

A
TREATISE

ON THE SUPPOSED

Hereditary Properties of Diseases,

CONTAINING

REMARKS

ON

THE UNFOUNDED TERRORS AND
ILL-JUDGED CAUTIONS

CONSEQUENT ON SUCH ERRONEOUS OPINIONS;

WITH

NOTES,

Illustrative of the Subject,

PARTICULARLY IN MADNESS AND SCROFULA.

Tu ne cede malis sed contra audentior ito
Quam tua te fortuna sinet.

Virgil.

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ON MORBID POISONS, &c.

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TO THE
RIGHT HONOURABLE
SIR JOSEPH BANKS,
BARONET,

KNIGHT OF THE MOST NOBLE ORDER OF THE BATH,
MEMBER OF HIS MAJESTY'S MOST HONOURABLE
PRIVY COUNCIL, AND PRESIDENT OF THE
ROYAL SOCIETY OF LONDON.

MY DEAR SIR JOSEPH,

IT cannot be from any wish to inform the world of your Titles, that they are thus enumerated; it is from a real satisfaction at seeing so many Honours so worthily bestowed.

Accept my sincere Thanks for the flattering manner in which you urged the publication of these Sheets; still more, for per-

IV.

mitting your Name thus to precede them ;
and allow me to hope with every Friend
to Science and Humanity, that you may
long continue to preside over that learned
and respectable Body, whose wish must be
the perpetuity of your services as well as of
its own existence.

I have the honour to be, with every senti-
ment of gratitude and esteem,

Your faithful and obedient

Humble Servant,

JOSEPH ADAMS,

Hatton Garden,
May the 21st, 1814.

PREFACE.

TWO great sources of distress, much aggravated by the uncertainty in which they are involved, are the danger of contagion and the apprehension of hereditary diseases. The former has often embittered the enjoyment of all that providence has bestowed upon us, and even stifled the feelings of consanguinity, friendship, and love: the ill effects of the latter have been in proportion, to the strength of the moral feelings. The dread of being the cause of misery to posterity, has prevailed over the most laudable attachment to a beloved object; and a sense of duty has imposed celibacy on those who seemed by nature the best constituted for the duties of a parent!

In these, as in many other highly important questions, men seem afraid of enquiring after truth; cautions on cautions are multiplied, to conceal the skeleton in the

closet, or to prevent its escape, till our very fears bring the object constantly before us, not in its real form, but multiplied into every possible shape, and magnified in all.

Mr. Hunter, by instructing us in the means of ascertaining the laws of contagion, and the characters of morbid poisons, has relieved us from much of this uncertainty. I have endeavoured to continue his mode of research, and to elucidate his doctrines, not by a greater accuracy of expression, but by adopting, where it could be done, a more popular language. The opinion of the medical world has been so much in my favour, that I have only to regret the limited field in which I have been enabled to act as an interpreter to such an oracle. There are, however, sufficient documents to prove, that neither time, industry, danger, expence, nor what, with most of us, is greater than all, obloquy, ever arrested me in those professional inquiries.

Connected with them was one, the value of which I accidentally learned. Whilst Sir Joseph Banks did me the honour of perusing

one of my papers, I waited with some impatience to hear his objection to my remarks on the hereditary properties of diseases. As soon as I learned that the pause did not arise from any difference of opinion, I had no difficulty in determining to make a distinct Essay on what had hitherto been only incidentally noticed.

On a discussion so new, some indulgence may be expected in the use of new terms, or rather in assigning to old terms, meanings more strictly appropriate. The work being intended for the general reader, every technical expression is carefully avoided; and in order that the attention may not be distracted from the chain of reasoning, every thing not necessary to illustrate the doctrine is added, in the form of Notes, at the end. The Reader will readily account for, and it is hoped, pardon the unexpected length of one of them.

CONTENTS:

	Page.
Division of the Subject - - - - -	10
Importance of the Distinction between Family and Hereditary Diseases - - - - -	12
Necessary to trace the Degrees of Susceptibility in each Connate Diseases rarely Hereditary - - - - -	13
Dispositions to Disease, when Hereditary, show themselves at certain Ages - - - - -	14
If the Predisposition only is Hereditary, the Disease may be prevented - - - - -	15
Of the supposed Hereditary Properties of Gout and Madness, Consumption and Scrofula - - - - -	16
The Doctrine illustrated - - - - -	from 17 to 27
If Susceptibilities do not appear till the more advanced Climacterics, the Disease may be often prevented - - - - -	27
General Conclusions from this Part of the Inquiry - - - - -	29
Provisions of Nature for preserving and improving the Race—in Climate—in what we see in a State of Nature—and in the Progress of Refinement - - - - -	31
A particular Provision for an Hereditary Susceptibility, which could not be corrected by either of the above Means	37

INDEX TO THE NOTES.

Danger of ill-directed Cautions - - - - -	45
The Author's Claim to Public Indulgence - - - - -	47
Abstract of M. Portal's Paper - - - - -	59
Definition of Madness attempted - - - - -	71
_____ of Scrofula - - - - -	81
Gout and Cretinism, is their Prevalence in certain Districts the Effect of Hereditary Causes? - - - - -	85
Remarks on Elephantiasis and other Cutaneous Diseases, in Answer to Dr. Bateman - - - - -	89
A single Case of supposed Hereditary Deafness - - - - -	124

ERRATUM. P. 46, l. 22, *for* inter eos, *read* inter eos.

A

DISSERTATION,

&c. &c.

THOUGH hereditary peculiarities in Man are infinitely more important than in other Animals, yet the little information hitherto collected on the subject, would lead us to suppose they have been less attended to. **MERCATUS**, in the beginning of the 17th century, published among his voluminous works, a short but very judicious Treatise, *De morbis hereditariis*. This has been overlooked by every succeeding Writer who has touched incidentally on the question; and from that time to the present, I can meet with no systematic performance on the subject. A late number of the Memoirs of

B

the French National Institute, contains a long paper by M. PORTAL, "*Sur la nature & traitement de quelques maladies hereditaires ou de famille.*"—This appears to have been written as the sequel of several Prize Essays; we may, therefore, consider it to be the present state of our knowledge, as far as has been published: yet in that Essay, so little is done towards arrangement, that we find the terms *connate* or *congenital*, *hereditary*, and *family*, used almost as synonymous, and even confounded with *connutrite*, or diseases derived from nurses.

We can only account for such apparent backwardness in so important an Inquiry, by the great difficulty in selecting facts on a subject which does not admit of experiment; and by the unwillingness to be informed in those who are most interested, on a matter which proves an alloy to their best feelings. Perhaps, however, it may be found in this, as in most other sources of uneasiness, that a more accurate knowledge is less painful than constant suspense: nor can the

inquiry be unimportant to any family, how free soever they may fancy themselves from any hereditary peculiarity; for it will require no argument to prove that, like the varieties in other animals, all these peculiarities must have originated in the offspring of couples who were free from them.

But facts, however numerous and well authenticated, lose much of their value if injudiciously collected, as none but Naturalists are aware of the peculiar characters by which varieties are more strongly marked. In the following paper, therefore, my wish is,

1st. To propose an arrangement, which, after long application to the subject, I have found most convenient in this early stage of Inquiry.

2dly. To illustrate this arrangement by well authenticated facts, and to show their practical importance by inferences which naturally arise from them.

3dly. To ascertain what provisions are made by Nature to correct any apparent deviations in the human race.

And, lastly, To see how far these provisions may be imitated or improved by Art.

The proposed arrangement consists, first, in keeping always in view the necessary distinction between a *family* and an *hereditary peculiarity of constitution*; and, secondly, in marking the period of life and other circumstances under which such peculiarities, whether family or hereditary, show themselves.

The distinction between a *family* and *hereditary peculiarity* consists in this; that the first is confined to a single generation, to brothers and sisters, the children of the same parents; and the second is traced from generation to generation.

Though these terms are generally used as synonymous, and though some of the peculiarities we shall describe may be applied to either in different families, yet we shall see, as we proceed, the importance of attending to the distinction.

The period of life at which such peculiarities discover themselves is the next

consideration. This will be best illustrated by diseases, because these are most strongly marked; and to these our inquiries into human physiology should be principally directed.

Diseases either appear at birth, in which case they are called *congenital* or *connate*; or they arise afterwards.

The first only can with propriety be called *hereditary* or *family diseases*, all others we should consider as *hereditary* or *family susceptibilities* to certain diseases. The degrees of *susceptibility* are, in one point at least, so strongly marked, as to render it necessary that they should be distinguished by appropriate terms.

If the *family* or *hereditary susceptibility* is such, that the disease, though not existing at birth, is afterwards induced without any external causes, or by causes which can not be distinguished from the functions of the economy, such a state may be called, A DISPOSITION to the disease.

But if the susceptibility, though greater

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But if the susceptibility, though greater

than is remarked in other families, is so far less than a disposition as always to require the operation of some external cause to induce the disease; this minor susceptibility may be called, A PREDISPOSITION to the disease.

Having thus marked the distinction between hereditary and family peculiarities, and the division of each into the *connate*, the *disposition* and the *predisposition*, in proportion as the susceptibility may be greater or less; I shall offer some general remarks on the different ages at which family and hereditary diseases as they are called, for the most part show themselves.

Connate or *congenital* diseases are more commonly family, than hereditary: some of them being mortal, cannot indeed be transmitted, of which connate hydrocephalus or watery head is one among other instances: other connate peculiarities are more properly organic privations or imperfections, as connate deafness, or connate cataract.

DISPOSITIONS are found in some families

to diseases which are connate in others; *hydrocephalus*, which we have remarked as connate in some families, in others occurs to several brothers and sisters in succession, as they arrive at a certain age. The disposition to bliadness and deafness is often hereditary, though the connate privation of those senses is, I believe, always confined to a single generation. When the disposition is hereditary, the children are born with perfect organs; but usually about the age of puberty, a dullness of the sense is discovered, which gradually increases for the remainder of life, or till the entire loss of the faculty.

PREDISPOSITIONS also are found in some families, and *dispositions* in others, to diseases in the same organs, and called by the same name, of which the pulmonary consumption may serve as an illustration. In some families, we see a number of brothers and sisters falling into consumption in succession as they arrive at a certain age. This we may strictly call a *family disposition* to the disease, inasmuch as it is confined to a single

generation, and as we can discover no external cause to excite it. Another kind of consumption, and the most common in cold climates, is hereditary; but only in *predisposition*, always requiring the influence of climate to induce it, and consequently always to be prevented, and often relieved, by avoiding the exciting cause. In this instance, we see a disposition in some families, and a predisposition in others, to diseases different in themselves, though called by one common name. We shall now see, that even in the same disease a difference of susceptibility may be discovered in different families: and this difference it will be found not less necessary to mark.

Gout and *madness* are, by almost universal consent, considered hereditary; yet, if we admit the general implication as to their immediate causes, both these diseases, and particularly the former, should be considered as only hereditary in predisposition. If it were true in all, as it is in most cases, that the habits of the sedentary and wealthy are

necessary to induce the gouty action, there could be no question, that it is only hereditary in predisposition; but in some, the susceptibility to gout is so strong as to require no other stimuli for inducing the action, than such as seem absolutely necessary for the support of ordinary health. In *gout*, therefore, we must admit the two degrees of susceptibility, *disposition* and *predisposition*, nor will it be often difficult to fix their exact limits.

In *madness*, the difficulty may seem greater, but this is only on account of the frequent impossibility of ascertaining the state of the mind previous to such a change, and still more from the ill-judged secrecy with which such events are often obscured.

It may be asked, Why this attempt at discrimination, where the differences seem almost to meet? I shall therefore proceed, as proposed,—To illustrate the arrangement by well authenticated facts; and the necessity of it, by inferences which naturally result from them.

Connate or *congenital diseases*, it has been remarked, are rarely hereditary, which is the more remarkable, because peculiarities of form in less important parts are often hereditary. A striking feature is transmitted from generation to generation; but though *congenital cataract* is frequent among brothers and sisters, I have never known, nor can I discover any record, in which it has occurred in their offspring. Those who are born *deaf*, and consequently *dumb*, rarely marry, which makes it difficult to decide the question in them. I have however known an instance, in which a nobleman of this description married and had a numerous offspring, all perfect in those organs: his grand-daughter married, according to the laws of her country, her own uncle, that is, the son of her deaf grand-father; yet, none of her numerous children have any defect in hearing. It is true, in this instance, the grand-father was the only one of the family who was deaf, so that the defect was neither an *hereditary* nor *family privation*.

But though *congenital blindness* and *deafness* are rarely, if ever hereditary, the *disposition* to these defects is often so ; and in such cases it will be found, that the disease usually shows itself at an early period of life. The family of the Le Comptes is a striking illustration of an hereditary disposition to blindness :* many might be adduced of an hereditary disposition to Cataract, and Mr. Bass's family of Peterborough is, as far as the race has extended, one among many other instances, of an hereditary disposition to deafness. All the Le Comptes saw clearly till about the age of 16 or 18 ; at that age, some of them, without any apparent cause, became dim-sighted, and grew gradually more so, till they became dark : such has been the case for three generations, with a certain number in each race ; meanwhile, such as have escaped that critical age, have retained their sight through life. In the Bass family, the same progress has followed

* See Baltimore Med. and Phys. Reg. 1809.

in defect of hearing, at the same age, and excepting the difference of numbers, with nearly the same consequence.

It has been remarked in another place,* that the hereditary disposition to *elephantiasis* is governed by similar laws. In families the most disposed to that disease, such as have the disposition, show it at an early age; and those of the same family, who escape beyond that age, remain free throughout life. Such has been the case also, with a disposition to acute *hydrocephalus*, in a family of several children. Three were seized with the disease about the age of puberty, and in all, the rapidity was so great, that the most powerful remedies seemed scarcely sufficient to protract the fatal issue. Those who escaped that age, have continued free from the complaint. I knew three brothers attacked with *angina pectoris*, each as he arrived at the age of about eighteen; to all it proved fatal in a few months; such of the children as grew up to manhood escaped the disease,

* See Morbid Poisons.

The above illustrations are sufficient to shew, that when the *susceptibility* to an hereditary or family disease is so great as to amount to a *disposition*, that is, so great, that the disease is induced without any external causes, we can have little hopes of preventing it; and that if the disease has arisen during the changes about the age of puberty, we are to expect a cure, more from a proper direction of the efforts of nature during that period, than from remedies which may be useful in the same disease, when excited by external causes, or induced at a more advanced age. It is, therefore, of the utmost importance to recollect, that such constitutional dispositions are more commonly confined to brothers and sisters, than hereditary; and that, whether family or hereditary, they always show themselves at an early period of life. Hence, those of the children who have passed that age without any of the symptoms, may be considered as free from the constitutional disposition. It will also appear by what follows,

that the danger or security of the rising offspring may often be estimated by a similarity of feature or character to those of their brothers or sisters, who have previously fallen into the disease. The mother of the hydrocephalic children before mentioned has been correct in her prognostic, which of her latter children would be seized, and at what age ; painful as such a prospect may be, it is more tolerable than the horrors she might have suffered from constant suspense, as she can view most of her children without apprehension, and is in some measure prepared for the only mode however precarious, of preserving the rest.

This remark is still more applicable to that kind of consumption which affects several brothers and sisters about the same age. The parents are often healthy, or at least free from this disposition ; but the fate of some of their children, gives an early presentiment concerning others born afterwards of a similar complexion, features, and temper. Meanwhile the young subjects are the

last to see the danger, and when it is suspected, the excess of life, if I may so call it, or the precocity of growth and intellect is such, as to precipitate a most interesting figure and character into a vortex, from which no caution can prove any security. But when the susceptibility is so slight as to amount only to a *predisposition*, we have rarely any means of discovering it till the disease itself approaches; nor is there any age at which we may call the patient secure. As, however, some external cause is always necessary to induce the disease, we may hope to prevent it by avoiding such causes, or to cure it by removing them. Hence, the importance of distinguishing the first described consumption from the scrofulous; the one a family disposition, requiring no external cause to excite the disease, which exists in all climates, and is fatal in all; the other an hereditary predisposition, never excited into action but in certain climates, and the disease often cured by an early removal from them.

In this instance, the different degrees of susceptibility in different families may be thought to be sufficiently explained by the difference in the two diseases; which, though generally confounded, have little more in common, than that they are both seated in the same organ. But many instances occur of well-marked different degrees of susceptibility to the same disease in different families. I shall only mention *gout* and *madness*, for the reasons beforementioned. When *gout* appears at an early age in a temperate subject, when it invades the cottage, or is seen in hospitals, we cannot question that the susceptibility is such as amounts to a *disposition* requiring no external causes to produce it. When the disease follows intemperate or sedentary indulgences as exciting causes, the susceptibility amounts only to a *predisposition*; and though this *predisposition* is often hereditary, yet the *disease* itself will be found in more instances original than hereditary.

This may, at first, appear paradoxical,

but for the truth of it, I appeal to common experience, nor will it be difficult to account for the cause on the principles laid down.

Where the hereditary susceptibility amounts only to a *predisposition*, some external cause is necessary to induce the disease. These external causes are well known. The predisposition may, therefore, exist from generation to generation, without any appearance of the disease among those whose habits are frugal, from necessity or choice. But if one of them should acquire the means, and yield to habits of indulgence, we shall see him the first of the family to bring this predisposition into action. Thus it is, that we so frequently find gout in members of a wealthy corporation, whose ancestry never felt the disease, only because they were never exposed to the exciting cause. From this it follows, that where the predisposition exists, it is of no consequence to the future progeny, whether the disease has been excited or not. For it will be

sometimes found, not only that the disease has been thus excited for the first time in the family, but that the progeny of the same individual will remain free from it. The indulgencies above alluded to, though new to the individual, are familiar to, and consequently less valued by his posterity; and labor, which, from early necessity, was irksome to him, is by them courted as exercise. The inference follows, that in a *gouty disposition* we cannot expect to prevent the disease; the most we can promise, is to protract the periods of intermission, and to moderate or shorten the paroxysms:—In the *predisposition*, on the contrary, the disease may be prevented or cured.

Madness, as well as *gout*, is never *hereditary*, but in *susceptibility*; and those who have paid the greatest attention to the subject, must admit the two degrees of susceptibility. When we perceive, (an event by no means uncommon) several children of the same parents, and sometimes in different branches of the same family, seized with

madness about the age of puberty, we cannot but admit a disposition to the disease ; for though some mental irritation is usually assigned, yet the cause is often so trivial, that we cannot doubt whether the supposed effect has preceded it. Sometimes we find the disease cease, as the changes of the constitution during that period are completed. If that should not be the case, little can be expected from art. But when the *susceptibility* amounts only to a *predisposition*, requiring the operation of some external cause to produce the disease, there is every reason to hope, that the action of the disease may be for the most part much lessened, if not prevented altogether : for this purpose, the hereditary peculiarity should always be kept in view in the direction of the early studies, in the subsequent employment, and in the discipline, during that early period of life, which admits and requires every judicious restraint.

These remarks may be for the most part applied to a state of susceptibility hitherto

unnoticed, because not easily included in either of the other divisions. The state to which I refer is induced by pregnancy and child-birth in women, and at the more advanced climacteric in both sexes. Though the actions excited on these occasions arise from the functions of the economy, yet they are not the ordinary functions. In most cases the provisions of Nature are sufficient for preserving the subject during such changes; and on that account they are often too little regarded. In women, not only pregnancy and child-birth, but the critical period of advanced life is strongly marked, and many judicious cautions are to be found in medical writers on this last subject; but it is a great mistake to suppose, that the change in men, about the same age, is always unattended with any disturbance of the constitution. I know a family in which three brothers were each, in succession, attacked with symptoms of Angina pectoris between the age of forty-seven and fifty. The disease was less violent than in the young sub-

jects before mentioned, so that each lived with a continuance of the complaint to a fair old age. Those who escaped to the age of fifty, remained free for the remainder of their lives, and none were attacked earlier. Whether the disease was hereditary, or confined to that generation, cannot be ascertained. The mother was said to be asthmatic, and died suddenly; but it was before Dr. Heberden had given a name to that species of asthma. All her grand-children, many of whom have survived the critical age, have remained without any symptoms of the disease, and all have with much prudence looked forward to every means of prevention, as the period has approached. It is worth remarking too, that the females of the former generation escaped; whether by a greater attention to the changes of that age, it is not in my power to determine.

On the whole, may we not draw the following conclusions from this part of our Inquiry, namely, That when the disease is *connate*, we can have no means of forming

any prognostic, nor of superseding it. That when the *susceptibility* is such as amounts to a *disposition*; that is, when the disease is expected at an early age, and without any external cause to induce it, our hopes of prevention must be very feeble, and our hopes of cure must rest principally on the completion of the constitutional changes. But,

That when the susceptibility amounts only to a *predisposition*, or is insufficient to induce the disease without the access of some external cause, it may often be prevented or cured.

That the same attempts at prevention and cure may often succeed when the susceptibility is excited into action by pregnancy, or by changes which take place at critical periods in more advanced life.

That, as we have so little chance of superseding a connate disease, or of preventing one to which there is a constitutional disposition, it will be a most important consideration to ascertain how far such connate diseases, or such dispositions to early disease,

are in other cases confined to a single race, as we have seen in most of the instances adduced; and whether, as in the rest, those of the family who escape the critical age, are free from the disposition.

Such appears to be the present state of our knowledge respecting the diseases themselves. Let us now consider what provision has been made by Nature to correct such hereditary peculiarities, and how far they may be imitated or improved by Art.

We must at once see, that if no provision had been made in the construction of animals to prevent it, hereditary diseases would by degrees have become universal; whereas there is every reason to believe, that they lessen in the human race, as Society improves: and we shall see that so important an end is not left to the uncertainty of human institutions. Throughout all the animated productions with which we are acquainted, there is found a disposition in every variety to return to the original form; and in those animals which are reared for

our use, much industry is required to prevent it. In a state of nature the race of all gregarious animals is probably progressively improving, as far as is consistent with their capacity for improvement. The strongest male becomes the *vir gregis*, and consequently, the father of most of the offspring. In the ruder state of human society, or rather in its earliest formation, something of the same kind may prevail; but in a more advanced stage, sufficient provision is made by the preference which health and intellect will for the most part produce in either sex.

Another provision arises out of climate; which we have seen is, in some cases, the only means of exciting a diseased susceptibility into action. Those constitutions, which are peculiarly susceptible of such diseases as are excited by climate, fall an early sacrifice; hence, the propagation from such sources gradually lessens, and the disease would cease altogether, were it not that parents, free from such susceptibility,

occasionally produce an offspring in whom the susceptibility originates.

Thus we see the natives of warm climates, when removed to colder, are peculiarly liable to scrofula; and it cannot be necessary to add, how much the natives of colder climates suffer under the Tropics, from causes which produce little or no effect on the offspring of the old inhabitants. By these means a race is gradually reared with constitutions best calculated for the climate: a law which, I suspect, has been too much overlooked, in our inquiries after the causes of the more marked varieties in the human species,

The provisions of Nature, however, for restoring the original form, in animals reared for our use, may be very much interrupted by accidental circumstances, and almost superseded by the industry of man. Sir John Sebright informs us, that if a flock of sheep, in which there is any defect, are permitted to breed *in and in*, the defect will