, Public Health Service
NATIONAL LIBRARY OF MEDICINE
U.S. Department of Health, Education, and Welfare, Public Health Service
Washington, D.C.
NATIONAL LIBRARY OF MEDICINE

NATIONAL LIBRARY OF MEDICINE
Health, Education, and Welfare, Public Health Service
U.S. Department of Health, Education, and Welfare, Public Health Service
Washington, D.C.

JUN 26 1961