**An essay, philosophical and medical, concerning modern clothing / By Walter Vaughan, M.D. physician at Rochester, Kent.**

AN

# ESSAY,

*PHILOSOPHICAL AND MEDICAL,*

CONCERNING

# MODERN CLOTHING.

[PRICE THREE SHILLINGS.]

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BY

WALTER VAUGHAN, M.D.

PHYSICIAN AT ROCHESTER,

*KENT.*

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[M,DCC,XCII.]

TO

DR. J. E. SMITH,

PRESIDENT

OF THE

LINNEAN SOCIETY,

FELLOW

OF THE

ROYAL SOCIETY, &c.

*Dear Sir,*

*I inſcribe this ſmall Eſſay to you, as a Teſtimony of that Friendſhip which I conceived for you whilſt we were together on the Continent, and which I have entertained ever ſince.*

*I am, dear Sir,*

*with all poſſible Reſpect,*

*your ſincere Friend,*

*WALTER VAUGHAN.*

# PREFACE.

THIS Eſſay was begun ſome Years ago, and intended to be read before a Society of which the Author was a Preſident. But conſcious that to make a deep and laſting Impreſſion on his Hearers both Brevity and Method were neceſſary, and judging himſelf inadequate to either, he deſiſted, laid aſide the little he had written, and changed the Subject for another.

Since that Time, the ſame Motive, which firſt inſtigated him to undertake the Taſk, have frequently rekindled in his Mind a Deſire to accompliſh it: and he hopes the

Delay which has of Courſe increaſed his Experience, has enabled him to think with ſome Preciſion, and to write with ſome Clearneſs and Conciſeneſs.

It is true, to ſtem the Torrent of Cuſtom ſuppoſes an Aſſurance which the World may not readily commend. An Aſſurance which from the known Inefficacy of the elaborate and poliſhed Treatiſes of Winſlow and Camper, ſome may call by the harſh Name of Temerity. But however bold the Author of this Eſſay may be judged, he dares to ſay he ſhall not be accounted licentious. He has not oppoſed Cuſtom only becauſe it is Cuſtom; nor has he darkened the Proſpects of the well-inclined with gloomy Reflexions on human Calamities. But if after weighing the

Authority

Authority of Cuſtom in the Scales of Reaſon he has found that ſuch Cuſtom is wrongly and unfortunately impoſed on Mankind, he thinks the Votaries to Faſhion can make no real Complaint againſt him for detecting and expoſing the Impoſition.

Preſuming not to dictate his Sentiments to any; he only wiſhes to announce them. And that Politeneſs which ſhould always prevail in diſcuſſing popular Topics, he has carefully endeavoured not to violate. This he did the more intentionally, becauſe he thought it might contribute to ſecure the Efficacy of his Inſtructions, and to invalidate the Prejudices of the extravagant and thoughtleſs.

In

In a Word, intent on the great Duties of his Office, ſtudious to improve thoſe Talents which may render him uſeful in Society, and convinced that the Cauſe of Virtue is cloſely connected with the Object of his preſent Eſſay, he makes it public with the ſame Cheerfulneſs that he ſat down to write it.

WALTER VAUGHAN.

ROCHESTER,
*Oct.* 11, 1791.

# CONTENTS.



PREFACE.

NON UT LAUDEMUR, SED UT PROSIMUS.

AN

THE Reader is requeſted to make the following Corrections before he begins to read this little Eſſay. For ſome of them greatly affect the Author's Senſe and Intention, and others eaſily ſeen at firſt Sight render the Peruſal tedious and diſagreeable, if not timely attended to.

As to Omiſſions and Errors in Punctuation, which depend partly upon the Printer and partly upon the Author, a few are here pointed out, and the reſt his candid Reader will ſupply and pardon; well knowing the Impoſſibility of a medical Man's regular Attendance on the Preſs.

## E R R A T A.

| Page | | Line |
|---|---|---|
| 8, | from the Top | 3, After *Anatomy*, a Mark of Admiration ! |
| 13, | | 5, Inſtead of *erect*, read *ſteady*. |
| 16, | | 6, After *Semblance*, omit the Comma , |
| 24, | Bottom | 9, Omit *doubtleſs*. |
| 25, | | 11, Omit *now-a-day* |
| 27, | Top | 6, Inſtead of *hat*, read *that*. |
| 40, | Bottom | 9, Inſtead of *Axillæ*, read *Axillæ*. |
| 41, | Top | 7, Inſtead of *laſts* and *is*, read *laſt* and *are*. |
| 47, | Bottom | 12, Inſtead of *Solicitudin eopem*, read *Solicitudine Opem*. |
| 50, | Top | 15, Inſtead of *ſujet*, read *ſubject*. |
| 54, | | 12, Inſtead of *Lie*, read *Life*. |
| 57, | | 8, Inſtead of *agreeable*, read *agreeably*. |
| 61, | | 10, Inſtead of *Elbows*, read *Elbow*. |
| 65, | | 2, After *them*, put a Comma , |
| 68, | | 11, Inſtead of *generallymade*, read *generally made* |
| 78, | | 7, Inſtead of *into*, read *to*. |

87, The Aſteriſk in this Page refers to this Note, which was overlooked, viz. * *Hoffmanni Syſtema Med. rationalis. Sect. I. Prolegomena de Febrium Natura in Genere.* § VII. Dr. Lind thinks the Patient's Life in the greateſt Danger from the hot Fit (Advice to Europeans, App. p. 313.): but I am inclined to believe Hoffman.

| | | |
|---|---|---|
| 88, | Bottom | 6, Inſtead of *weakneſs* read *weakens*, and inſtead of *inebrating* read *inebriating*. |
| 90, | Top | 4, Let the following Words be incloſed betwixt Commas— , when the Air is dry , |
| 92, | | 12, Omit *are*. |
| 103, | | 4, Inſtead of *uncomfortably warm*, read *uncomfortable*. |
| 106, | | 4, Put an Aſteriſk, and another at the Bottom of the Page, with this Note — * Expoſition of the Principles of Anatomy and Phyſiology, &c. Vol. II. Note 355, by the Author. |
| 109, | Bottom | 5, After *about*, put a Comma inſtead of a Colon |
| 112, | Top | 11, After *Smell*, put a Mark of Interrogation ? |
| 114, | | 6, Let the following Words be incloſed betwixt Commas— , between the Toes , |

AN

# ESSAY,

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ON

# MODERN CLOTHING.

## CHAP. I.

### INTRODUCTION.

*Design of the Whole.*

IT is an Obſervation eaſily made every Day that Man conſiders thoſe Things the leaſt of all, which from their Relation to him he ought to conſider the moſt; and that many Evils of which he conſtantly complains are ſuch as it is in his own Power eaſily to avoid. Thus, every reaſonable Man muſt be aware of the little Attention which is generally given to the Nature of, and Manner of putting

his Clothes, as a poſſible Cauſe of embittering and ſhortening his Days. And there are, without Doubt, many other Cauſes of Complaint equally as effectual, though common and unheeded as this.

Far be it from me to derogate from thoſe Profeſſors of the healing Art, whom the Prince of Orators ſo long ſince likened unto Gods,* and whom the enlightened Part of the World, in every Country, even now hold in the greateſt Eſtimation. I only ſay that, as it is the univerſally acknowledged Duty of medical Men to watch over the public Health and to avert every poſſible and probable Cauſe of Diſeaſe, it becomes them excluſively to diſtinguiſh Things ſalutary from ſuch as are not, and to enter into familiar Explanations, as often as there is Occaſion to convince Perſons of the Impropriety and Danger of ill Habits. It is my humble Opinion, that however grave and important the oldeſt Phyſician may ſeem,

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* *Nulla Re magis ad Deos accedunt quam Salutem Hominibus dando.* CICERO.

he

he ought not to be offended at Perſons, if they do not follow his Advice, when it conſiſts only of a bare Aſſertion of the Inſalubrity of Things, or of the bad Conſequences of a Habit and a Deſire or Command to abandon it. For unleſs Men be convinced that a Thing is wrong, it would certainly be ſupine and fooliſh for them to avoid and condemn it.

As for me, who have been ſomewhat inſtructed in the Principles of Medicine, with which I profeſs to be much delighted; and brought up in Hoſpitals, in which all acknowledge the healing Art to be exerciſed with moſt Simplicity and Succeſs; I ſhould judge myſelf deſerving little of Mankind and acting a very diſhonourable Part, if, convinced that Health and Life are frequently ſacrificed to Dreſs I did not publiſh the Grounds of my Conviction to attract the Attention of thoſe for whoſe Benefit I profeſs to practiſe.* Is

* I confeſs, I feel the ſame Motives as the ſagacious Sydenham may be ſuppoſed to have felt from theſe Words: —" *quantacunque fuerint aliorum Conamina, ſemper exiſtimavi mihi*

Is not the Advice of Nurſes, and of Patients to one another often followed, whether good or bad, for no other evident Cauſe than their endeavour to eſtabliſh it by reaſoning? Is not this the Cauſe that Stay-Bands, ſwaddling Clothes, Rollers, and ſimilar Things are put about Children almoſt the Moment they begin to breathe? The Nurſe finds it irkſome to be continually watching the tender Infant; ſhe dreads the Labour of ſhifting its Clothes as often as ſhe ought, and of Courſe ſhe recommends thoſe which are ſo reſtrictive and heavy as to reſtrain its gentle Movements, and ſo cloſe and thick as to create and conceal Uncleanlineſs. It is natural that a Nurſe ſhould be leſs tender to the Child of another than of herſelf: and ſuch is the Depravity of many Nurſes, their inſatiable Thirſt after Cordials, their invincible Obſtinacy, and their unpardonable Confidence and Boldneſs, that I am

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*mihi vitalis Auræ Uſum fruſtra datum fore, niſi et ipſe in hoc Studio verſatus, ſymbolum aliquod, utcumque exiguum, in commune Medicinæ Ærarium contribuerim.*" PRÆFATIO.

convinced

convinced Mankind would be really benefited by their total Abolition. Can any be ſo tender a Nurſe to a Child as its Mother, to a Huſband as his Wife, &c.?

But Cuſtom muſt be regarded: and what one does from Craft and Knavery, another may be led to do from Humanity. So much does Example prevail over Precept.

I never knew a Nurſe who adminiſtered *Opium* without the Knowledge and Direction of a Phyſician, and I have known numerous Inſtances of their adminiſtering it in Hoſpitals, who had not ſome plauſible Reaſon to alledge as an Excuſe. Even the Form of reaſoning faſcinates irreſiſtably. I have more than once known the cogent Perſuaſions of an officious Nurſe prevail over the expreſs Orders of a viſiting Apothecary: and I am ſure that this is very often the Caſe among the common People, who deſerve and have a Sort of Claim to the Attention of medical Men, as well from the Superiority of their Number as from their Poverty and Want of Knowledge. But amongſt

amongſt Perſons of Rank, Learning, and Ability, it may be taken as granted, that Truths however fairly ſtated, and Arguments however logically deduced, loſe much of their Weight by being advanced by Men out of their proper Profeſſions. So much is it incumbent on Phyſicians to ſtudy and inculcate what moſt conduces to Health, and that Conſtitution of our Bodies which is ſo neceſſary to the Enjoyment and Comforts, as well as to the Performance of the Duties of Life.

§ 1.

THE Deſign of this Eſſay, to ſpeak plainly, is to inveſtigate the Cauſes of Dreſs, to prove that the common Mode of clothing not only alters the natural Form of our Bodies, but alſo produces Inability, Diſeaſe, and Death; and to propoſe a Clothing ſuitable to every Age, Sex, Conſtitution, and Country.

My Reader will be greatly miſtaken, indeed, if he imagine that I am about to educate ſuch another Emilius and Sophia,

for

for each other, as Rouſſeau did. My Buſineſs is not with Education. The Trumpery of the Milliner, and the Apparatus of the Toilette are of no Concern to me. I care not how our Beaux and Belles dreſs, provided they do not thereby diſqualify themſelves for the Duties of human Society. I proceed, therefore, to lay down certain Premiſes.

§ 2.

FIRST, I think it indiſputable that the Form and Structure of Man, as well as of every other Animal, are by Nature adapted to his Rank in the Creation. And to confirm this chief of my Premiſes, I will conſider—the erect Poſition of Man—the Magnitude of his Brain, and its Proportion to the Organs of Senſe, and—the Wiſdom of Almighty God as it is manifeſted in his other Works and declared in the holy Scriptures.

A. Man is the only Animal that walks erect by Nature. Moſcati has nevertheleſs aſſerted that Man does not walk

erect

erect by Nature, but by Art. He thinks, or would be thought to think, that he can prove this Aſſertion by Anatomy! Surely, it will be exclaimed—" *Nihil tam abſurdum dici poteſt quod non aliquis Philoſophorum excogitaverit.*"—But to deſcend into particulars: Moſcati has properly enough defined that to be the natural Poſition of every Animal, in which it is moſt healthy, ſtands moſt firmly, and is beſt fitted for Motion of various Kinds. Let us ſee then by what Train of Arguments he was led to believe, and aſſert, and ſet about proving, that Man gains no Advantages from being erect, and that his moſt natural Poſition is horizontal.

He adduces Inſtances of Men who walked upon their Hands and Feet; and that all Men ought to walk ſo too, he infers from a Body being firmer which is ſupported by four than by only two Props.—Now, admitting that there have been Men who walked on their Hands and Feet; it does not follow from thence that a horizontal Poſition was natural to them.

them. The Univerſality of a Thing is not done away by the Evidence of a few Exceptions. Beſides, no Animal, except Man, has two Hands and two Feet: Apes having four Hands,* and other Animals of the Claſs *Mammalia* having four Feet.

Again, it is ſhewn, I think, that the Arms were not deſigned to ſupport the Body, by their being ſhorter than the Legs. It is objected by this Philoſopher of Milan, that the Length of Bones depends upon the Uſe made of them; and that the Proportion of them is deſtroyed by the erect Poſition. But this Objection ſo pompouſly obtruded, reſts upon a moſt ſlippery Foundation: ingenious it certainly is, but it is arbitrary in the extreme: for there is a remarkable Difference between the anterior and poſterior Extremities of moſt Animals which conſtantly

* If the Reader will take the Trouble to conſult the *Syſtema Naturæ* of Linné enlarged and improved by Joh. Frid. Gmelin, and publiſhed at Lipſic, 1788, by Emanuel Beer, he will find under the Claſs *Primates* many Obſervations to prove that the *Simiæ*, or Apes, were never intended to walk erect. The Obſervations are chiefly derived from comparing the Bones and Muſcles.

go, as it is common to ſay, *on all fours.* For what Reaſon then are the Arms ſhorter than the Legs, unleſs it be natural for them to be ſo? How can the Arms become longer by beinguſed as Legs!—And are Fingers made ſo beautiful, and endowed with ſo exquiſite a Senſe of feeling for the Purpoſe of treading the Ground! It does not ſeem likely: for the Cuticle is ſo ſoon thickened by Preſſure, as we are taught by the Hands of Blackſmiths, that the Nerves which end in the *Papillae* of the Skin at the Tips of the Fingers would be ſo ſecluded by it from tangible Bodies, as to be altogether uſeleſs, or at leaſt ſo incapacitated for the nice Diſtinction of Qualities as to deprive us of that Variety of Pleaſure and Information of which Touch is ſo inexhauſtible a Source. Where Nature intended that the Cuticle ſhould be thick and hard, there ſhe has made it ſo herſelf, as on the Soles of the Feet of Infants that have never walked.

Another Aſſertion of Moſcati is that when an Animal goes on four Legs it is not ſo ſubject to Fatigue, as if it went only

on

on two. He ſays that many Muſcles are continually acting to preſerve our Bodies upright, to move us from one Place to another, and to keep our Heads ſteady; but that Animals going horizontal, having their Heads merely fixed to their Necks, and moving alternately one anterior and one poſterior Extremity, always, however, reſting on two, do not incur Fatigue of the Muſcles.—Now this, plauſible as it appears at firſt Sight, will be found upon Examination to be more ſeducing than ſolid.

Circumſcribed in my View, I will not attempt to prove how exactly and wonderfully the human Skeleton is formed for Motion according to the Laws of Mathematics. I wiſh, I could even diſpenſe with ſuch Terms as are likely to be thought difficult by the commoneſt People that may read my Book. As ſuch Terms, however, muſt be either expreſſed or implied, I will uſe them as ſeldom as poſſible; and try rather to convey my Meaning by familiar Examples than by abſtract Reaſoning.

Whoever reflects that the human Skeleton consists more especially of long cylindrical Bones, joined at their Extremities one to another, retained over one another like Pillars, and yet not bearing perpendicularly one upon another, will see, it is plain, without my proceeding, that our Body is kept erect by the Intervention of particular Means. The mere Skeleton of a Man can never remain erect of itself. The Joints must be connected by Ligaments; and Muscles and their Appendages are necessary to move and determine the Degree and Manner of their Movement.

The Influence of the Mind is conveyed by the Nerves into the Muscles; and hence it is that the *voluntary* Actions of the Body are performed. The Bones could not be moved but for the Muscles. As to their Connection by Ligaments, it alone could not preserve the Body erect. We should be perpetually falling, as well from the Slipperiness of the Cartilages which cover the Ends of the Bones as from our being incapable of quickly adapting

adapting the Line of Gravitation to the caſual Inclinations of the Body.

Bodies always fall where the Line of Gravitation or of Innixion tends. A Man cannot ſtand upright and ~~erect~~ steady, unleſs the Line of Gravitation be within the Baſe of his Body; unleſs the Line of Gravitation fall between his Feet, or upon one of his Feet. For, although we frequently do ſtand upon the Heel or Toe of one Foot, the Line of Gravitation or Propenſion falling within the Bounds of the Heel or Toe; yet, even the Action of the Heart or Reſpiration would incline us to fall by throwing the Line of Propenſion out of the Baſe, if the Muſcles were not excited by the Will to throw it as quickly in again.

In a Word, every Man of common Obſervation muſt know that it is eaſier to ſtand on one Foot than on both, changing the Foot alternately, and conſequently giving alternate Action and Reſt to the Muſcles. But does not a Man ſtand and walk as firmly on two Legs as Animals on four? I confeſs, I have always thought ſo.

10. " *Fruſtra fit per plura quod fieri poteſt per pauciora.* If the Stability of our Body be the greater in Proportion as the Number of its Supports is the greater, it may be aſked, why we do not ſtand on our Heads too! Why ſhould we walk on our Hands and Feet, if our Feet alone are ſufficient?

How the Centre of Gravity of our Bodies is thrown forwards in walking, how the hinder Limb is lengthened, its Toe preſſed againſt the Ground, its Heel raiſed, &c. in ſhort, how walking, running, &c. are performed, it is not neceſſary to deſcribe at preſent. But whoever conſiders the Strength of a Man's Muſcles, and that he has Clavicles, Buttocks, and Calves to his Legs, which no other Animal has except the Orang-Outang and Apes—which can walk erect like Man,*—whoever conſiders how the Shoulders of Man are kept at a Diſtance from each other by the Clavicles, while thoſe of Brutes having no Clavicles almoſt touch,

* Linné's *Syſtema Naturæ, Edit. Gmelin.*

will

will readily ſee that Man walks erect, without being more fatigued by it than Brutes by going horizontal.

As to an erect Poſition being a Cauſe of Diſeaſe, I think it eaſy to prove the contrary. I am of Opinion that the *Fœtus in Utero* never changes its Poſition, but is always as at Birth. And if I were to admit that its Head is turned downwards and its Legs upwards, yet as Brutes muſt alſo be in a ſimilar Poſition, I cannot believe, like Moſcati, that the large Size of the Head of a *Fœtus* and the ſmall Size of its Legs depends upon it; and much leſs can I believe that a Tendency to Giddineſs, Headache, Madneſs and Apoplexy are owing to the ſame Cauſe.

Palpitation of the Heart, and Aneuriſms of it and the large Veſſels near it, Inflammation of the Breaſt, Dropſy of the Breaſt, and pulmonary Conſumption are derived by Moſcati from a Change in the Situation of the Heart; which, he thinks, is cauſed by the erect Poſition, becauſe in a *Fœtus* the Heart is, as it is in Brutes, nearly perpendicular.—But this Argument

ment is of no Weight, ſince the poſterior Surface of the Heart of a *Fœtus* is flattened by Nature, as if to prepare it for reſting upon the tendinous Part of the Diaphragm. Beſides, it might be affirmed, with much greater Semblance of Truth, that many other Differences between the *Fœtus* and Adult depend on accidental Cauſes, which we are nevertheleſs convinced do depend on natural Cauſes, becauſe they are obſerved in four-footed Animals.

Hypochondriaciſm, Piles, Ruptures, *Varices*, Dropſy, and many other Diſeaſes, he attributes to the *Viſcera* of the *Abdomen* preſſing downwards upon the Contents of the *Pelvis*. *Prolapſus Ani et Uteri*, Coſtiveneſs and Abortion, he alſo aſſigns to the erect Poſition; and ſays that the laſt is moſt frequent in the human Species! — Alas! if Moſcati had conſidered the Poſition of the Diaphragm, the Yielding of the Abdominal Muſcles, and how by the Obliquity of the Diaphragm the *Viſcera* are forced forwards and not downwards—a Subject which I ſhall ſpeak more fully of anon (§ 12.—F.)

if

if he had conſidered the Courſe of the Abſorbents and their Termination in the Angles formed by the ſubclavian and jugular Veins, he muſt have diſcovered his Error. I am deceived if there be not ſomething in the human Face which proves that it was intended to look towards Heaven.

*Prona dum ſpectant Animantia cætera Terram*
*Os Homini ſublime dedit Cælumque tueri*
*Juſſit et erectos ad Sidera tollere Vultus.*

Having thus, I hope, effectually overturned the principal Paradoxes of Moſcati, reſpecting the Poſition of Man's Body, I come to ſpeak of the human Brain and Nerves, to ſhow how by the Conſideration of them the Fact alledged above (§ 2.) may be corroborated.

B. Should it be granted that the internal Structure as well as the external Form of Man are adapted by Nature to his Rank in the Creation, will it not be extremely probable that Peculiarities in Individuals are connected with Peculiarities of intellectual Powers, ſomewhat like Cauſe and Effect? I profeſs, I think

ſo: and though I have not long ſtudied, as ſome may have done, the Science and Practice of Phyſiognomy, and am not prone to recur in any degree to myſterious Explications, yet I have more than once gueſſed, and gueſſed ſucceſſfully, the Diſpoſition of a Man from a ſlight Glance at his Features. I am inclined to ſuppoſe him, whoſe Face is like that of a Dog or an Owl, to have alſo a correſpondent Diſpoſition.

My Reader has probably not Time to ſpare, and I want both Ability and Inclination to keep his Attention and good Nature towards me alive by a long Diſſertation. Be the Seat of the Soul where it may:—I have choſen to inſtance the Brain of Man to prove by it how greatly the internal Structure of Animals differs, and how much more complex the Structure of Man is than that of any other Animal. But to deſcant on the Magnitude of the human Brain, its Proportion to the Organs of Senſe, and the Connection between this Proportion and the mental Powers, would be a Work, in this

Place,

Place, of Supererrogation. It muſt at leaſt be allowed that it is for ſome wiſe Purpoſe that the human Brain differs from that of every other Animal: for if Man were deſigned for no particular End, he might certainly have been formed like Brutes. In ſhort, I have no Doubt but that the internal Structure of Man's Brain, as well as the Form of his Face, are ſomehow connected with his Diſpoſition.

The great Morgagni, who diſſected the Bodies of maniacal Patients, obſerved that the medullary Subſtance of their Brains was drier, harder, and firmer than that of the Brains of others. And Profeſſor Meckel has ſaid, in one of the Berlin Memoirs, that he found the Brain not only drier, but ſpecifically lighter in the Bodies of inſane Perſons. It muſt not be forgotten, however, that Morgagni and others ſometimes ſaw the Brain ſoft in one Part and hard in another. To me it is very likely that whenever the internal Senſes are diſordered, a proportional Diſorder of the Brain alſo exits; and I

 have

have frequently thought, and do even now think, that the State of the human Brain in ſome Diſeaſes becomes like that of certain Brutes in Health.

But I would not be thought to believe that Senſation ariſes from mere Organization. I do, indeed, believe that it cannot exiſt without it. But my Opinion is that the ſame Organization often remains after Death, and therefore that ſomething muſt be ſuperadded to Organization, to make it produce Senſation and Thought. What that Something is nobody knows: we call it the vital Principle: in the Scriptures it is perhaps called the *Breath of Life*.

Now, let me aſk my Reader, whether he believes with me, that there is one Organization of Man and another Organization proper to every Race of Animals? Whether he believes with me that every Man has a Peculiarity of Organization by which he is more or leſs fitted for Senſation and Reflection?

C. For the laſt Proof (§ 2.) I had reſolved to conſult the Bible, in which it is

ſaid

ſaid that God created Man after his own Image. But I deſiſt, becauſe I cannot pretend to aſpire to, and ſupport as I would, that Character which gives Authority and Dignity to theological Tenets. Therefore, if my Reader do not agree with me that for the viſible Image of an inviſible, incomprehenſible, and incomparable God a peculiar and moſt excellent Structure and Organization are neceſſary, I openly acknowledge that I ſhall not be diſappointed, if he believe not one Argument that I am about to offer.

§ 3.

I SHALL now endeavour to prove that the Notions which we have of the Proportions and Beauty of the human Body are arbitrary and fanciful. This is a ſecond Premiſs.

If it be granted that every Man has naturally a peculiar Organization, and is thereby ſuſceptible of certain definitive Degrees of Exertion, it follows that every Alteration of Organization muſt tend to alter

alter the Suſceptibility—to increaſe or to diminiſh it. That Mankind have no ſettled Rules for judging the Proportion and Beauty of one another, I infer from conſidering the following Facts, *viz.*

A. That not only the Individuals of different Nations and of different Ages, but alſo the Individuals of any one Nation and of any one Age, differ in their Taſtes of Beauty.

B. That in all civilized Nations particular People endeavour, in ſome Manner, to vary their Proportions, let them be naturally what they may.

C. That the Painters and Statuaries moſt verſed in the Art of deſigning agree that the Excellence of a Picture or Statue is more certainly proved by the Impreſſion it makes upon the Senſes than by comparing its ſeveral Dimenſions.

D. That the Dimenſions of two Bodies, or of the two Sides of one Body, are never exactly ſimilar.

E. That Nature never united Parts ſo proportioned one to another as thoſe which

form

form the Aſſemblage at Rhodes called *Apollo*, or the *Venus de Medicis* :—

" Two faultleſs Monſters which the World ne'er ſaw."

§ 4.

PREMISES (§ 2. and 3.) being thus eſtabliſhed, I leave it for my Reader to eſtimate the Audacity and Folly of thoſe who are always intent on altering their Shape and Appearance; as if any Deformity which the Capriciouſneſs of the Age gives Riſe to were more becoming and delightful than the Works of our omnipotent Creator. In the next Part of my Eſſay I ſhall undertake to prove that Clothes, which are neceſſary to defend us from the Inclemencies and Viciſſitudes of Climate and Seaſon, and to hide thoſe Parts which Delicacy and the Intereſts of Society require to be hidden, by being worn agreeably to the preſent Faſhion incapacitate us for our Duties as Members of Society, create Diſtreſs and Diſeaſe, and are in Truth the moſt inſidious Inſtruments of ſelf-deſtruction.

It

It may be imagined, that what I ſhall preſently pronounce, is more applicable to the fair Sex. Nay, if I may judge from the Converſation which I have caſually had, I am expected to rant on tight Stays, and to repeat in ſhort, energetic and poignant Language, all the common-place Reflections which have tranſpired from ſplenetic Writers. —But I ſhall purpoſely avoid ſuch mean Invective. It has always been known that Men and Women are naturally attracted by each other; and it is almoſt certain that if thoſe Women who lace tightly from a Deſire to pleaſe Men, had found by Experience that inſtead of rendering themſelves more lovely, they were more diſliked, they would doubtleſs have remained content as Nature made them: ſo that the Fault is more in Men than in Women.

Nor will I refer Abuſes in Clothing to the vulgar and illiterate: for they are far more general among the rich, the poliſhed and the well-informed; conſtituting a principal Part in the luxurious Parade of

Wealth

Wealth and Diſtinction. How oſten have I been grieved that ſuch Evils ſhould be every Day ſo much practiſed by thoſe whoſe Example is likely to betray thouſands, and reduce them to Poverty and Diſtreſs!

——— *Tanta eſt quaerendi Cura Decoris.*

I thought ſome Years ago that the moſt effectual Method of preventing young People from being ſo enamoured of fine Clothes, would be for their Parents to inculcate that native Charms alone conſtitute Beauty, and that very few are handſome enough to wear plain Clothes. But though I am perſuaded this Method would ~~now-a-day~~ be advantageous, yet recollecting that in this Age the Number of old Women is leſs than perhaps in any preceding one, I do not inſiſt on it

The juſtly celebrated Buffon ſays Faſhion is rational, when it is intended to leſſen and conceal Defects and Blemiſhes. But, if by this, he would be underſtood literally, I do not ſee when Faſhion is not rational, in the ſame Senſe. I rather think he intended to call this

Faſhion juſtifiable. If this Conjecture be admitted, and I think, they who read his *Hiſtoire Naturelle* cannot but admit it, it will be ſuppoſed that he thought Reality ſhould be no Part of the Concern of a deformed Lady or Gentleman, and that thus he was giving them a fine Leſſon of Hypocriſy.—Now, as they who diſguiſe their Perſons may juſtly be ſuppoſed to diſguiſe their Sentiments, I will try to confute the Count de Buffon partly from his own Words and partly from thoſe Premiſes which I flatter myſelf I have already obtained my Reader's Aſſent to. The Count ſays that, taking Mankind in general, there is a greater Number of deformed than of well-proportioned Bodies, and a greater Number of ugly than of pretty Faces.—Now, I admit theſe Aſſertions, not becauſe I believe them, but becauſe I cannot prove in what the Proportion and Beauty of the human Body conſiſt; and, therefore, I deny that any Faſhion whatever can be founded on Diſproportion and Uglineſs. For Faſhion, in the Senſe that I have been

been uſed to underſtand and employ the Word, implies ſomething approved and eſtabliſhed by the Cuſtom of many. But Deformities of Body and Face are ſeldom or never ſeen exactly alike; ſo that the Means of concealing them can never be eſtabliſhed by the Cuſtom of many; every individual, on the Count de Buffon's Principles, would clothe himſelf differently according to the Seat and Complexion of his Deformity!

"*Spectatum admiſſi, Riſum teneatis Amici!*"

What a motley Appearance we ſhould make, if we were all clothed *rationally*, according to Buffon's Opinion: if every one of us were to cover his ſuppoſed Defects and Blemiſhes, and to expoſe his ſuppoſed Beauties and Excellencies! What Reaſon is there in Diſguiſe?

Let us, however, ſuppoſe Faſhions dictated by the deformed, becauſe the greater Number of Mankind is deformed. Would it not reduce even thoſe who are not deformed to the hard Lot of dreſſing as if they were? I fancy it would: for if thoſe only wore great Coats whom little

Coats would betray, Mankind would be diſtinguiſhed into two Claſſes, in every Town. The obvious Conſequence of which would be, as Beauty is more eſtimable than Deformity, that they who accuſtomed themſelves to wear great Coats would be diſliked, and that they who once put them on to defend themſelves againſt Inclemencies of Weather, would now either lay them totally aſide, or elſe only wear them on the moſt urging Occaſions, leſt they ſhould be accounted deformed.

Men of a ſound Underſtanding can often tell the Emotions of the Soul by external Signs. Theſe Signs were formerly ſought after in the Features of the Face: they are now looked for as much in the Coſtlineſs of one's Apparel. Alas! if our venerable Anceſtors were but raiſed from the Dead to ſee their Poſterity diſguiſed ſo hideouſly with Paint, Powder, and ſeveral other Articles of Dreſs, they might be led to aſk—

"Where is a Man?"

I do

I do not mean to ſay that Faſhions have not originated from the Blemiſhes of Individuals in Power. I know they have. But I deny that any Man's having a Blemiſh and uſing Means to hide it, is a ſufficient Cauſe for my uſing the ſame Means who have not that Blemiſh.

The plain Truth is, that Refinement teaches Men to diſlike every Thing natural, fits them only to diſguiſe, and diſqualifies them for aſſuming with a manly and a liberal Air that Character which alone is truly great.

## CHAP. II.

*Concerning the Effects of modern Clothing.*

WHILST I was engaged in eſtabliſhing on the firmeſt Foundation the Premiſes fit for a pleaſant and uſeful Superſtructure, ſuch as I hope my Reader will deem the preſent Performance, I endeavoured with all the Ability I could, not only to deduce the Superiority of Man over all other Animals from the Excellence of his Senſation, the Form of his Body, eſpecially his Limbs, and the Freedom of his Motion, but alſo the Superiority of one Man over another, as to Mind, from a ſhort but argumentative Digreſſion on the curious and intricate Structure of his Brain, and the Changes which it undergoes by Diſeaſe. Laſtly,

I ſuggeſted

I ſuggeſted ſome Hints on the comparative Phyſiognomy of Man and Brutes, and profeſſed a Belief that the Organization of the Brain, the Operations of the Mind and the Lineaments of the Face, are naturally and inſeparably connected with one another. I now come to ſhow how Clothing may be a Cauſe of Diſtreſs, Inability, Diſeaſe and Death.

In conducting this Part of my Eſſay, there are two Methods which preſent themſelves, the analytical and the ſynthetical: neither of which I can ſtrictly abide by. But I prefer the former, Firſt, becauſe it has paved the Way to ſo many important Diſcoveries in the Philoſophy of Nature, and, Secondly, becauſe by reſolving Things into their conſtituent Parts ſo that each Part may be ſeparately examined, it ſeems the better adapted to the Doctrine of Diſeaſes in which we deſcend from conſidering morbid States in general, which is *Pathology*, to the Conſideration of morbid States in particular, which is *Noſology*.

§ 5.

§ 5.

CLOTHING may cauſe Diſtreſs, Inability, Diſeaſe and Death in two Ways, more particularly, *viz.*

1. When it is ſo faſhioned and adapted as to compenſate for ſuppoſed Defects, or to ſupply and augment imaginary Beauties.

2. When it is made of improper Materials through Neceſſity, or for the Sake of Ornament.

As for the Cuſtom of confining the Limbs of Infants with Rollers, and Things of the ſame Kind, it is now growing obſolete. People have ſome Time ſince found that Deformity and Lameneſs are induced by it, and the Bills of Mortality ſhow that Deaths are far leſs frequent in Infancy now than they were formerly. What Motives there could ever have been for Mothers to lay a Reſtraint on the Motions of their Infants, it is not eaſy to ſay. But why Nurſes are fond of ſwathing

Infants, it is eaſy to ſay: it is that they may be deterred from moving their Limbs by feeling an Uneaſineſs in attempting it. For this Inaction and Conſtraint which limits the Suppleneſs of their Articulations, renders the Eye of the Nurſe leſs neceſſary, and affords her an Opportunity of more frequently ſatiating thoſe brutal Appetites which Nurſes are ſo infamous for: Tippling and Junketing.

§ 6.

I PROCEED to conſider each of the two Ways noticed above, beginning as it is moſt conſonant to method with the former. If Clothing be ſo made by the Artiſt and ſo put on by the Wearer as to leſſen or conceal ſuppoſed Defects and Blemiſhes; or to increaſe or add imaginary Beauties, it is plain that the Object of both Artiſt and Wearer is either to have them ſo ſmall as to compreſs, or ſo large as by retaining a certain Quantity of Wadding to fill up Hollows, and thus to render

render the Proportions and Symmetry of the Body apparently real and natural.

The Time then is now come, in which I muſt call my Reader's Attention to the Influence of too ſmall and too large Clothes on the Structure and Faculties of the human Body. And as not only the Extremities but alſo the Trunk of the Body may be generally as well as partially compreſſed, I ſhall treat of them in both States.

It would be an Inquiry of the greateſt Importance to inveſtigate how far the Dreſs, and Implements of Labourers in the ſeveral Manufactories are capable of influencing them; and how Soldiers who are frequently obliged to bear Arms, and to carry great Burthens, may be enabled to do ſo, with the leaſt poſſible Fatigue. And ſhould I ever find myſelf inclined to reſume my Pen on this Subject, the preſent Eſſay ſhall be conſidered as introductory to ſuch an Inquiry.

§ 7.

As to Clothes made too ſmall,
*the ſuperior Extremities, or Arms, are ſubject to the moſt general Preſſure from the Sleeves of Gowns and Coats, and to the moſt partial Preſſure from the Hem of the Sleeves of Shifts and Gowns, Bracelets and the Wriſt-Bands of Shirts, and the elaſtic Band and Buckle made to keep up Gloves :—*
As to Clothes made too large,
*the ſuperior Extremities are ſeldom encumbered with any.*

THINGS ought to be thoroughly known before their Cauſes are inquired after: and I ſhall accordingly let Hiſtory always precede Philoſophy.

A. The moſt general Preſſure to which the Arms are ever ſubjected by the tyrannical Laws of Dreſs is inflicted by the *Sleeves of the Gowns of Women.* Theſe are made to extend almoſt, but not entirely, down to the Elbow.——Men ſeldom or never ſuffer ſuch general Compreſſion of the

the Arms from the Smallneſs of the Sleeves of their Coats, becauſe the Figure of their Arms is different from that of the Arms of Woman, owing to their Muſcles being larger, and ſwelling more in Action, and to the Interſtices between them not being ſo completely filled up with Fat. Every Man muſt be ſenſible of the Beauty which a Female derives from the Roundneſs and Smoothneſs of her Limbs, and the Softneſs and Whiteneſs of her Skin. Her *Nates* loſe their Rotundity in Proportion as they loſe their Fat: and Men complain of Pain and Uneaſineſs from ſitting, when the Fat is waſted from their *Glutaei* Muſcles. In Holland, where many Women labour as much as Men in England, it is very common to ſee their Arms like thoſe of Men, with ſwelling Muſcles, and without either Plumpneſs or Whiteneſs. Do not the Breaſts of Women ſo white, exuberant and lovely by Nature, become diſguſtingly pendulous, Olive Coloured and flabby when they loſe their Fat?

I wiſh

I wiſh, I could perſuade my fair Country Women to bear with Patience that Complement of Fat allotted them by Providence. For it is certain, if they deſire to be thin when they are fat, the very means of rendering themſelves ſo, will inevitably rob them of that, which by diſtinguiſhing them from Men, renders them lovely, Smoothneſs and Whiteneſs of Skin. For Children who are generally fat, are generally fair: and when they become Women, and have made themſelves thin by abſtaining from Meat, by voraciouſly ſwallowing Bread, and by drinking Vinegar, or Things ſoaked in it, they loſe their Plumpneſs, their Skin falls into Wrinkles, becomes dry and ſcaly, and acquires an Olive Colour.—But theſe are not all the Evils which attend thoſe Ladies, who are deſirous to loſe their Fatneſs, and who damp their Appetite with Bread, to prevent their eating a proper Quantity of Meat: for even their Muſcles grow ſmall in conſequence of this Regimen, and the Ends of their Bones becoming proportionably prominent, render their

Appearance

Appearance altogether diſagreeable, ghaſtly and unnatural. We may be ſure that Nature does nothing without having in View the beſt and wiſeſt Ends. The Truth of which I think is ſhown by her giving ſo much Fat to thoſe whom we ſoon find labouring of morbid *Viſcera*, of Conſumption and Dropſy, when they have viciouſly freed themſelves from it. Do we not every Day obſerve Females become ſuddenly thin from the Practices which I here reprobate, loſing their Appetite or acquiring unnatural ones, labouring of Irregularities of the menſtrual Diſcharge, and gradually ſinking into Conſumption, Dropſy, &c? Lean Perſons are always the more ſenſible of Cold in Proportion as they are the more lean. How much more ſenſible of Cold then muſt they be who naturally fat have become lean?

The Arm of a Woman is by Nature ſomewhat taper from the Tip of her Shoulder, becoming ſmaller downwards to her Wriſt; but that of a Man is always, or ought to be, largeſt a little below his Elbow. Hence, it appears why the Sleeves

of

of a Woman's Gown may compreſs generally, and why the Sleeves of a Man's Coat can only compreſs partially. I have a Coat now in my Poſſeſſion, made ſo ſmall in the Sleeves that if I graſp any Thing, whilſt I wear it, I cannot hold it long; and if I graſp nothing, the Veins on the Backs of my Hands ſwell. I cannot write with it; for I cannot hold a Pen with proper Steadineſs and Command: nor can I lean for a few Minutes only on my Deſk without benumbing my Fingers. Now, if partial Compreſſion below the Elbow can excite ſuch Inability and Pain, what may not the general Compreſſion of a Woman's Sleeves excite? The Compreſſion in the *Axillæ*, which ſmall Gown or Coat Sleeves occaſion, may alſo be occaſioned by the Uſe of Crutches.

I cannot omit to notice in this Place, the improper Application of a Machine very common for keeping the Shoulders of Children backwards, and for opening their Cheſts. This Machine is moſt commonly called, I believe, a *Back-Board*.

It

It is eaſy enough to fix it ſo as to ſtop the Pulſation at the Wriſt; and as it is careleſsly uſed, I dare to ſay it often has this Effect. And I am inclined to believe that the Weakneſs and Numbneſs in the Arms of ſome Children, which not unfrequently laſt all through Life, is owing to the Preſſure which the Shoulder Straps and Pads of this Inſtrument make upon the ſubclavian and axillary Artery.

I am inclined to believe that the Shortneſs and Smallneſs of ſome Arms depends on the early and long continued Application of this dangerous Inſtrument.

B. The *Ends of Shift or Gown Sleeves*, whether they be ſimple Hems, or Bands like the Wriſt-Bands of a Shirt, may compreſs in a very great Degree: for they yield little, or not at all, when the Arms are moved. The Ends of Shift-Sleeves compreſs like the Ligature applied previous to Blood letting; and I have known them compreſs as much. Nay, I once knew a Woman come to be bled, whoſe Gown-Sleeve was ſo tight that the Blood

could not be ſtopped till ſhe was perſuaded to cut it.

C. The *elaſtic Bands* and *Buttons* uſed to keep up Gloves are another Cauſe of Compreſſion. The former, which is chiefly uſed by the Ladies, conſiſts, I believe, of a Wire twiſted ſpirally ſo as to poſſeſs great Elaſticity, contained in a thin Cover of Silk. It almoſt always leaves an unſeemly Indentation, and it frequently excites the ſame Effects as the ſmall Sleeves of a Gentleman's Coat.—Buttons are ſeldom uſed by the Ladies, except thoſe who ride. They compreſs the Wriſt, weaken the Hand, and incline it to ſhake, juſt like tight Wriſt-Bands.

D. *Tight Wriſt-Bands* occaſion a Fullneſs of the Veins on the Back of the Hand, Numbneſs, Weakneſs, &c. They are ſeldom however worn in ſuch a Condition as to excite theſe Conſequences, becauſe they have no Relation to Beauty or Ornament.

E. *Bracelets* are generally fixed by Ladies over the ſtyloid Proceſs and ſmall Head of the inferior Extremity of the

*Ulna.*

*Ulna*. They are leſs worn by fat than by thin Perſons, becauſe in the latter they ſerve to conceal, or to render leſs remarkable, the Ankle-like Projection. Their Effects are ſimilar to thoſe already mentioned.

F. *Rings* are now more common than ever. They ſeldom do any Harm: though I knew a peeviſh School-Miſtreſs, whoſe Fingers being ſwollen in Conſequence of her ſlapping a Boy on the Back, obliged her to have her Ring cut off with a File.

There are Exceptions to all general Rules; ſo that we can eſtimate Rules only according as there are more or fewer Exceptions to them. If I miſtake not, large Clothes can neither injure the Functions nor alter the Form of the human Body, unleſs they contain a certain Quantity of Wadding. When they do this, the Wadding becomes a Compreſs and the Clothes a Ligature: ſo that not being engaged at preſent to regard the Quality of Clothes, we may refer the Inſtances of partial and general Wadding, as to

their Effects, to what has been already advanced.

§ 8.

As to Clothes made too ſmall, *the inferior Extremities, or Thighs and Legs, are ſubject to the moſt general Preſſure from elaſtic leathern Breeches, and tight Boots, and to the moſt partial Preſſure from Garters, ſmall Shoes and Buckles.*

MUCH of what was adduced relative to the Difference between the Arms of Women and thoſe of Men is equally applicable to their Thighs. But beſides the Largeneſs and Roundneſs of a Female's *Nates*, the Trochanters of the *Oſſa Femorum* are wider apart in Women than in Men. Hence it would be almoſt impoſſible for a Woman of Youth, Health, and good Proportions to wear the Breeches of a Man of the ſame Height, and of apparently the ſame Size.

A. The Compreſſion of *tight leathern Breeches* however general, is not always equal.

equal. Every Man may have felt at ſome Time of his Life, a Numbneſs of one or both inferior Extremities, from ſitting on a hard Seat. I have known the ſame induced to ſuch a Degree by wearing a tight Pair of leathern Breeches, as to remain for many Hours after they were drawn off.—Elaſtic leathern Breeches frequently cauſe a Numbneſs and Coldneſs of the external Part of the Thighs and Hips, and are in my Opinion a very improper and injurious Article of Dreſs. They are certainly handſome, and very fit to expoſe a muſcular Thigh; but they are inconvenient in Walking,and I heard a fellow Student once ſay that he never wore them without feeling a Numbneſs and Coldneſs of his Extremities, and a Pain and Senſe of Weight in his *Teſtes*. I once felt the ſame myſelf, which has deterred me from wearing them ever ſince.

B. *Boots* made too ſmall, and of thick hard Leather, are ſo pernicious to Health, and ſo diſagreeable in Walking, that I wonder any ſenſible Being ſhould confine himſelf in them, for the ſilly Purpoſe of

ſhowing

ſhowing the exact Shape of his Legs. The Effects which they occaſion may eaſily be underſtood from what I have ſaid already, and from what is to be more fully explained hereafter. (§ 11.)

C. *Garters* are worn both above and below the Knee: but they are equally improper in both Places. They cauſe a diſagreeable Appearance of the Part. They diſpoſe the Legs to Dropſy, they render Walking tireſome, and they are a very common Cauſe, if I judge right, that many ſo often ſtumble, fall, and break their Knee Pans.

D. *Shoes* and *Buckles* I ſhall ſay nothing about, though all the World acknowledge the former to be a Cauſe of Corns and Lameneſs when too ſmall. For Camper has treated very fully of them in a Work which I have never had an Opportunity to peruſe.

## § 9.

### *Of the Preſſure of Children's Caps, Fillets, &c.*

I BELIEVE, the *Chin-Stay* is now ſo ſeldom uſed by our Engliſh Nurſes, that no

no one can doubt but the Head of an Engliſhman owes it Form to natural and not to artificial Cauſes. My medical Reader may recollect the famous Sentence of Veſalius in which he ſays that—"*pleraſque Nationes peculiare quid in Capitis Forma ſibi vindicare conſtat. Genuenſium namque, et magis adhuc Graecorum et Turcarum Capita Globi ferè imaginem exprimunt, ad hanc quoque, quam illorum non pauci elegantem et Capitis quibus variè utuntur Tegumentis accommodum cenſent, Obſtetricibus nonnunquam magna Matrum Solicitudine opem ferentibus.*" * But however deſirous a Mother may be to give her Child's Head an unnatural Form, and however capable Midwives and Nurſes may be of flattening the Skull, as the Indians of America do, and of cauſing ſimilar ſlight Variations, I am convinced there is ſomething in the Face and Head of a Negro, which no Art can imitate, obſcure or ſupplant.

Why the figure of the Skull is ſo eaſily altered ſoon after Birth, may be account-

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* *De Corp. hum. Fab. Edit.* 1555.

ed for from the Sutures being open, and the Spaces between them being filled only by *dura Mater* and *Pericranium*. For the Sutures remaining unoſſified till after Birth, that the Child's Head may be diſmiſhed, its Brain compreſſed, and perhaps an Inſenſibility of its whole Body induced, as it paſſes through the *Pelvis*; it is eaſy to be conceived that the Edges of the *Oſſa parietalia* may be forced over each other, or nearer each other, even after Birth, for a longer or ſhorter Time; ſo as to make the Head flat, or otherwiſe, as Fancy may dictate.

I am inclined to believe that there is no part of the human Body ſubject to ſo little artificial Alteration as the Face. There are perhaps Peculiarities in the Form of every Part of the Body, by which a curious Naturaliſt might diſtinguiſh the People of different Nations from one another: but all muſt allow that ſuch native Differences are in no Part ſo conſtant and remarkable as in the Face. The Figure of the Skull may be changed by Art: but I am miſtaken if that Character

ſtamped

ſtamped by the Hand of Nature in the human Face can ever be obliterated, or ſo much obſcured as to prevent its being aſſigned to its proper Nation, without Reference to artificial Changes, or to the Colour of the Skin, the Hair, the Stature, &c. Small Eyes, thick Lips, and high Cheek-Bones are national Features, and they have never been aſſigned to Art. That the Skull which Mr. Cline ſhows of a Caribee Indian ſhould have been ſo much flattened without impairing his mental Faculties,—for he was ſkilled in Plants,—is a Circumſtance which I do not preſume to reaſon about, becauſe we know ſo little of the Uſes of the different Parts of the Brain.

But to quit this Digreſſion, for I am not certain that the Skulls of Children are ever altered in Form by Engliſh Nurſes, I cannot but expreſs my Supriſe that the celebrated Camper, Sabatier,* and others, ſhould have denied the poſſibility of

* *Traité complet d'Anatomie. Tome* I. p. 25.
*Journal de Phyſique. Avril.* 1789.

changing the Figure of the Skull in Infancy. For I verily believe that many of the Diſeaſes of Children depend on bad Management, that their Faculties are impaired, that the Suppleneſs of their Limbs is leſſened, by the irrational Preſſure of their Clothing, and that their frequent Deaths in the firſt and ſecond Years of their Lives, are partly owing to the Hazards of Infancy and partly to the Prejudices of Midwives which diſpoſe them to think their Ailments unavoidable and incurable.* When I recollect that Bones are ſubject to more changes than any other Parts of the Body, probably from the very circumſtance of their Hardneſs; when I recollect that ſound Bones are often removed by the Preſſure of Tumors; when I recollect how they are affected by Aneuriſms, how they are removed after Fractures, how their Particles are ſucceſſively abſorbed, and how they are imprinted by the Action of incumbent Muſcles; I am obliged to differ from Cam-

* Grigg's Advice to the Female Sex.

per

per and Sabatier. I muſt alſo differ from Haller, who with as little Reaſon ſays—"*Si Oſſa et Dentes renovantur, ſi adeo vetuſta Elementa delentur et nova iis ſuccedant, de aliis Corporis Partibus minus firmis, non oportet dubitare.*" *

To proceed. *A Cap*, or ſomething like it, is fixed on the Heads of our Children ſoon after Birth, and made to bind the external Ear cloſer to the Skull than it was ever naturally intended. Mothers and Nurſes think nothing more unbecoming an Infant than prominent Ears; and Ladies are in general ſo averſe to them that they hide them as a Deformity. Nay, ſome Ladies hide their Ears how flat and cloſe to the Head ſoever they be. The Abſurdity of which, I think, I cannot better inculcate than by vindicating Nature's Intention, and by proving the Inconveniences which inevitably attend and follow ſo irrational an Attempt to ſuperſede her. It is agreed by all that the external Ear, or that oval concave

* *Elementa Phyſiologiæ. Tom.* VIII. *Pars* II. p. 54.

Cartilage which is affixed to the *Os temporale* on each Side of the Head, is intended to collect the Tremors excited by ſonorous Bodies in the Air, and to convey them to the *Membrana Tympani*, or Drum of the Ear. The great Elaſticity of this Cartilage proves its Uſe, as likewiſe do its numerous Eminences and Cavities which ſo accurately correſpond with one another to receive the Rays of Sound, and to reflect them into the *Meatus auditorius*, or that Paſſage which leads to the *Tympanum*. Beſides if this Cartilage be cut entirely off, Hearing is either greatly leſſened or totally deſtroyed by it. Hearing is alſo leſſened by flattening the Ears: and the Ear-Trumpet is in Reality nothing but an artificial external Ear.—Now, if all this be true, and my Reader muſt know that it is generally received as true; what Reaſon can induce us to flatten and conceal our Ears?

Nature ſeems to have made the human Ears moveable, like thoſe of Dogs, Horſes, &c. and for the ſame Reaſon too. If not, I aſk why did ſhe furniſh them with Muſcles?

Muſcles? For though the Number of the Muſcles of the external Ear be different in different Subjects; yet, I believe, there never was a Subject in whom there were not ſome, as well belonging to the whole external Ear as to its ſeveral Parts. I am of the ſame Opinion as Albinus was, that —" *Conſuetudo et perpetuus Vittarum Uſus Auriculas ad Caput apprimunt et immobiles reddunt.*"

To refute Reimarus, as I have Moſcati, I am not at preſent inclined. I deny however that the Senſes of Brutes are more acute than thoſe of Men, and that Brutes have Senſes which Men know nothing of. Let Reimarus, or his Admirers prove the contrary, if they can.

## § 10.

### *Of the Compreſſion of Collars, Neck-Laces, Stocks, &c.*

THAT Preſſure on the Neck is often hurtful in the faſhionable World, and is ſometimes fatal, it is univerſally known.

Let

Let us conſider then how Preſſure is applied to it.

*Collars* and *Neck-Laces* are the moſt common Means of compreſſing the Neck. But they are confined almoſt excluſively to the Ladies, as Stocks and Neck-Handkerchiefs are to the Gentlemen. I have ſeen Collars and Neck-Laces ſo tight around a beautiful Neck, that after occaſioning much Pain, they were neceſſarily, though reluctantly, torn off and thrown away. I have three Times in my Life ſeen them ſo tight as to break while the Ladies who wore them were dancing.

The Poſition of a Collar, or Neck-Lace, as I obſerve it, if it conſiſt of only a ſingle Strip of Velvet-Ribbon, or of any ſimilar Thing, is exactly againſt the Head of the Wind-Pipe, or, to ſpeak technically, againſt that obtuſe Angle ſituated in the fore Part of the Neck, and formed by the Union of the two quadrangular *Laminæ* of the thyroide Cartilage. It is ſtrange my Reader may think, that Ladies ſhould have ſo great an Averſion to this Part, which is ſeldom ſo prominent in them

as

as in Men, in whom we are uſed to call it *Pomum Adami*. But it is ſtranger that few Ladies reliſh this *Pomum*; and that the Collar and Neck-Lace of which I now ſpeak, are put on to compreſs, to leſſen, and to hide it. Yet I have it on their own Authority that it is an uncomely and ungraceful Projection, and that it ought to be hidden.

The Poſition of the Collar or Neck-Lace, if it conſiſts of two Strips of Velvet-Ribbon, or of two Rows of Beads, is ſuch that one is made to encircle the Neck tightly a little above the thyroide Cartilage, and the other, or others, to hang looſe below it. If there be two, or more Rows below the Cartilage, they hang one under anoher: an Arrangement which ſufficiently proves the Intention of rendering the Eminence leſs conſpicuous.

*Stocks buckled tight*, and *Neck Handkerchiefs* containing a *Stiffener*, as it is called, are worn only by the Gentlemen. A Lady never wears them unleſs ſhe rides, and not always even then. Indeed, the former are almoſt entirely left off, except by old Men, and ſuch as are required to

appear

appear big and grave by the Importance of their Function: and the latter being generally made of Muſlin, and tied in a looſe Knot, can ſeldom be productive of any Inconvenience or Pain.

Now Collars, Neck-Cloths, Neck Handkerchiefs, Stocks, &c. but eſpecially the firſt, if too tight, are extremely dangerous. They render Swallowing difficult, becauſe they compreſs the *Oeſophagus*, and they may induce Giddineſs, *Stupor*, and Apoplexy. Doctor Fothergill mentions as an exciting Cauſe of Apoplexy looking backwards for ſome Time without turning the whole Body. He ſays—"I believe that many Perſons have dropped down in apoplectic Fits merely from this unheeded Cauſe:"—and he rightly explains it, by obſerving that if the Neck be ſhort and thick, a Twiſt of it ſo far, leſſens the Diameters of the jugular Veins that it is impoſſible for them to return a proportional Quantity of Blood.—As to this Effect, it is the ſame whether the jugular Veins be twiſted, or compreſſed. But Compreſſion may cauſe

Apoplexy

Apoplexy in thoſe whoſe Necks are not ſhort, and in whom a Twiſt conſiderable both in Degree and Duration would not even induce Giddineſs.

§ 11.

THE Effects of Preſſure on the ſuperior and inferior Extremities being now generally mentioned, they ſhall next be related particularly, agreeable to my original Plan.

A. If the Artery or Arteries carrying Blood to a Limb be compreſſed, a *Waſting* or Atrophy of the Limb follows. This is known to every one.—But Gottſched, in his *Diſſertatio de Motu Muſculorum*, and Schulzius, in his *de Elaſtiatatis Effectibus*, ſay that Senſe and Motion are likewiſe loſt in Conſequence of ſuch Compreſſion. Here, if my Reader will ſuffer me to digreſs, is a new Field to be illumined by Diſcuſſion. We all agree that an Injury done to the Brain, or *Medulla oblongata*, or to any particular Nerve, generally produces a Diſeaſe of the animal and more

particularly of the Vital Functions. We all agree that a Nerve ſeparated from the Brain may retain its Energy for a conſiderable Length of Time. But do we all agree that the Energy of the Nerves is derived from the Brain, or from the Blood-Veſſels ſurrounding them? Doctor Monro maintains the latter Opinion, and will not allow the Brain to be, as I have been taught to think it is, excluſively the Fountain of Senſe and Motion.

As for me, I differ from Monro, for various Reaſons. If the *Thalami Nervorum opticorum* be preſſed, does not Blindneſs follow? If the Origin of any Nerve be deſtroyed, does not its Energy periſh alſo? And why do Nerves loſe their Energy when their Origin is deſtroyed, if the Blood-Veſſels ſurrounding them can afford or preſerve it?

I am told that Mr. Cruickſhank ſaw a Monſter nine Months old, which lived thirty-ſix Hours after it was born, though it had no *Cranium*: and I have read of ſimilar Monſtroſities. But is this a Reaſon that we ſhould believe the vital

Functions

Functions and the Increaſe of the Body have no dependence on the Brain? I think not: for ſuch acephalous Subjects never live long, and all the Experiments to be found in the Writings of Haller and Zinn, which I recollect, ſhow that the Functions of the Nerves do depend upon the Brain.

The Circulation of the Blood is nevertheleſs neceſſary to the Influx of the nervous Energy; and the mutual and reciprocal Influence of the nervous and ſanguiferous Syſtems upon each other, is proved by the *Phænomena* obſervable in both Syſtems, after the Application of the ſame noxious Powers to either of them.—It is not difficult, I ſay, to account for the waſting and the loſs of Senſe and Motion in a Limb, when the Circulation of the Blood in it is diminiſhed or ſtopped.* For the Motion of the Blood being neceſſary to the conſtant and regular Influx of nervous Energy, it is manifeſt that Sen-

* The Reader will recollect what was ſaid of the Back-Board. (§ 7. A.)

ſation cannot long continue without it. If the nervous Syſtem be weak, the Circulation is ſlow at the ſame Time, as we obſerve it in old People.

It has been a Queſtion,—whether the Blood be circulated by means of the Contractility of the Arteries, or of an Influx of nervous Energy? Now it was proved long ſince, that the larger Arteries are ſurrounded with a kind of Net-Work of ſoft Nerves, * as the Heart is with the cardiac *Plexus*. † But, in my humble Opinion, the Circulation of the Blood muſt depend more upon their muſcular or irritable Power than upon the nervous Power derived from the Brain, and communicated to them by ſurrounding Nerves. I may ſay as Albinus did on a ſimilar occaſion,—" *Experimenta indicant Integritatem Nervi requiri ut aptus ſit Muſculus qui ſecundum Naturam ſe moveat: oſtendunt, Nervo*

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* Haller, *De Nervorum in Arterias Imperio. Goetting.* 1754.

† Haller, *Nov. Comment. Soc. Scient. Goetting. Tom.* II. *Tab. ad Pagin.* I. alſo J. N. Neubaver, *Deſcriptio Nervor. cardiacorum. Jen.* 1772. *Tab.* I.

*ſtimulato*

*ſtimulato, Fibras carneas in Convulſiones agi. An vero oſtendunt Nervorum Poteſtate moveri? Excuſatam velim Incredulitatem meam. Non amo falli.*" *

B. If a Nerve be compreſſed, the Part into which it is continued becomes convulſed, paralytic, inſenſible, and waſted. But if the Compreſſion be ſlight and of ſhort Duration, theſe Effects ſoon go off. Thus, when we lean upon our Elbows, and preſs the internal Condyle of the *Os Humeri*, the Energy of the ulnar Nerve which runs through a Groove behind this Condyle is interrupted, and convulſive Twitchings of the Fingers, Inability to bend the Arm, and Numbneſs follow. Doctor Monro knew a Wound of the inſide of the Arm ſucceeded by a Weakneſs and Waſting. †

It is doubtful whether the Nerves once divided, though they do unite, be ever capable of conveying their Energy again beyond the Place of Union. The Experiments of Monro, Fontana, Murray

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* *Annot. Acad. Lib.* I. *Cap.* XII. *pag.* 49.

† Oſteology.

and

and others ſeem to prove that they do not; ſo that an Atrophy from the Diviſion of the Nerves of a Part may be accounted incurable. Compreſſing the Neck has cauſed a Loſs of Voice; * and injuring the Muſcles of the Larynx, weakens the Voice, becauſe theſe Muſcles receive Nerves from the recurrent Branches of the eight Pair. Sitting ſo as to compreſs the ſciatic Nerve cauſes a Senſation of pricking in the Thigh and Leg, diſpoſes them to Cramp, and makes them ſo numb, and ſo weak as not to be able to ſupport the Weight of the Body. Sitting with one Leg over the other Knee produces the ſame Effects in the former, and cauſes the popliteal Artery to beat violently. Very ſimilar Effects therefore follow, whether an Artery or a Nerve be compreſſed, or divided. And the Inſtance of Aneuriſms in the Limbs affords an additional Proof: for if th Operation for Aneuriſm be performed in a Limb, and the Circulation of the Blood be thereby interrupted, and not

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* *Hiſt. de l' Acad. de Paris.* 1705.

carried

carried on by collateral Arteries, a Lividity and Mortification will inevitably enſue.

C. If however the venous Blood be obſtructed in its Return to the Heart; the Arteries being incapable of emptying themſelves into the correſponden t Veins, become unnaturally full and diſtended, and endeavour to relieve themſelves by increaſing the Secretion from their exhalent Extremities. Hence a Dropſy is the Conſequence : the Fluid exhaled being ſo much that the Abſorbents cannot drink it up. Beſides, the Arteries being weakened more and more by Diſtenſion after the Obſtruction in the venous Syſtem is made, and the Force of the Heart continuing the ſame, *Aneuriſms* and *Varices* muſt neceſſarily ariſe.

In performing the Operation called *Veneſection*, though it is cuſtomary carefully to prevent the Return of Blood through the Veins without ſtopping its Courſe through the Arteries, a Circumſtance which is judged by the Swelling of the Veins and the Pulſation below the Ligature,

Ligature,—I have known Patients complain of Pricking and Numbneſs, and have always thought it right to untie the Knot and tie it again till I could cauſe a Diſtenſion of the Veins without either.

I have thus conſidered the Blood-Veſſels and Nerves together, becauſe of their intimate Connection with each other. I have alſo mentioned Convulſions, Palſy, Inſenſibility, Waſting, Dropſy, Aneuriſm, and Varix as the particular Effects of Preſſure on the Extremities of the Body. And, I believe, it will not be difficult to account for theſe Diſeaſes from what I have advanced.

D. I might treat of the Abſorbents under the Influence of Compreſſion: but every Body who has ſtudied their Hiſtory as it is given by Cruickſhank and Moſcagni, who conſiders that their only Termination is at the Angles formed by the Union of the ſubcalvian and jugular Veins, and that their Diſtribution in the Extremities of the Body is ſuch that one lies on each Side of the large Arteries, and that the ſuperficial Abſorbents accom-

pany

pany the cutaneous Veins, will be able to infer the Effects of Compreſſion on them as well under the Action as the Reſt of the Muſcles.

E. I cannot omit to mention how much Ligatures around Muſcles weaken them; and by compreſſing both the Arteries, Veins and Lymph-Veſſels, contribute to obſtruct the Courſe of their Contents.

F. In a former Part I only mentioned Shoes ( § 8.—D. ): and it may have been thought that for the Reaſon there alledged I might only mention Stays too. But I now proceed to ſpeak of them particularly.

Ladies as well as Gentlemen are frequently uſed from their Childhood to ſmall Shoes; and the Effect of them is extremely obvious. They render the Bones of the Feet immoveable. Whoever looks at the Foot of an Infant and remarks how the tarſal and metatarſal Bones are moved, whoever conſiders how Savages whonever wear Shoes climb up Precipices, and how even in this Country Perſons born without Hands have made Uſe of

 their

their Feet in performing ſeveral delicate Operations, will wonder how ingeniouſly we take from ourſelves what might be ſo extremely uſeful and what we can never again reſtore.

Ladies only wear high-heeled Shoes. But for what Purpoſe it is difficult to ſay. It is certain they walk up Hill better than Men, but they cannot walk ſo well upon plain Ground, nor can they walk down Hill without Danger of falling ( § 2. A.). The Muſcles inſerted into the *Os Calcis* are contracted and ſhortened and thoſe of the Top of the Foot are elongated, diſtended and weakened by high-heeled Shoes.

## § 12.

### *Of Compreſſion of the Thorax and Abdomen.*

A. *Stays* have been ſo long in Uſe, and ſo often condemned, that I cannot flatter myſelf our Ladies will be perſuaded by me to throw them aſide. It has been reported that a certain Claſs of finical Gentlemen have begun to wear them: but, for

for the Sake of the Age, I hope this Report is groundleſs.

Stays till the Age of fourteen are worn and laced moderately tight, as I am informed, to keep Children upright, to ſtrengthen their Bones, to give them a proper Shape, and to correct or leſſen Incurvations of the Spine: from fourteen till thirty five, and ſometimes till forty, they are worn partly through Habit, but moſtly to make the Waiſt ſeem ſmall, and to hide Crookedneſs. After a Woman has paſſed her fortieth Year, ſhe is leſs anxious about lacing tightly, and ſhe prefers Eaſe to looking handſome.

I have frequently thought that if the original Uſe of Stays could be diſcovered,—as Men ſought after the Means of ſupplying their Wants before they ſtudied how to adorn their Perſons,—it would be ſuch as all Mankind might approve. I gueſs that they were intended in Part to conceal the Breaſts, and in Part to defend them from Injuries which might diſqualify them for the Secretion of Milk. It is true, Stays do not ſeem well ſuited for

theſe Purpoſes now-a-day. But the Reaſon is obvious: the original Uſe of Stays was ſoon forgotten after Caprice had ſo greatly disfigured them; and ſtill more forgotten after they were made to anſwer irrational Purpoſes.

B. As the Circumference of the Breaſts of Women is generally as high as the inferior Margin of the ſecond true Rib, ſo as preciſely as I can aſſertain, Stays are generall ymade to extend as high as the third true Rib, or the Space betwixt it and the ſecond. Modeſt Women always take Care to hide the *Papilla*, and ſome ſtill more diſcreet hide the whole Hemiſphere of both Breaſts. Indeed it is now become a Faſhion to extend the Stays almoſt as high as the firſt Rib. — Stays, I believe, ſeldom or never reach quite ſo low as the umbilical Region, being in general more than two Inches above the Navel. I do not aver that this is always the Caſe: though that Women in England prefer long Petticoats and long Legs to ſhort, making themſelves like the Mogul Women who

who have naturally long Legs and ſhort Bodies, I am fully authorized to declare.

It is to pleaſe the Ladies that Gentlemen frequently make the Waiſt-Band of their Breeches extend far above the Navel; this cauſing their Legs to appear the longer. Thus it follows, that Stays which encircle the Body, from the ſecond or third Rib down to the End of the epigaſtric Region, by being made to compreſs much, neceſſarily leſſen the Capacity of the *Thorax* and *Abdomen*, and not only compreſs the contained *Viſcera*, but propel them out of their proper Situation.

C. I ſhall next relate how I have ſeen the Bones of the *Thorax* altered by Stays, and afterwards deſcribe and illuſtrate thoſe Symptoms and Diſeaſes which ſuch Alterations occaſion by what I myſelf felt when I wore them only a few Minutes.

I have known the *Sternum* more than an Inch deep, the anterior Extremities of the Ribs of one Side bending over ſo as almoſt to meet the anterior Extremities of thoſe of the oppoſite Side, which were bent in a ſimilar Manner.—I have known

Inſtances

Inſtances in which the Ribs of one Side only projected forwards over the *Sternum*, proceeding almoſt ſtraight from the *Vertebrae* of the Back, and giving the Appearance of a ſharp Edge.—I know a Lady, at this Time, whoſe *Sternum* is ſo placed that its right Margin together with the affixed Extremities of the right Ribs is turned directly outwards; its left Margin together with the affixed Extremities of the left Ribs being turned inwards. It is a moſt unſeemly Sight; for the right Side which is ſharp projects far beyond the left. Theſe are vulgarly called *Gooſe-Breaſts*. They are narrower than they ought to be.—That Stays ſhould induce ſuch Effects can hardly be wondered at when it is recollected that at Birth the *Sternum* is cartilaginous, conſiſting of ſeveral Parts, and that the Ribs throughout Life are cartilaginous at their connection with the *Sternum*. For Cartilage is eaſily bent, and is eaſily made to aſſume various Figures.

D. A Lady did me the Favour to lace a Pair of her Stays on me,—ſuch as are worn

worn in the faſhionable World.—She was a handſome Woman. She was tall, and, as it was agreed, well proportioned. I did not acquaint her with the Object of my Curioſity in wearing her Stays, leſt ſhe ſhould wantonly cauſe me to think worſe of Stays than they really are, or cunningly ſerving the Turn of her own Sex, cauſe me to think better of them. But I left her to lace them on as ſhe was uſed. When ſhe had laced them on, I wore them about ten Minutes; during which Time I put myſelf into a Variety of Attitudes, more particularly into thoſe which Females are oftenеſt in. Thus I endeavoured to form an Opinion of the Manner in which Stays do Harm. Where the Capacity of the Breaſt is greateſt, there I found the Stays preſs moſt. And as their Preſſure hindered me from making a full Inſpiration, I ſoon felt ſuch a Laſſitude and Weight at the *Praecordia* that I thought I ſhould have fainted before they could poſſibly be taken off. And even when they were taken off, and for ſome Time afterwards, I breathed difficultly,

felt

felt as if my Lungs had not Room enough to be dilated in, and was both extremely weak and ſleepy. It is needleſs to explain minutely in this Place, how theſe Symptoms are induced. It is enough to know at preſent that they are induced.

E. That the Inſtruments by which the Breaſt is enlarged ſhould be oppoſed, and that Breathing ſhould be rendered difficult by Compreſſion of the Breaſt, might eaſily have been told *á priori*. How can that *Thorax* be enlarged in Inſpiration which is compreſſed and leſſened even in Expiration?—I felt the greateſt Preſſure where the Ribs are naturally moved moſt; and it is clear to me that Women who are tightly laced, notwithſtanding the Mobility of their Breaſts, cannot move the intercoſtal Muſcles at all, or cannot move them enough for a perfect Inſpiration. In healthy Reſpiration the Diaphragm is certainly more employed than the intercoſtal Muſcles, the Ribs, except the firſt, being raiſed upwards and outwards at the ſame Time: but in morbid Reſpiration, even the firſt Rib which is commonly fixed

ed and immoveable, is raiſed, and the inferior Margins of all the Ribs are forcibly turned upwards and outwards.

I will not venture to affirm that tight-lacing renders the Muſcles which raiſe the Ribs immoveable. But as Compreſſion renders Muſcles immoveable in other Parts, I think it muſt have a Tendency at leaſt to do ſo in this Part. And if I be not much deceived, I have more than a hundred Times obſerved Women tight-laced who were obliged after eating, dancing, &c. to employ even thoſe Muſcles to raiſe and dilate the Breaſt, which in common, vital, healthy Reſpiration are not employed at all: ſo that they breathed as laborioufly as if they had been in a Fit of ſpaſmodic *Aſthma*.

Having mentioned in a former Part of this Eſſay (§ 7.—A.) that a Machine, called a *Back-Board*, is inimical to the Health of Children, I ſhall now notice how much more inimical it is when worn together with Stays; both of them forming a firmer Impediment to the eaſy Motion of the Bones of the Cheſt.

F. But the Contents of the *Abdomen* and *Pelvis* ſuffer from ſuch Preſſure as much as thoſe of the Breaſt. And whoever reflects on the Poſition of the Diaphragm, its being higher anteriorly than poſteriorly the Attachment of its middle Part to the *Mediaſtinum*, and that only its lateral Parts lying directly under the Lungs deſcend in Inſpiration, will readily perceive that if its Poſition were horizontal, the Cheſt could not be ſo much enlarged as it now can, and that the *Viſcera* of the *Abdomen* would be perpetually liable to Diſeaſe from being compreſſed into too ſmall a Space, and againſt the unyielding *Pelvis*. Hence it appears that Stays which preſs againſt the Muſcles of the *Abdomen* preventing their yielding, counteract the Intention of Nature by forcing the Contents of the *Abdomen* backwards and downwards, and by obſtructing the neceſſary Expanſion of the Lungs.

Mr. White ſays — "Lacing the Stays tight has been practiced not merely in conformity to the rules of faſhion, but from a miſtaken notion that by preſſing the children

children lower down, the mothers would have better times. This I will venture to ſay is one of thoſe vulgar errors which have not the leaſt foundation in either fact or reaſon. I never yet knew children lie too high. In their natural ſituations they are much leſs inconvenient to their mothers, and are carried with greater eaſe; to which I muſt add that the mothers have at leaſt as good or better times than when they are preſſed down too low, by which means the belly of the mother becomes pendulous, and the Child is troubleſome to carry; the inconvenience increaſes too with every Child, and where the mother has had a great number, the weight at laſt becomes intolerable. The conſtant preſſure of the *uterus* upon the bladder in this caſe occaſions frequent motions to make water: an incontinence or involuntary diſcharge of it ſometimes comes on, and it is attended with many other inconveniences."——But independent of Pregnancy, what Evils do we every Day obſerve in thoſe who wear Stays? Do we not find Inſtances particu-

larly in fat People, of *Herniae, Exomphalos*, or Rupture at the Navel, in which even the Stomach, the Liver, and the Spleen are protruded? Women are indeed more ſubject to this Diſeaſe in the latter Months of Pregnancy. But is not the Reaſon obvious, the Stays preſſing the *Viſcera* downwards and not leaving Room for the *Uterus* to expand in? Does not Abortion often enſue from this?

§ 13.

I HAVE choſen to ſpeak only of Stays and their Effects on the *Thorax* and *Abdomen*; becauſe I am perſuaded that from what I have ſaid, the Effects of tight Waiſtcoats, &c. may eaſily be underſtood. I ſhall proceed therefore to treat more particularly of the Effects of Preſſure on theſe Regions.

A. There ſeems to be a certain Proportion between the Size of every *Viſcus* and the Diameter and Capacity of its Arteries; —and perhaps alſo between the Arteries, the Veins, the Abſorbents and the excretory

tory Ducts. This is a Circumſtance which has ſcarcely been taken Notice of by thoſe who have had the greateſt Opportunities of obſerving it: though it muſt be obvious even to the moſt ſuperficial Reaſoner that every Diminution of a *Viſcus*, or of its Veſſels, by Compreſſion, or by other Means, will create in it, or diſpoſe it to, Diſeaſe.

It may be objected to this, as it has been to *Error Loci* in Inflammation, that when a *Viſcus* is ſo much compreſſed as to leſſen, or obliterate the Capacity of any of its Veſſels, the Fluid contained may take a retrograde Courſe and readily paſs through *Anaſtomoſes*. But the Force of this Objection is extenuated, if not entirely done away by recollecting that no ſuch retrograde Courſe has ever been rendered viſible where the Blood circulates with very great Velocity and *Momentum*, as it always does in the Lungs or where it circulates with very little Velocity as in the ſpermatic Arteries.

B. That an unequal Diſtribution of Blood and other Fluids does cauſe particular

cular Congeſtions in the *Viſcera*, and conſequent Inflammations, Hemorrhages, and ſimilar Diſeaſes, it ſeems to me more than probable. And I am convinced that when the Capacity of any *Viſcus* is diminiſhed, e. g. the Lungs, as the Quantity of Blood ſent into them remains the ſame, any Thing that increaſes the Force of the Circulation, whether Heat, Exerciſe, or Paſſions of the Mind, may cauſe Inflammation, *Haemoptöe*, *Aſthma*, Dropſy of the Breaſt and Conſumption.—I am convinced from reaſoning *à poſteriori* that Nature intended a given Quantity of Air to come into Contact with the Blood of the Lungs at each Inſpiration, and that Emaciation and Weakneſs ſupervene when this Meeting of Blood and Air is leſſened or ſtopped:—as if the Blood loſt its Power of nouriſhing for want of Air.

*Unâ eâdemque Viâ Sanguis Animuſque ſequuntur.**

C. I think the Diſeaſes of the Liver, Inflammation, &c. to which great Eaters

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* Virgil.

and

and Drinkers are ſo ſubject, proceed from the Stomach diſtended with Meat and Drink compreſſing the Liver, while the Motion of the Blood in the *Vena Portarum* is preternaturally quickened. Does not the Blood determined in larger Quantity through the iliac Veſſels into the *Pelvis* and lower Limbs, when the umbilical Veſſels are tied, occaſion their ſpeedy Growth and Increaſe? How then, the Quantity of Blood ſent to a *Viſcus* being the ſame, if the *Viſcus* be leſſened by Compreſſion, can Diſeaſes not ariſe?

D. Whether Ligatures around the Limbs and Trunk of the Body can ſo alter the Qualities of the Blood, as to produce Eruptions, &c. I am uncertain. The Experiments ſuppoſed to prove this do not appear to me concluſive. *

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* *Mem. de l' Acad. des Sc. à Paris.* 1740.

## CHAP. III.

### *Concerning the Effects of Heat and Cold.*

§ 14.

GOOD Clothes, or ſuch as are made well and of proper Materials, have the following Properties. *viz.*

A. They neither hinder by their Hardneſs, nor incommode by their Weight and Tightneſs, the free and eaſy Motions of the Joints.

B. They keep the Body in that Degree of Heat which is moſt agreeable as well as moſt ſuitable to the Functions and Actions of Health.

C. They exert no noxious Power themſelves, nor are they rendered noxious by the Excretions of the Body or the Atmoſphere.

The firſt Quality I have already treated of as fully as the Intention of this Eſſay requires or admits It is next to be inquired therefore, how by Clothes the human Body may be kept at a proper Degree of Heat.

§ 15.

A. Phyſicians agree that the Functions of a human Body are performed with the greateſt Regularity, Eaſe and Pleaſure when its Heat raiſes the Mercury to about 97°½ or 98°. In Fever it raiſes the Mercury to 105°, 106°, 107°, or 108°.—Even in the cold Fit our Heat exceeds the natural Standard by 2° or 3°. Braun found that the Heat is nearly the ſame in both Sexes and in every Age.*

B. All the Experiments of Doctor Crawford,† and Mr. Hunter ‡ on animal Heat, tend to prove that the Powers of generating or ſeparating Heat in Animals,

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* *Novi Commentarii Academiae Scientiarum imperialis Petropolitanae. Tom* XIII. 4to.

† Exp. and Obs on Animal Heat, &c 2nd Edition

‡ Obs. on certain Parts of the Animal Oeconomy. page 87.

and

and conſequently of generating Cold, are in a certain Proportion to each other, and to the Neceſſity for them. Hence, it is that in Summer and in Winter, notwithſtanding the Climate, the Heat of our Bodies is almoſt alike.

Boerhaave thought we could not live in a Heat exceeding the natural Standard! * But Doctor Fordyce's Experiments ſhew how egregiouſly this great Man was miſtaken: he himſelf having borne for ſeveral Minutes an Atmoſphere heated to more than 220°. without feeling either Pain or Uneaſineſs. †

C. As Senſations produced in us are never in Proportion to the Force of Impreſſion, ſo the Senſation of Heat and Cold, which we have, is not the greater in Proportion as the Heat or Cold of the Atmoſphere is the greater, but in Proportion as our Bodies are warmer or colder.

All Perſons are not equally affected by Heat and Cold. This depends greatly upon the Habit of each, and greatly upon

* *Elementa Chemiae. Tom.* I. *pag.* 277, 278.

† Philoſophical Tranſactions. Vol. XXV. Parts I and II.

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the State of Health. For they who are by Nature delicate and irritable, or they who have rendered themſelves ſo by warm Clothing or lying long in Bed, are ſubject to Dyſentery, Rheumatiſm, Catarrh, &c. And they who have been long confined, and in whom the Blood circulates ſlowly, whether through Fatigue or Diſeaſe, are ſubject to catch Cold. —Fear, and all the depreſſing Paſſions co-operate with Cold to excite Diſeaſe.

After dancing, &c. when the whole Syſtem is rouzed, the ſame alarming Effects may ariſe whether we take cold Water into the Stomach, or expoſe the Surface of the Body to a cold Atmoſphere.

But going ſuddenly out of a very hot Atmoſphere into a cold one, or out of a temperate Atmoſphere into a very cold one, frequently cauſes no Diſeaſe at all. This ſeems to depend upon the ſame Cauſe as the Freezing of Animals alive: that the Excitation of the Body is too conſiderable to be ſoon and eaſily overcome: that the Congelation takes Place before the Powers of Life are exhauſted. *

* See Hunter's Obs. on certain Parts of the Animal Oeconomy. page 90.

The beſt Method of preventing the bad Effects of Cold is to clothe ourſelves ſo as to be ſlowly affected by either Heat or Cold: and the beſt Means of counteracting them are ſuch as increaſe Strength.

D. The Heat of the Surface of the Body ſhould not be confounded with that of the internal Parts: for the Heat of the internal Parts is not ſo liable to be increaſed by Exerciſe, Clothing, and Changes in the Temperature of the Atmoſphere as that of the external Parts.

E. Cold applied to the Surface of the Body contracts the Orifices of the ſuperficial Veſſels, propels an unuſual Quantity of Blood inwards, and cauſes a Paleneſs, Dryneſs, and Roughneſs of the Skin: *Cutis anſerina* as it is called. If the Degree of Cold be not greater than that of the Atmoſphere ſometimes in the coldeſt Weather of this Climate, and if the Body be vigorous and healthy, the Cold only ſubtracts the Exceſs of Heat above 98° from it, and ſuch a Cold may juſtly be accounted ſtrengthening. If, on the contrary, the Body be weak and irritable, and

Cold

Cold be applied ſuddenly, or if it be applied exceſſively and continued long, it then ſubſtracts more Heat from the Body than what is above the natural Standard, conſequently the Senſibility and Irritability will be leſſened, the Spirits will be depreſſed, the Functions will be impaired, or totally ſuſpended, and the Organizations will be finally deſtroyed.—Moderate Cold invigorates the debilitated by producing a Re-action: the living Body poſſeſſing a Power of exerting itſelf, when excited by Cauſes which tend to deſtroy it. And that the Exertion of this Power does ſtrengthen the Body is evident from the Effects of bathing in cold Water: which *moderately* uſed has given Strength to thouſands, *immoderately* Diſeaſe and Death.

Whenever the cold Bath does good, the Paleneſs of the Skin, and other Symptoms mentioned, are ſucceeded by a Warmth and Itching, a ſlight but general Moiſture on the Surface of the Body, and an Increaſe of Appetite. If however, inſtead of theſe Effects the Skin remains pale,

pale, and dry, the Body cold and inſenſible and Sleepineſs and Head-ache, with a Diminution or Loſs of Appetite ſucceed, we may conclude that it is hurtful, and that its Continuance is dangerous. For this is a State like the cold Fit of an Ague: a State full of Danger.—" *Qui enim moriuntur ex Febre, ſive continua ſit ſive intermittens, acuta ſive chronica, pereunt ſub Spaſmo, Frigore Horrore et Rigore Partium externarum Convulſionibus: quia Cor, Pulmones et Cerebrum, Sanginine intus congeſto nimium obruta, eundem ob Debilitatem amplius repellere nequeunt.*" *

F. Parts at a conſiderable Diſtance from the Heart, and in which the Blood moves ſlowly, e. g. the Noſe and Ears, the Fingers and Toes, are ſubject to more Variations in their Heat than other Parts. Hence we find that when they are long expoſed to Cold, the Paleneſs of the Skin is ſooner followed by a Lividneſs, a Rigidity, an Effuſion of *Serum* beneath the Cuticle, Ulcers commonly called *Chilblains*, Mortification and Death.—Cold has always a Tendency to deſtroy the Senſibility of the

the Body, and conſequently to deſtroy thoſe Powers by which it generates Heat: the Energy of the Brain and the Motion of the Blood. It is from this that it always deſtroys the Senſibility of Parts before it kills them, and that Parts naturally endued with little Senſibility are ſuch eaſy Victims to it.

G. I know many are of a contrary Opinion, and believe that Heat relaxes and weakens, and that Cold ſtimulates and invigorates. I have ſhown already how Cold may ſtrengthen thoſe who are weak by exciting the *Vis conſervatrix* of the Syſtem; but the primary Action of Cold I take to be ſedative. And as no Man would call Wine debilitating, becauſe it weakens *mediately*, or by inebriating, ſo he ſhould not call Cold a Stimulant and Roborant, becauſe it ſtrengthens *imediately*, or by cauſing Re-action.

## § 16.

HAVING deſcribed the Operations of Heat and Cold as conciſely and plainly as I could

I could, I ſhall adduce a few ſhort Remarks on the Atmoſphere, to ſhow how Moiſture and Dryneſs concur with Heat and Cold to influence the human Body.

A. *Moiſture* and *Dryneſs* applied to the Atmoſphere, which is always moiſt, * can only be conſidered as relative Terms.

In a *Suite* of Rooms heated by Flues in the Floor and with boiling Water, Doctor Fordyce ſtood only a few Minutes before Water ran down his Body in Streams.—It was not the Vapour of his Skin, but the Vapour of the Rooms condenſed on his Skin, that ran down.

B. Now Condenſation is a Source of Heat, as Evaporation is a Source of Cold.—Doctor Fordyce ſome time after this Experiment, expoſed his Body to a much greater Heat, in a dry Atmoſphere, and ſtaid in it longer, without being affected nearly ſo much.

C. Doctor Fordyce aſsigns two Reaſons for this: viz.

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* Watſon's Chemical Eſſays. Vol. III. p. 52.—Phil. Trans. abridged, N°. 189.

1. That dry Air does not communicate its Heat like Air ſaturated with Moiſture.

2. That the Evaporation from the Body which takes Place "when the Air is dry" aſſiſts its living Powers in producing Cold. *

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* Philoſophical Tranſactions.

CHAP.

## CHAP. IV.

*Concerning woollen Clothes, the moſt natural, the moſt wholeſome.*

§ 17.

SINCE Nature always endeavours to preſerve Man and other Animals at the ſame Temperature ( § 15. ), and has given to Quadrupeds only one Kind of Covering to defend them from the Inclemencies of Seaſon and Climate, I am inclined to believe that it was intended for Men to imitate the Covering of Brutes, and to wear only one Kind of Clothing.

The curious may inquire, why Man is not by Nature defended like Brutes with

a Coat of Hair? But it may be anſwered, that if Brutes had the ſame Reaſon as Man, and were of Courſe as capable to make a fit Clothing for themſelves, they had probably been not ſo defended as they now are.

A. It muſt be acknowledged that for the Harmony of the Univerſe brute Animals are neceſſary. And as their Temperature, as well as that of Man, is nearly the ſame in Summer and in Winter, is it not reaſonable to conclude that both are preſerved of one Temperature by the ſame Means, and for the ſame Ends?

Beſides, as Bears and Foxes which inhabit cold Climates can maintain the natural Temperature in all Seaſons, and be in Health and Vigour, with one and the ſame Covering; I would aſk why Man might not maintain his natural Temperature, and remain in Health and Vigour, with one and the ſame Covering alſo?

That it would be improper for Man to go naked, it needs no Proof. But as the Body of Man is beſet with Hair like that of Quadrupeds, though in general neither ſo

long

long, nor ſo thick, I cannot but conſider it as an Index of Nature to point out that our Covering like that of Brutes, ſhould be made of Hair or Wool.

Nor can I imagine of what Uſe the Hair is on the Hands and Arms, on the Legs and Thighs, if it be not this Index. Nay, the Head of Man is thickly clothed with Hair by Nature; and if the early Faſhion of ornamenting the Head had not degenerated into the Habit of wearing a Hat, I am miſtaken if the Hair alone had not been found ſufficient to keep our Heads warm.

B. One Objection, which my Friends have urged againſt this, is, that Bears, Rabbits, Hares, Foxes, and many other Animals, have not an equal Quantity of Hair in all Seaſons. But admitting this Fact, it does not ſeriouſly militate againſt my Opinion ( § 17.), there being no Seaſon or Climate, however warm, in which theſe Animals are not covered with ſome Hair; and it often falls off even in the coldeſt Seaſons and Climates.—It ſeems natural that the old Hair ſhould fall off to make Room for new;—that the Hair

ſhould

ſhould be regenerated as well as the other Parts of the Body. And the Hair being thicker in cold than in warm Climates, and in cold than in temperate Seaſons, does not prove that it is unneceſſary in warm Climates;—and much leſs that any Thing better might be ſupplied. The utmoſt it proves is that leſs might ſuffice.

§ 18.

BEFORE however it be granted that Man ſhould always wear the ſame Kind of Clothing (§ 17.), and that it in Imitation of Nature ſhould be woollen, let us reflect on ſome of the Advantages which Society would derive from it. Theſe I ſhall conſider under the one or the other of the two following Heads. *viz*:

A. Either, as derived from its being always the ſame.

B. Or, as derived from its being woollen.

It may be neceſſary to remind my Reader that I only treat of that Covering which is worn next the Skin, and not of that

that which is external and merely ornamental (§ 1.).

Many ſpeaking of Clothing, by heedleſsly confounding that worn next the Skin, with that which covers it, have drawn very erroneous Inferences. They have even peferred in general Terms the whole Dreſs of the People called *Quakers* from its Simplicity and Neatneſs: a Preference which however juſt with Regard to the exterior Clothes, is certainly not equally ſo with Regard to that worn next the Skin. For Quakers wear the ſame Kind of Shirts and Stockings as we do: and ſome of them really neat, who honour me with their Acquaintance, ſuffer as much and are in Danger of as much from the Preſſure of their Clothes as many of us.

1. The more obvions Advantages to be derived from wearing always one Kind of Covering may be eaſily underſtood from the following Conſiderations.

a. Uneaſineſs, Itching and Pain moſt commonly attend the Change of one Kind of Covering for another, even when there is no Suſpicion of Dampneſs.

A Skin

A Skin uſed to the Feel of fine Linen cannot bear that of Courſe. *

A Skin uſed to the Feel of Linen cannot bear, with equal Pleaſure, the Feel of Cotton. And Flannel which ſeems to me in its Effects moſt like the hairy Covering of Animals, is regarded with a Degree of Antipathy by thoſe who have long accuſtomed their Skin to Linen or Cotton. †

b. To change our Apparel as often as the Weather changes is attended with a great Loſs of Time, and ſuppoſes a fit Opportunity, and a certain Degree of Independence.

Now Time and Opportunity are ſeldom at the Diſpoſal of Sailors, Soldiers, and Huſbandmen. And as the Neceſſity of theſe People muſt always have exiſted;

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* The Brother of *Louis* XIV, who was ſecluded from Society in the Baſtille of Paris is reported to have worn very fine Linen, becauſe coarſe Linen made him uneaſy. *Mem. du Marechal Duc de Richlieu, &c.* Ann of Auſtria was under a ſimilar Neceſſity of wearing fine Linen.

† Sir Benj. Thompſon ſays there is no Luxury greater than that of wearing Flannel, when one is uſed to it. Phil. Tranſ. Vol. 77. Part II. p. 240.

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it does not ſeem likely that ſuch a Covering ſhould have been intended for them by our all-wiſe Creator as they have neither Ability nor Opportunity to wear.

Conſider the Dormouſe: it is ſo clothed with Hair, which ſlowly communicates Heat, that Mr. Hunter could not freeze it even in a freezing Mixture, till he had thoroughly wetted its Hair. * And if ſuch a Reptile as this, ſo low a Link in the Chain of Exiſtence, is qualified by a Covering of Hair to maintain a ſimilar Degree of Heat in all Seaſons and Climates; will my Reader believe that Man might not alſo more effectually brave Inclemencies of Weather if he had ſuch a Covering?

I hold the Practice of wrapping ourſelves up in Flannel at the Approach of Winter, changing it for Calico at the Approach of Spring and Autumn, and wearing Linen only during the Summer, to be equally abſurb and hurtful. I make no Doubt but many have fallen Martyrs

* Obs. on certain Parts of the animal Oeconomy p. 89.

to it. For it prevails equally among the ſtrong and the weak, thoſe of thirty and thoſe of ſixty. Beſides, the Temperature is ſeldom the Signal for theſe Changes, it is the Day of the Month!

I aver that, as no Man can certainly fortell what Covering may be moſt ſuitable for to-morrow, ſo if he could, the States of the Weather are too inconſtant and various for him to poſſeſs a Covering proper for every poſſible one. I am hurt when People in Eaſe and Affluence tell me that Clothes ſhould be changed as often as the Weather changes: juſt as if they had only the Care of themſelves at Heart. For Poverty will always preclude the labouring Poor from the Advantages of ſo frequent a Change, provided it be ever ſo neceſſary.

2. The principal Advantages to be derived from a woollen Covering next the Skin may be underſtood from the ſubſequent Reflexions.

How ſlowly a Covering of Wool tranſmits Heat, I have already obſerved in ſpeaking of the Dormouſe. And the ſame

Experiments

Experiments to which I then alluded, ſupply us with an unexceptional Proof that linen and cotton Shirts and Stockings ſubject us to more debilitating Heats and more fatal Colds than flannel.

In confuting old Opinions for the Sake of eſtabliſhing new, we are generally in the ſame Predicament as they who pull down old Houſes to erect new in their Places. We get no Praiſe for the firſt Part of our Labour, that of removing the old; nor is it till we have cleared away huge Maſſes of Rubbiſh and eſtabliſhed a Foundation, that we gain the Attention and Reſpect of Mankind.

The Dormouſe could not be frozen even in Mr. Hunter's freezing Mixture till its Hair was thoroughly wetted (§ 18.—B.): and it froze afterwards as ſoon as if it had not been covered with any Hair. The Reaſon can be no other than this, that Water communicates Heat quicker than Hair. In other Words, the Heat of the Dormouſe was ſo ſlowly communicated by its Hair to the Atmoſphere, that its living Powers being rouzed at the Ap-

proach of the freezing Mixture were capable of generating or extricating more Heat as faſt as the Hair conveyed any away. Every one knows how ſlowly Wool attracts Water: and it is proved by the moſt ſimple and ſatisfactory Experiments that—" Bodies which are the moſt eaſily wet, or which receive Water in its unelaſtic Form with the greateſt eaſe, are not thoſe which in all caſes attract the watery vapour diſſolved in the air with the greateſt force. *

But why ſhould a Covering of Hair, or Flannel, communicate Heat from the Atmoſphere to our Bodies ſooner than from our Bodies to the Atmoſphere? The Fact is, it does not.

Thus far, I think, we have Reaſon and Analogy in our Favour. Let us next enquire how they felt Flannel who wore it in hot Climates. I know no Authority better than that of Sir Benjamin Thompſon.—" It is a miſtaken notion, ſays he, that it is too warm a cloathing for ſummer.

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* Philoſophical Tranſactions. Vol. 77. Part II page 244.

I have

I have worn it in the hotteſt climates, and in all ſeaſons of the year, and never found the leaſt inconvenience from it," *—And I can aver that I have worn it ſeveral Years, in Summer as well as Winter, in the warmeſt Rooms, and under the moſt fatiguing Exertions, without ever feeling the leaſt Inconvenience. Nay, ſince I have worn it, I have never once felt any Complaint in my Breaſt, which I frequently did before. In ſhort, ſince I have worn it, I have never experienced an Hour's Ailment.

But why is Linen and Calico preferred to Flannel? I am told, it is becauſe Flannel heats more than Linen or Cotton. Now, it muſt be allowed it is not the Heat of our Covering that is ever diſagreeable to us, but its being ſoaked in Sweat and confined next the Skin. Did my Reader ever feel uncomfortable from mere Heat? No: he could not. He can only have felt uncomfortable from his wet Shirt ſticking to his Skin.

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* Philoſophical Tranſactions Vol. 77.

I prefer

I prefer Flannel to Linen, becauſe with the former I can perſpire without Danger, and exerciſe myſelf without any unpleaſurable Feeling. But who can do ſo, when Linen is next his Skin?—If one dances with Flannel next the Skin, the Perſpiration is neceſſarily encreaſed, the Matter perſpired is conveyed through the Flannel to the Atmoſphere, and the Skin remains dry, warm, and comfortable. If one dances with Linen next the Skin, the Perſpiration is alſo neceſſarily encreaſed, but the Matter perſpired is not conveyed through the Flannel to the Atmoſphere: much of it being condenſed into a Fluid State, retained in the Linen, and kept in Contact with the Skin. Here then there are two Sources of Heat which thoſe who wear Flannel next the Skin are never ſubject to: theſe are 1. the Condenſation of the Vapour of the Skin, all Vapours in becoming fluid and all Fluids in becoming ſolid giving out Heat, and 2. the greater Capacity of Linen for Heat.

Suppoſe, again, that after dancing and perſpiring greatly, Neceſſity obliges me to

go

go into the open Air. I have done it many Times with Flannel next my Skin; but I never caught Cold by it, nor did I feel uncomfortably warm. And doubtleſs the Reaſon is becauſe my Skin was kept dry by the Flannel conveying away the Matter perſpired before it loſt its Form of Vapour. Suppoſe after dancing and perſpiring freely, Neceſſity ſhould oblige one with Linen next his Skin to go ſuddenly into the cold Air: what will be his Senſations! what his Riſque! His Linen will be ſoaked in Sweat, and like every Thing excrementitious diſguſtingly ſtinking, he will feel cold and ſhiver, his Teeth will chatter, and it is a Thouſand to one but he catch Cold,—a Hundred to one but his Lungs become inflamed. For he is ſubject to a Source of Cold, which thoſe who wear Flannel next the Skin ſeldom or never are: this is the Evaporation of the condenſed Fluid from their Linen, which will be greater in Proportion as it is expoſed to the more Wind.

C. Thus it appears how effectually a Covering of Wool can defend our Bodies from

from ſudden and exceſſive Heat and Cold, how exactly it co-operates with the Powers of generating Heat and Cold in living Syſtems (§. 15.), and how conſtantly it preſerves us in that Temperature which is moſt pleaſurable as well as moſt natural and beneficial.

D. As to the Benefits derived from Flannel as an *electric*, I cannot conveniently enlarge on them *. It muſt ſuffice, at preſent, to have proved that Heat and Dryneſs are neceſſary to Perſpiration; † and that our Clothes never feel ſo pleaſant as when the Matter perſpired and the Evaporation from our Clothes are in ſuch a given *Ratio* to each other as to preſerve us dry.

## § 19.

I SHALL now recite the moſt common Objections, which People make to Flannel: I ſhall at leaſt recite all I know.

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* Brydone's Tour through Sicily, &c.

† See Home's Med. Facts and Experiments.p. 245.

A. It

A. It is ſaid that Flannel always *weakens*, but eſpecially when worn next the Skin. This is the firſt Objection; and a more ungrounded one there cannot be. It is ſaid Flannel weakens by cauſing too great a Perſpiration; and hence ſome People avoid it as they would ſwallowing a large Doſe of Dover's Powder. Yet I never heard or read of a Phyſician who taught or believed that a dry Skin and a free Perſpiration, ſuch as Flannel is known to occaſion, ever do Harm.—"In Egypt during the ſecond Part of the Summer, every one ſweats profuſely ſeveral Times a Day, and at that Seaſon the Inhabitants always enjoy the moſt perfect Health.—"*

But every Man who has worn Flannel any Length of Time knows that it neither heats him more than Linen, nor ſubjects him to a more copious Perſpiration after Exerciſe. I ſpeak from Experience, and it is proved by Analogy and Demonſtration.

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* Glaſs. Comment. de Feb.—Comment. X. De Sudorum Evocatione. Proſper Alpinus de Med. Ægyptiorum. Lib. 1. Cap. XVIII.

If, indeed, Flannel made us ſweat, it might then do Harm: but by only making us perſpire it is one of the moſt effectual Means of doing us good.

Such abſurd Notions as theſe are generally propagated by the rheumatic, the gouty, and the infirm, who are diſpoſed to ſweat in Conſequence of their Diſeaſe, but who know not how to diſtinguiſh betweeen the Effects of the Diſeaſe and thoſe of their Flannel.

B. Flannel is alſo ſaid to excite an *Itching*: but this Objection may be made to Linen. For it is clear that neither fine Flannel nor fine Linen cauſes it. Nay, even coarſe Linen and coarſe Flannel only cauſe it for a Time.

C. It is natural enough for Perſons to rub and ſcratch themſelves who feel any Itching; and that the Skin ſhould of Courſe be inflamed, it is eaſy to ſuppoſe. But they who are prejudiced againſt Flannel, ſay that Flannel alone may cauſe an *Eruption*. Now if it ever did this, the Objection would be a very ſerious one. But I deny that it ever can.

D. There

D. There ſtill remains another Objection to be mentioned. It is that Flannel diſpoſes Perſons to the φθειριασις of the Greeks, the *Morbus pedicularis*, or *Pediculatio* of the Latins. This Objection, however, can only be ſeriouſly made by thoſe who wiſh one Flannel Waiſtcoat to ſerve for many Months. I do not think it worth while to remove ſuch an Objection as this: but if my Reader will follow my Example, and change his flannel Waiſtcoat as often as he changes his Shirt, I am certain he will find Flannel far more ſweet and comfortable than Linen.

## § 19.

I SHALL conclude this Eſſay with a Remark on the Cuſtom of wearing cotton Stockings, and a Propoſal for the delicate and invalid to alter the Form of their Stockings in general.

A. *Cotton Stockings* are more generally worn by the Ladies than any. It is a cuſtom however which I know to be equally pernicious and filthy.

a. It is proved to be pernicious thus. There is not a greater and more important Emunctory in the whole human Syſtem than the Feet. The Connection between the Feet and the Head, the Stomach, the *Uterus* and the urinary Paſſages is ſuch that I, and very many beſides me muſt, have ſeen a Fit of the Gout, a Suppreſſion of the *Menſes*, and Pains reſembling thoſe of the Stone almoſt inſtantaneouſly brought on by Cold applied to the Feet. I am even perſuaded that Cancer, Inflammation, and even Abortion are frequently occaſioned by wearing cotton and ſilken Stockings.

Cotton like Linen once ſaturated with the Moiſture diſcharged from the Feet, can receive no more: and as it can part with little or none at all to the Atmoſphere, the Excretion muſt be more or leſs impeded, and a Senſe of Coldneſs and Clamminеſs muſt be inevitable. Nothing ſtops the Excretion from the Feet ſooner and more effectually than Cold.

b. Nor are Facts wanting to convince thoſe who are open to Conviction that Cotton worn next the Skin is a plentiful

Source

Source of Uncleanlineſs. Let any one deſirous to ſee it proved wear cotton Stockings one Day and worſted the next, and afterwards ſay which was the more free from Humidity and Smell. I have tried the Experiment often, and always with the ſame Reſult. Cotton ſaturated with the Sweat of the Feet,—and Cotton can contain more than Linen,—ſoon rots. Cotton Stockings will not laſt nearly ſo long as worſted for this very Reaſon.

Mankind ſeem as yet ignorant of the Calamities which may ariſe from the ſpontaneous Changes which the Sweat of the Feet ſtagnating in the Stockings undergoes: of the Calamities which may ariſe from the mutual Action of the Sweat and the Leather and its Impregnations. In ſhort they who wear cotton Stockings ought from Regard to Delicacy as well as Health to change them once a Day even if they ſit ſtill: and if they walk about.—as Motion encreaſes Perſpiration, — twice or oftener.

It is unneceſſary to ſpeak of ſilken Stockings: for they are ſo thin, and ſuch eaſy

Conductors

Conductors of Heat, that they are never worn alone by prudent People, but over worſted or yarn. I have no great Objection to this Cuſtom.

B. The laſt part of my Eſſay contains a Propoſal for Stockings to be made with Toes, as Gloves are with Fingers. A Propoſal ſo ſtrange is not expected to meet the Approbation of thoſe who are biaſſed by Prejudice, and who rather conſider the Cuſtom than the Comfort of Things. But, it is hoped, all Perſons who honour the preſent Eſſay with their Attention, will not diſlike any Objection, merely becauſe it is an Objection; but regard it with Sedulity and Candour, as it ſo intimately concerns the Welfare of Mankind.

1. Although the Feet are as great and important an Emunctory as any in the human Body, yet it has never been propoſed, as I know to ſolicit the Diſcharge from them. On the contrary, it has been repeated as a Rule, particularly in the polite World, that ſuppreſſing their Diſcharge is the moſt certain and effectual Method of keeping them dry and free from

Smell

Smell. Hence, old Women have ſet about ſuppreſſing the Diſcharge, and an unſuſpected Fatality muſt often have overtaken the unwary who confided in their anile Injunctions.

a. I agree that dry Feet are preferable to moiſt: but I aſſert that thoſe Means which encreaſe their Perſpiration are the only which can poſſibly preſerve them dry, and prevent their ſmelling offenſively.

Whether the Vapour perſpired from the Feet be like that from other Parts of the Body, as I do not know that it comes but from the exhalent Arteries which open on their Surface, I cannot determine; though I am convinced that the Neceſſity of Perſpiration in ſome Parts of the Body is far more indiſpenſable than in others. Perhaps, a Diminution or Suſpenſion of Perſpiration in other Parts is more readily compenſated by an Increaſe of Urine than in the Feet.

No one can ſeriouſly doubt the Importance of a free Perſpiration from the Feet. Keeping them in warm Water has frequently removed Pains and even Inflam-

mations

mations of very diſtant Parts: and a copious Diſcharge from them has in all ſuch Caſes been known to precede the Cure. So that if the Pain and Inflammation were not cauſed by Suſpenſion of the perſpiring Faculty of the Feet, they were at leaſt certainly cured by exciting or increaſing it.

b. By what change of Clothing then are the Feet to be kept dry and free from Smell. When we run, and when we dance, do not our Feet perſpire much, and do not the Feet of ſome become clammy and offenſive after ſuch Exerciſes, within a ſhort Time, notwithſtanding all their Endeavours to prevent it?——Now, all this is eaſily enough anſwered. In Fact, I have anſwered it fully already. But, I will anſwer it again in a ſummary Way.——I have ſhown that our Body perſpires moſt when it is drieſt, and that it is preſerved dry by wearing ſuch a Covering as conveys away the Vapour perſpired before it has Time to condenſe into a fluid Form. Laſtly, I have ſhown that ſuch a Covering muſt be woollen. Therefore, if Perſons

wearing

wearing Cotton,thread,or ſilken Stockings do feel a Coldneſs and Clammineſs, and if their Feet do exhale a diſagreeable Smell; I ſay it is becauſe their Stockings inſtead of conveying the Vapour perſpired away before it changes its Form, abſorb and retain it in Contact with the Skin, in a Heat moſt favourable to Putrefaction, and thus obſtruct all future Perſpiration.

I do not however believe that our Feet are as eaſily kept dry as our Bodies. For the Vapour of the Skin after paſſing through even worſted Stockings muſt in ſome Meaſure be ſecluded from the Atmoſphere by the Leather of the Shoes. Be this as it may, worſted Stockings convey the Vapour from the Feet, and do not readily retain it condenſed: ſo that if the Vapour only aſſume a fluid State, on the Outſide of the Stockings, between them and the Shoes, we are at leaſt more likely to feel leſs Coldneſs and Clammineſs than if we wore Stockings which more readily abſorb Water than Vapour.

But the moſt diſagreeable Senſation which they ever feel, whoſe Feet ſweat,

is between the Toes. Here it is that the more fluid Part of the Sweat being abſorbed, leaves the groſs and glutinous Part to accumulate and putrefy. This I think can only be prevented by preſenting even to the Skin, between the Toes, a woollen Covering; in other Words, by making our Stockings with Toes, as we do our Gloves with Fingers.

*FINIS.*